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Actor-Network Theory: Methodology and Ontology. An eventual irreduction of Philosophy to be.

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Membros do Júri

Presidente:

Vogais:

I dedicate this thesis to all those who exceed.

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Abstract

From methodological and ontological notions of Actor-Network Theory (Callon, Latour, Law), chronological antecedents, correlations with other branches of knowledge, we extract consequences of the proposed methodologies and of the ontology in question. Such correlations, methodologies, and ontology(s) are crucial to understand the possible reformulation of hard themes of Philosophy of Action, Philosophy of Language and Metaphysics, going beyond the instrumental application of Actor-Network Theory in the scope of the so-called social sciences. Such reformulation is carried out by Latour mainly in *Irreductions* (1988), essential for an eventual irreduction of Philosophy to be.Thus, a rigorous close reading of the most relevant parts of *Irreductions* for such a goal is conducted, tracing a (second) now strictly philosophical route unique to Bruno Latour's irreducing project. This allows us to fully frame Actor-Network Theory and *Irreductions* in a non-instrumental dimension to problematize what is pertinent to an Irreductionist Ontology and Philosophy. One that may construct the material possibility of an eventual irreduction of Philosophy to be.

Key-words: Actor-Network Theory, Irreduction, Bruno Latour, Methodology, Ontology

Resumo

A partir de noções metodológicas e ontológicas da Teoria Ator-Rede (Callon, Latour, Law), antecedentes cronológicos, correlações com outros ramos do conhecimento, extraimos consequências das metodologias propostas e da(s) ontologia(s) em causa. Correlações, metodologias, e ontologia(s) são cruciais para compreender a eventual reformulação de temas duros da Filosofia da Ação, Filosofia da Linguagem e Metafísica, ultrapassando a aplicação instrumental da Teoria no âmbito das ciências ditas sociais. Esta reformulação é levada a cabo por Latour principalmente em *Irréductions* (1988), essencial para uma eventual irredução de uma filosofia por vir. Assim, procede-se a uma análise rigorosa dos aspectos mais relevantes de *Irréductions* para esse fim, relevando uma via agora estritamente filosófica, singular ao projecto de irredução de Bruno Latour. Esta análise permite enquadrar numa dimensão não instrumental a Teoria Ator-Rede e *Irréductions* de modo a problematizar o que é pertinente para uma Ontologia e Filosofia Ator-Rede e/ou Irreducionista que permita construir a possibilidade material de uma eventual irredução da filosofia por vir.

Palavras-chave: Teoria Ator-Rede, Irredução, Bruno Latour, Metodologia, Ontologia

Introduction

The objective of this thesis is to open ground for an eventual irreduction of Philosophy (to be). In the footsteps of what is designated as Actor-Network Theory, strongly choosing Bruno Latour as the main reference for reasons explicit in the thesis. And in the footsteps of Bruno Latour's work in *Irreductions* on the leitmotivs of ireduction and relativity together. The exposition thus moves through an analysis of Actor-Network Theory in Chapter 1 where the goal is to trace and weave its possible relations with Philosophy as an activity, a doing, as much as to stress and lay bare which aspects can bear novelty towards a different focus both on methodology and ontology. The difficulties of such laying bare, as to content and to style, make integral part of the exposition and are to be seen as constitutional, unavoidable and methodologically indistinct from Actor-Network Theory itself and from the irreducing project it may help to foster. While reaching for what can be considered a new approach towards ontology, a new materialism without a dichotomical counterpart.

I stress that though *Irreductions* aims, in a very peculiar way as it will be seen, to be (also) a philosophical work, Actor-Network Theory, in whose grounds it is born, does not, at all. This appearance of a difficulty is simultaneously its greatest weakness for a philosophical intent and one of Actor-Network Theory's greatest strengths for the same philosophical intent, for lack of submission to more consensual views of what the discipline should be based on and has been based upon. By assuming such a risk of starting from it, with the objective of laying grounds for an eventual irreduction of Philosophy to be, the exposition does not aim at an history of Actor-Network Theory unless that is relevant to the goal intended, as it does not aim to reduce it into a pre-existing philosophical current, albeit some could certainly fit more than others. As well as, by the full acceptance of such a risk, it engages in making an effort not to betray such strength by integrating its discussion neatly in the philosophical states of the art Actor-Network Theory payed little attention to.

The whole first chapter assumes the need to focus exactly on the theme of how could Actor-Network Theory be fruitful for Philosophy and for a Philosophy, following it according to its own set of guidelines, influences, operating concepts or concept

analogues. Constructing the building blocks, or weaves, or network nodules, from which Philosophy may or not start associating in new connections, under the tenets or guidelines, more implicit than explicit of Actor-Network Theory itself, and none others. What is to be constructed upon is Actor-Network Theory, as I take it for the goal intended, which is quite coherent with the theory per se. The sub-chapters follow such a logic and use the network strenghtening method which the theory claims. Meaning, to treat the subject-matters of research as a complex weave to be acted on, under the constraint of introducing connections, mediations, that may induce the actuality of new material possibilities by irreducing established intermediations. In this sense, analysing a subject-matter is as much describing it as it is fabricating it, in a positive rendering of the term, that of weaving on and on to test what actually resists. With no end in sight, but not randomly. Subchapters are then not to be seen as closed entities but as movements being put forth throughout the exposition. Which will always be recalled further on, a riff.

1.1. opens the thesis by reflecting the vast array of ever growing designations Actor-Network Theory is otherwise called; hints at some difficulties hereby implied; introduces the terms of "actor" and of "network" as conjoined and as to possible misconceptions if their use is based on the History of Philosophy; pinpoints the ontological pull towards heterogeneity and associations with a strong mistrust for explanations and prior frames of attribution; begins tracing as relevant the history of Actor-Network Theory and approaches towards its understanding for the goals intended; tackles how Actor-Network Theory, albeit its non-philososphical origins, does demand a Philosophy if wanting to overcome case-studies as much as if wanting to follow them through without artificaly stopping networks.

1.2. explores relations made between Actor-Network Theory and Philosophy (comparing with other correlations with other revant doings or activities) choosing one as the most fruitful, gravitating towards ontology; introduces the particular take on this subject-matter by distinguishing between Metaphysics, Practical Metaphysics, Ontology; lays bare some dichotomies Actor-Network Theory might help to see in a different light as a way of both understanding its usefulness as a doing and of enforcing the need for Philosophy to pay attention to it; starts dealing with *Irreductions* at this regard as the key text for a philosopical ouverture to be launched from Actor-Network Theory; speaks of

what Philosophy might on the the process have to leave behind in the accounts it makes of itself as a theoretical activity or a theory or as a producer of theories.

1.3. deals with the key notions Science and Technology Studies brought to Actor-Network Theory and establishes how they were developed and used forward; how from them conclusions were taken regarding the overall validity of cause and effect relations towards an Ontology, the reformulation of episteme and views on knowledge and knowing; what is meant in the course of the theory by the word "attribution", its relations with a deflated view of agency away from the more consensual ways of viewing it (granting agency to objects in the process); the role of heuristical guidelines not to be taken as principles (introducing the "how", the practice, the "in action"); the fundamental relevance of metrology and associated instruments and machines for calibrating the real, for the meaning of acting at a distance and of acting in the future in the construction of an ontology.

1.4. deals with construction at the light of Actor-Network Theory by splitting its meaning from social constructivism or from efabulation; explains the vitality of replacing causal relations by the conjuction of translation and betrayal and reflects upon the consequences derived from this replacement; examines the role of mediation and of intermediation at this regard concluding on the mediation primacy in Ontology in the making and Ontology per se; examines the major influences of Engineering, Architecture, Public Admnistration both to Actor-Network Theory and to stabilization of Ontology; explains the meaning of "figuration" in Actor-Nework Theory and consequences thereof; tackles the issues of forms and of abstraction in the light of the primacy of so-called symbolic constructions.

1.5. deals with the entangled role and influence Semiotics brings to Actor-Network Theory on what is an agent, an actant, an actor, how it re-shuffles discussions on what action is and allows for generalized symmetry in treating alike established oppositions, such as internal vs. external, individual vs. collective, private vs public, for example; deals with the same entangled role and influence in the case of Rethorics, pushing for a new understanding of a rethoric of things to replace the limited view of Rethorics as a persuasion of words and arguments, by analysing Latour's case on the scientific article first of all; deals with the notion of Network as per how it entered Actor-Network Theory and Latour's work on it, focusing on the relevance of forms (said as simbolic), what

abstraction is or isn't, the central role of mathematical equations and the decisive advantage they give in stabilizing an Ontology via multiple pathway networks; deals with the advantages in methodological and ontological terms of replacing a series of consensual dichotomies by networks; describes the five uncertainties that come from using Actor-Network Theory to the fullest and accepting the conjoined expression "actor-network" as more faithfully describing what actually is, as it is.

In Chapter 2 my goal was to let fully done the examination of the principles that sustain the reflection further on in the course of *Irreductions*, and which may bear the greatest relevance both for future investigations of the theme and for the understanding of the originality and specificities of the approach, a revised materialism or a new materialism, if needing to choose labels the book itself frows upon. These are the principle of irreduction and the principle of relativity, principles which according to the book itself have little governance and are not "principles". From them, to integrate other relevant parts of the text as to the goal intended. Namely, the introduction where the irreducing aim is launched forth and an incursion in the second part where the issues of logic, logos, and language, so keen to Philosophy begin to be tackled in the peculiar ways *Irreductions* follows through its irreducing project, hereby applied to the concept of Being, so keen to Metaphysics and Ontology. During the exposition I also refer, as the work itself does it innumerous times on purpose, forward tracking and backwards tracking, other parts of the text, which is, as will be seen, a complex weave with no easy going direct line of intelligibility. On purpose but again not randomly, always stressing the paths to governance and the construction of material possibilities, per the book's intent. Again, such tracing an retracing stand as a constitutional aspect of the methodology and of the approach to Ontology which is weaved on in the work.

The thesis deals extensively as to why is *Irreductions* exceptional in the course of Actor-Netwok Theory, in the course of Latour's work and, as far as I am concerned and hope to make clear, in the course of what could be an irreduction of Philosophy to be. As for the option for a very close reading of the chosen parts of the text as method and as the fulcrum of the second half of the thesis, it is justified both by the fact that it is yet not done at all and, mainly, by the strong belief that the the work deserves it and can only be approached thus, for the goal intended to have any material possibility, coherently. While,

on the other hand, such a close reading may also show the how of putting the theory to use in slowly connecting and associating what seems far distant and far apart for the construction of a more resisting and real network. A philosophical task in itself which can not elude contaminations between that which is said to be real and that which is said to be not that real, assuming such a risk when engaging the materials worked, in this case the closely read parts of the work I focused on. Slowing down, not reducing and not using the reducing strategy as the book itself asks us to do, "as if", in the introduction. This will also, I hope, become clear as to why. As it will also become clear, I hope, that the distinction between form and content, as that of genre for a specific content if I can express it thus, looses its grip when it comes to *Irreductions*, for reasons which are not superficial. Summing up would not do, consistently with the claims put forth. Thus, I will let in this case the sub-chapters speak for themselves.

Still, the sub-chapters frame both principles mentioned, closely read mainly in 2.2 and 2.3, in the overall irreducing project. By closely reading first the introduction of *Irreductions* in 2.1, where the cards of the game are placed in the table. And by tackling the governance aspect of an eventual irreduction of Philosophy to be, that of producing material possibilities, by an incursion to the second chapter of *Irreductions* in 2.4, not as closely read but hopefully dealt with the necessary depth to entice the following through of this line of inquiry and research, which I strongly feel can be extremely fruitful for Philosophy and for the goal intended. Perhaps allowing for a refreshing take on the role of Philosophy, on Ontology, and on the regaining of the wonder which some say is at the start of philosophical activity, at the center of the philosophical need, and the justification of the need for philosophy to not let it slide into familiarity for excessive use and focus on reduction. As there are more things, Horatio.

1. Actor-Network Theory: Methodology and Ontology.

1.1. A Plethora of designations

"Actor-Network Theory", "Actant-Network Theory", "ANT", "Sociology of Translation"[1], "Associology", "Slowciology", Material Semiotics", "Constructivism", "Irreductionism", "Relationism", even "After-Theory", stand as more or less accepted and used designations for a theoretical-practical framework created by Callon[2], Latour, Law[3], further developed, changed and adapted by subsequent users. Both the theoretical work and corresponding practices are, still today, constantly circulating on the follow of this alternating designations trend. "Circulating" which is, as things go, a technical term in the theory. That of hybrid circulating entities, called Actor-Networks, which are never inherently stable but may become shaped as if such by force and by forces, entities that change, grow, or fail, according to how they pass and are passed along, according to how they are made along with others and by others[4].

Due to such a circulating nature what we study here is still on the move as it keeps unfolding out of focused practice, gaining still more associations, another technical term with yet another designation rising from it[5]. A first strong thesis is that as Ontology is slowly revealed much, if not all, of what we encounter, of what is deemed to be effectively real, of what there is, shares these same characteristics of constant movability, associability, hybridity, either we explicitly choose to be aware of it or not. Pursuing an Ontology able to resist trials, consequently, demands that one does become aware of it,

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1 Cf. Law, 2009: 145: «To translate is to make two words equivalent. But since no two words are equivalent, translation also implies betrayal: traduction, trahison. So translation is both about making equivalent, and about shifting. It is about moving terms around, about linking and changing them.»
2 Cf. Callon, 1982, 1986a, 1986b.
3 Cf. Law, 1986, 1991, 1997, 1999, 2009.
4 Cf. Latour, 1996 [1990]: 379: «If choosing words for the network-tracing activity has to be done, *quasi-objects* (Serres, 1987) or *tokens* might be the best candidate so far. It is crucial for the definition of the term that what circulates and what makes the circulation be both co-determined and transformed. A ball going from hands to hands is a poor example of a quasi-object since, although it does trace the collective and that the playing team would not exist without the moving token, the latter is not modified by the passings.»
5 Latour, 2005: 5: «Even though most social scientists would prefer to call 'social' a homogeneous thing, it's perfectly acceptable to designate by the same word a trail of associations between heterogeneous elements.»

expressing it in any theoretical analysis by not reducing things to an immobility who is not theirs[6].

In such a framework, it is from 1978 to 1990 that the term "Network" ("*Réseau*") becomes clarified, or created a-new, translated-betrayed a-new, bearing a distant but nevertheless pertinent relation with the mathematical properties of networks[7], while being joined with, and becoming indistinguishable in practice from, the term "Actor", coming from the semiotic actant, the theatrical actor, and from action or doing[8]. By 1990 Bruno Latour already feels the need to point to a precise sense, positively and negatively, for each individual term and for the composite expression they form when joined to designate the theory, "Actor-Network", thereby intending to dismiss growing misunderstandings[9].

By using "actor" what was meant, it is said, is not an Anglo-Saxon[10] view where action is to be distinguished from, or even related with, behaviours. Thus, we are indeed away from some philosophical thinking which frames behaviours vs. actions, behaviours or actions. Decisively, it was also not meant that one would be speaking of motivations or intentions as applied only, or particularly or mostly, to so called individual human agents. Accordingly, one is not drinking from the frameworks in which agency is more traditionally discussed, while the ground stepped on is also not paved with belief and desire terminology.

Likewise, by using "network" one is not necessarily engaged in the discussion of technical networks, stable and achieved grids where actors would be placed, neatly

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6 Cf. Latour, 1996 [1990]: 370: «Literally there is nothing but networks, there is nothing in between them, or, to use a metaphor from the history of physics, there is no aether in which the networks should be immersed. In this sense ANT is a reductionist and relativist theory, but as I shall demonstrate this is the first necessary step towards an irreductionist and relationist ontology.»

7 Cf. Latour, 1996: 372: «A network in Mathematics or in engineering is something that is traced or inscribed by some other entity - the mathematician, the engineer. An actor-network is an entity that does the tracing and the inscribing. It is an ontological definition and not a piece of inert matter in the hands of others, especially of human planners or designers. It is in order to point out this essential feature that the word "actor" was added to it.»

8 Cf. Latour, 1996 [1990]: 372: «This is why ANT adds to the mathematical notion of network a completely foreign notion, that of actor. The new hybrid "actor-network" leads us away from mathematical properties into a world which has not yet be so neatly charted. To sketch these properties, we should now move on from static and topological properties to dynamic and ontological ones.»

9 Cf. Latour, 1996 [1990]: 369: «I would like in this paper to list some of the interesting properties of networks and to explain some of the misunderstandings that have arisen.»

10 Cf. Latour, 1996 [1990]: 372: «"Actor" in the Anglo-Saxon tradition is always a human intentional individual actor and is most often contrasted with mere "behaviour".»

arranged and neatly composed within, or neatly arranged and neatly composed by[11]. As it was not meant to target social networks of interactions where social is taken as a distinct domain apart from others[12]. Therefore, adding up as if one a conceptualization of so-called individual human agents neatly placed in a network-like grid would be, according to Latour, highly misleading if not plain wrong.

By now we can discriminate a first difficulty, already hinted along when mentioning some of the many designations for what we deal with. The terminology used to give account of what Actor-Network Theory stands for suffers, at least, a double reframing. It reframes widespread uses of the words in question while further reframing itself constantly. By constructing new ground from old stones, it keeps hardening the task. This is to be seen as a characteristic and not immediately as a flaw, a misunderstanding[13].

The conjoining of the two words, actor and network, by a hyphen, is to be seen first and foremost as simultaneously a network tracing and a network doing[14] to be dully described and dully followed. Methodologically, instrumentally, up to any ontological consequences which may then become evident. The key aspect that has to be stressed, for now, is that it is to be a doing. Something to be done and acted out, claiming little to no regard on any possibility of previously imposed distances towards the objects it acts on

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11 Cf. Latour, 1996 [1990]: 369: «A technical network in the engineer's sense is only one of the possible *final* and *stabilized* state of an actor-network. An actor-network may lack all the characteristics of a technical network – it may be local, it may have no compulsory paths, no strategically positioned nodes.»

12 Cf. Latour, 1996 [1990]: 369: «Whereas social network adds information on the relations of humans in a social and natural world which is left untouched by the analysis, ANT aims at accounting for the very essence of societies and natures. It does not wish to add social networks to social theory but to rebuild social theory out of networks. It is as much an ontology or a metaphysics, as a Sociology.»

13 Cf. Latour, 1996 [1990]: 370: «Why then use the word network since it is opened to such misunderstandings? The use of the word comes from Diderot. The word "réseau" was used from the beginning by Diderot to describe matter and bodies in order to avoid the Cartesian divide between matter and spirit. Thus, the word has had a strong ontological component from the beginning.»

14 Cf. Latour, 1996 [1990]: 378: «(…) there is not a net and an actor laying down the net, but there is an actor whose definition of the world outlines, traces, delineate, limn, describe, shadow forth, inscroll, file, list, record, mark, or tag a trajectory that is called a network. No net exists independently of the very act of tracing it, and no tracing is done by an actor exterior to the net. A network is not a thing but the recorded movement of a thing.»

and acts with, while being done. Such tracing and such doing are, moreover, not solely the privilege of humans[15]. As agency isn't[16].

Latour´s strikingly polemic case is for an Ontology of actor-networks, dissimilar words joined as if one by a hyphen, as being simultaneously what there is and how what there is effectively comes to be. Actors in practice mutually determined and indistinguishable from networks, albeit not completely so as it is not just one word. Plus, no single word would capture the scope intended through the designation. This is, also, where the processing of irreducibility starts: the grounds to be tracked are said to be shaky grounds constantly being performed. Subsequently all grounds will be thus seen. Forcing the use of many words transporting many possible interpretations where meaning but accumulates itself up. Given designations are then inherently flawed. The most apparently strict those that flaw the most.

Such Ontology of actor-networks, of doings being done, is put forward as prior to any frame of attribution asymmetrically treating apart human from non-human, agent from non-agent, active from passive, social from non-social, natural from non-natural, symbolic from non-symbolic. Such attributions would always come after the fact by the constraining of scopes and languages. Never priory acceptable for the analysis of what there is and how it comes to be, as it is done and being done[17]. At most, such departing asymmetries are but continuously generated effects[18] of how actor-networks strengthen

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15 Cf. Law, 1997: 382: «Let me be clear. Actor-network theory is analytically radical in part because it treads on a set of ethical, epistemological and ontological toes. In particular, it does not celebrate the idea that there is a difference in kind between people on the one hand, and objects on the other. It denies that people are necessarily special. Indeed, it raises a basic question about what we mean when we talk of people.»

16 Cf. Latour, 1996 [1990]: 373: «An "actor" in ANT is a semiotic definition – an actant –, that is, something that acts or to which activity is granted by others. It implies no special motivation of human individual actors, nor of humans in general. An actant can literally be anything provided it is granted to be the source of an action»

17 Cf. Latour, 1996 [1990]: 374-375: «In itself ANT is *not* a theory of action no more than cartography is a theory on the shape of coasts lines and deep sea ridges; it just qualify what the observer should suppose in order for the coast lines to be recorded in their fine fractal patterns. Any shape is possible provided it is obsessively coded as longitude and latitude. Similarly any association is possible provided it is obsessively coded as heterogeneous associations through translations. It is more an infralanguage than a metalanguage. It is even less than a descriptive vocabulary; it simply opens, *against* all a priori reductions, the possibility of describing irreductions.»

18 Cf. Law, 2009: 145: «Pasteur, a hero of French science, is said to have revolutionized French agriculture. For instance, he discovered the cause of anthrax and created a vaccine for the disease. But how did this

or weaken themselves, are strategically more or less connected with more or less compulsory paths, assimilate more or less resources and successfully associate or not with other actor-networks, translate-betray or not an infinity of relations between the heterogeneous elements presently assembled in them.

Mistrust towards such prior frames of analysis is carried out unto the instrumental utility and justification of what they could eventually do. Namely, to cause or to explain. They are said to be the cause of nothing while not capable of explaining anything. Thus, it must be stressed that the Ontology to be sought through the designation of "Actor-Network Theory" will not fall under the word "cause", to be dismissed and replaced by translation-betrayal or mediation, and under the word "explanation", to be dismissed by description and following. We are thus faced in the making do of the theory with an ontological aspiration far away from the terminology and use of causes and explanations. This is not to be seen as a lack, but, again, as a characteristic.

At the stake is an Ontology of heterogeneous associations of different natures and kinds, between heterogeneous elements of different natures and kinds. An Ontology said to be «*a reductionist and relativist theory, but as I shall demonstrate this is the first necessary step towards an irreductionist and relationist ontology.*»[19] Seemingly, one enters into the realms of vagueness if wishing to flock away from ambiguity through judging by no other than yes or no standards, black or white, either this or that. It has to be remembered that while we are indeed stepping on shaky grounds those ambiguous grounds are said to be what makes justice to the grounds of what there is. At least before the construction, yet another technical term stolen away from other disciplines by translation and betrayal, of metaphorical or otherwise road pavements, turns such shakiness into well-lit highways. Mapped with clear direction marks with no apparent

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happen? Was he, as Hughes claimed of Edison, a great man? Latour rejects this because in a material-semiotic world all actions, including those of great men, are relational effects. To show this he charts how a network of domesticated farms, technicians, laboratories, veterinarians, statistics, and bacilli was generated. He describes how they were shaped (in some cases created) in this network. And he shows how the result was generative. Farms were turned into laboratories, vaccines made from attenuated bacteria, cattle stopped dying of anthrax, and Pasteur became a great man (Latour 1988b). All of which were the effects of a set of materially heterogeneous relations.»

[19] Latour, 1996 [1990]: 4.

ambiguity. Constructivism or construction will accordingly enter the arena as another designation[20].

By now it also stands as obvious that purification and clarification of language is not the most relevant goal sought and not the most relevant tool for the achieving of any of the goals sought. Conflicting with a consensual aim of most philosophical systematicity and/or methodology. Instead, associating more and more possible meanings to whatever words are used to give account of, including and excluding significations in a process bordering invention and play while dismissing frontiers and oppositions with literature, is. Again, a characteristic tracing way into the theory.

Regardless, it is not said by 1990 that dualities and distinctions such as those mentioned regarding agency, objects, natural, symbolic, social, do not or cannot turn out to be real or more or less effective, resisting more or less, a key point to bear in mind[21]. Following a successful construction, by being thus constructed, they may be so by becoming so. What is actually real and how it comes to subsequently resist as such, according to how it is constructed, is in fact the fulcrum of the Ontology, its litmus trial. In 2009 Law uses the word "enactment"[22] to discriminate how such constructions of dualities and distinctions are realized and speaks of a performative turn of seismic proportions coming from what he names as "after-theory", yet another designation strolling in[23]. But what is said is that they are neither instrumentally nor methodologically

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20 Cf. Latour, 2005: 88: «In plain English, to say something is constructed means that it's not a mystery that has popped out of nowhere, or that it has a more humble but also more visible and more interesting origin. Usually, the great advantage of visiting construction sites is that they offer an ideal vantage point to witness the connections between humans and non-humans.»

21 Cf. Law, 2009: 147: «This is not to say that they are not real – they may indeed be made real in practice– but they offer no framework for explanation.»

22 Cf. Law, 2009: 151: «In short, we are in the realm of performativity. Economics in theory is all very well, but economics in practice is different. And theory is only translated into practice if it is enacted – in practice.»

23 Cf. Law, 2009: 154: «There is nowhere to hide beyond the performativity of the webs. But since our own stories weave further webs, it is never the case that they simply describe. They too enact realities and versions of the better and the worse, the right and the wrong, the appealing and the unappealing. There is no innocence. The good is being done as well as the epistemological and the ontological. Actor network 1990 knew this in theory (Latour 1988a) though it sometimes forgot it in practice. It was forcibly reminded of its non-innocence by Donna Haraway in her own much more explicitly political material semiotics (Haraway 1991a, 1991b). We make realities, she said. The only question is: what kind of difference do we want to make? Material-semiotic writers have responded to this question in different ways. Haraway uses tropes – most famously the cyborg – that interfere with and undermine politically and ethically obnoxious

necessary to begin with, neither are they given, nor acceptable data to start framing and explaining along the objects of study. To take them as such turns out as descriptively quite poor, inducing erroneous highly reduced understanding of what there is and how it comes to be[24]. It is seen as never true, exemplifying, that something is either constructed or natural. Constructivism turns out, all things considered, as another flawed designation[25].

Explaining, then, in actor-network theory becomes, if anything, to first make visible the sets of practices that constitute specific network tracings and doings, themselves necessarily aggregated to a specific network node. Better yet, those practices that are able to modify other nodes of the same network or of other actor-networks by mutual interference. Such sets of practices cannot ever cease to be themselves an extending of the actor-network they travel on and with, ever part of its paths when connecting[26]. Therefore, any overarching frames of dualities are actor-networks themselves which have been, more or less, stabilized and even reduced, their works often made invisible. The present result, the effect, of multiple tinkering's and multiple translations exerted by multiple actor-networks toiling. Not coming first, they are what needs to be proven and

realities. Latour talks of "ontopolitics" (Hinchliffe et al. 2005; Stengers 1997) and of a "parliament of things" where what is real, and how these things might live together, are provisionally determined (Latour 1993, 2004a). Mol talks of "ontological politics" in the specific context of healthcare (Mol 1999). STS feminist writer Moser defends practice-based versions of dementia (Moser 2007). Postcolonial STS writer Helen Verran talks of the ontic softening that would help encounters between the realities of Western technoscience and indigenous knowledge systems (Verran 1998, 2001). And Law, resisting the idea that the different versions of the real can be brought together at a single site of representation, offers methodological tools for partial connection (Law 2004).»

24 Cf. Law, 2009: 142: «More profoundly, it is a sensibility to the messy practices of relationality and materiality of the world. Along with this sensibility comes a wariness of the large-scale claims common in social theory: these usually seem too simple.»

25 Cf. Law, 2009: 151: «Something seismic is happening here. A vital metaphorical and explanatory shift is taking place. We are no longer dealing with construction, social or otherwise: there is no stable prime mover, social or individual, to construct anything, no builder, no puppeteer. Pasteur, we have seen, is an effect rather than a cause. Rather we are dealing with enactment or performance. In this heterogeneous world everything plays its part, relationally. The shift is easily misunderstood, but it is crucial. The metaphor of construction – and social construction – will no longer serve. Buyers, sellers, noticeboards, strawberries, spatial arrangements, economic theories, and rules of conduct – all of these assemble and together enact a set of practices that make a more or less precarious reality.»

26 Cf. Latour, 1996 [1990]: 375: «Actor-networks do connect and by connecting with one another provides an explanation of themselves, the only one there is for ANT. What is an explanation? The attachment of a set of practices that control or interfere on another. No explanation is stronger or more powerful than providing connections among unrelated elements, or showing how one element holds many others. This is not a property that is distinct from networks but one of their essential properties. They become more or less explainable as they go and depending on what they do to one another.»

explained, mainly described as nothing but practices, made again visible, brought into the forefront. Never what would prove or would eventually serve to explain.

In the current and end goal, and for the pursuit of a more faithful Ontology they are to be replaced or eliminated by the strict methodology of exhaustive description, supported on a generalized symmetry[27], another technical term, in the treatment of all available elements, using an infralanguage which dismisses them, not a meta-language which would subsume them. To further the point, while losing status as causes, reasons, or explanations, none of such prior ontological frames or domains is able, in practice at least, to be fully purified, clarified, demarcated without ambiguity or vagueness from their assigned opposites.

Under this somewhat basilar presupposition John Law considers in 2009 that by 1990 a more mature state of the overall theory stabilized. From which after criticisms and rebuttals a new approach was born with a growing multiplicity of objects of analysis coming into play. This more mature state would birth a diaspora[28], to whose results he calls the "After-Theory", underpinning it not as actor-network theory but now as "Material Semiotics". A material Semiotics tool kit applied to world building entities[29]. Ontology building entities one could say, or those entities able to make and install differences in what there is and how it comes to be.

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27 Cf. Latour, 1996 [1990]: 379: «It is to get out of this essential difficulty that ANT played with a generalized symmetry (Callon 1986; 1990) and made a principle of using whichever words are connoted in one of the former realm to describe the others, thus showing the continuity of networks and the complete disregard for the artefactual gaps introduced by pre-relativist arguments.»

28 Cf. Law, 2009: 142: «Rather it is a diaspora that overlaps with other intellectual traditions. As I have already hinted, it is better to talk of "material semiotics" rather than "actor network theory". This better catches the openness, uncertainty, revisability, and diversity of the most interesting work. Thus the actor network successor projects are located in many different case studies, practices, and locations done in many different ways, and draw on a range of theoretical resources.»

29 Cf. Law, 2009: 141: «Actor network theory is a disparate family of material-semiotic tools, sensibilities, and methods of analysis that treat everything in the social and natural worlds as a continuously generated effect of the webs of relations within which they are located. It assumes that nothing has reality or form outside the enactment of those relations. Its studies explore and characterize the webs and the practices that carry them. Like other material-semiotic approaches, the actor network approach thus describes the enactment of materially and discursively heterogeneous relations that produce and reshuffle all kinds of actors including objects, subjects, human beings, machines, animals, "nature," ideas, organizations, inequalities, scale and sizes, and geographical arrangements.»

But Bruno Latour, however, chooses in 2005[30] to restate the Ontology and methodology again as Actor-Network Theory properly, even if he had previously denied the designation, the argument being that a *quarter of a century*[31] was necessary for it to become evident that such was in fact the best designation available among all others. In 2013[32] he goes beyond in what can now be considered an organic evolution of the theory and not something who would come after it, not a collection of tools and approaches coming from a somewhat similar shared sensibility, as in Law´s case.

Be it as it may, both Latour's ontological case and Actor-Network Theory itself are lesser worked territories within Philosophy. It is a fact that it has not been much used as a construction material or tool within the discipline, the wide array of publications falling under its scope dealing foremost with society, science, technology while little to none prevails where the focus is hard consequences for Philosophy, showing it. In this lack we travel in this thesis. Tackling it is by itself a cumbersome task whose follow-through difficulty is added if Latour's vast production afterwards is to be taken into full account. It is my conviction due both to the characteristics of the subject matter and to the extension of its detours that as such the sought objectives cannot be approached too directly. One has to keep tracing and doing the threads not to misinterpret into expositive straightforwardness a proposal which negates it from the onset.

In order to accomplish the diminishing of the lack and to demonstrate the eventual relevance of laying grounds to an irreductionist Philosophy, to be, one must ceaselessly shift in and shift out of the little specificity of Actor-Network Theory while closely reading Latour´s *Irreductions*[33] as a central text for the Ontology view, making due of other works as needed. Within Actor-Network Theory itself *Irreductions* is the least studied work. Exactly because of some strictly philosophical tone it aims to pursue, combined with a striking use of language that scares purists within one discipline or the other. Hopefully, by this process, the marked distinctions in approach towards more or

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30 Cf. Latour, 2005: 88: «ANT is the story of an experiment so carelessly started that it took a quarter of century to rectify it and catch up with what its exact meaning was.»
31 Cf. previous note.
32 Cf. Latour, 2013.
33 Cf. Latour, 1996 [1990]: 373: «Even my own network study of Pasteur – in spite of the lengthy ontological second part – has often been understood as a Madison Avenue version of science – which is unfair not only to my account but also to Madison Avenue...»

less accepted philosophical ways of posing the questions it deals with will become less obscure. Both in terminology as in overall method and conclusions reached.

When it comes to Philosophy of Science, to shortly exemplify, the theme is vastly approached already via Science and Technology Studies, somehow the domain most tackled through and consensually associated with. But other hard subfields of Philosophy come into the spotlight as well. Applying the theory to Philosophy of Action would make us do with a revision of agency by a dismissal of the concept itself or by including as agents a sheer multiplicity of entities which usually do not fall under the category[34]. This is done with little concern or import with previous philosophical takes on agency, which makes the question harder to define on those same grounds. Asking in abstract what is an action, how are actions individuated, how are actions describable, how can they be explained, if there are causes or reasons at play, is seen as bordering the ineffective.

There are answers to these questions and a strong reflection thereof but they would never satisfy one who has trodden Philosophy of Action within strict Philosophy, centred on a strictly philosophical literature. To judge it on those presuppositions or to lose significant resources in trying to integrate it along by fencing a battery of sectarian rebuttals of how the thoughts on action have been constructed in a given discipline, according to its frame of road-works, would be to accept a game the theory itself never did play. Action and agency are, accordingly, two terms strongly translated and betrayed in its use.

Likewise, when it comes to Philosophy of Language, if the theory is also applied to it, we shall face a similar situation when speaking or wanting to speak of meaning and reference, the semiotic and the material, truth conditions, fiction or nonfiction, languages and meta-languages. These terms above are terms that are mostly not used or, if they are, are so in a highly betrayed and translated way. The idea of an infralanguage is, though, quite strong and highly relevant. Certainly, we must speak of translation as it is a vital

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34 Cf. Latour, 2005: 10: «So if an account employs either a symbolic or a naturalist type of causality, there is no reason to include it in the ANT corpus even though it might claim to be. Conversely, any study that gives non-humans a type of agency that is more open than the traditional natural causality – but more efficient than the symbolic one – can be part of our corpus, even though some of the authors would not wish to be associated in any way with this approach.»

term for the theory and for *Irreductions* but the state of the art of its use will again not be found in strictly philosophical literature to that purpose.

Nevertheless, language use and analysis are a stamp of the theory with its strong semiotic background[35]. While being linked with the analysis of statements as they change and are passed on, questioned or accepted via what Latour will call positive or negative modalities[36]. However, analysis of language does not limit itself to language and would never accept a strict boundary between words and things as they both proceed in becoming real and being used. As incorrect to call it an analysis of language as it would be to call it an analysis of things via language[37]. At this point, what would be more correct is to say that they materially intersect and that outside of this intersection there is nothing, as nothings exists outside of actor-networks.

Ontology and Metaphysics are the ultimate place where, in the case of Bruno Latour, Actor-Network Theory would find its home. But the same problems follow when wishing to apply it onwards. We have already hinted at the lack of use of causal notions and to the dismissal of explanations. Going further, we would be at a loss if trying to integrate the Ontology stated in *Irreductions* in a debate where choosing between a metaphysic of events or of entities was a must. Or if we wanted to ask if essences or relations subside primarily, though the balance predominantly seems to shift to the relational aspect of even those things we might call as essences. But not fully.

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35 Cf. Latour, 1996 [1990]: 374: «This salvation however does not come by falling back on the pre-deconstruction common-sense – "after all, there is a social context up there and a nature out there" – but by extending the semiotic turn to this famous nature and this famous context it had bracketed out in the first place.»

36 Cf. Latour, 1987: 23: «We will call positive modalities those sentences that lead a statement away from its conditions of production, making it solid enough to render some other consequences necessary. We will call negative modalities those sentences that lead a statement in the other direction towards its conditions of production and that explain in detail why it is solid or weak instead of using it to render some other consequences more necessary.»

37 Cf. Latour, 1996 [1990]: 375: «The weakness of semiotics has always been to consider meaning production away from what the nature of entities really are; when semiotics is turned to nature however, and that unhuman entities are entered into the picture, it soon appears that the word "discourse", or "meaning" may be dropped altogether without any danger of going back to naive realism or naive naturalism. It is only because semioticians studied texts – and literary ones at that – instead of things, that they felt obliged to limit themselves to "meaning". (…) But a semiotics of things is easy, one simply has to drop the meaning bit from semiotics... If one now translates semiotics by path-building, or order-making, or creation of directions, one does not have to specify if it is language or objects one is analysing.»

We would not be so hardly pressed if focusing on homogeneity or heterogeneity as it does seem the scale does fall on heterogeneity. But, nevertheless, this will not necessarily imply that what is different should be tackled differently. As it also does not imply that differences exist previously or exist by themselves. Acts of differentiation may serve our purpose better as, albeit the weirdness of the expression, acts of sameness[38]. We also find no clear once and for all distinction between reality, what is real, and fiction. But it would not be correct also to imply that there are no gradients in between or that there is no difference between the two.

Things grow hard as well if one reflects on commensurability and incommensurability. But here, at least, one has a Rosetta stone in the fact that measuring, metrology[39], the act of measuring and of finding measuring tools, heavily related with the act of reducing and weirdly enough with the need of reducing, plays a crucial role in the proposed ontological take, together with translating. As things are, we face an Ontology that pays little heed to the disciplines of Ontology and Metaphysics as usually treated in Philosophy as a discipline. Again, and still, both terms are to be translated and betrayed.

The above is far from being exhaustive but probably enough to hint at how the scope of application of the theory and of what we may unravel through *Irreductions*, at least when it comes to methodology and to objectives, intersects multiple fields other disciplines debate with, Philosophy necessarily included. While it questions the intersection of Philosophy with those fields as much as it questions the intersection of Philosophy with itself. Philosophy, one can now add, is seen by Latour first and foremost as a discipline with no particular domain, secondly as being capable of travelling through

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38 Cf. Tarde, 1999 [1895]: 73 *apud* Latour, 2005: 15: «To exist is to differ; difference, in one sense, is the substantial side of things, what they have most in common and what makes them most different. One has to start from this difference and to abstain from trying to explain it, especially by starting with identity, as so many persons wrongly do. Because identity is a minimum and, hence, a type of difference, and a very rare type at that, in the same way as rest is a type of movement and the circle a type of ellipse. To begin with some primordial identity implies at the origin a prodigiously unlikely singularity, or else the obscure mystery of one simple being then dividing for no special reason.»
39 Cf. Latour, 1987: 250: «Metrology is the name of this gigantic enterprise to make of the outside a world inside which facts and machines can survive.»

all of them by the same tools it has acquired while having no specific domain. As notoriously Actor-Network Theory likewise aspires to[40].

In Actor-Network Theory the practical demonstration of this aspiration having been somehow achieved is clearly visible by the multiplicity of case studies using it into multiple domains. As much as by the theoretical intentions nurturing it, and by the grounds it travelled on translating and betraying them. In Philosophy this domain-less nature trotting through multiple domains is clearly seen by at least the multiplicity of fields of which there is, and may arise, a Philosophy of. At least the intention is a platitude the history of Philosophy demonstrate at satiation.

As said, we find in *Irreductions* and throughout both Latour´s work and the more general use of the theory little belief in meta-languages. In fact, they are virtually denied in such a status[41]. The enlarged scope of application and the intersection of the theory with Philosophy and of Philosophy with itself, the questions it may pose, are not to be coherently solved with meta practices or meta theories. There is no way up to be trodden, either as a bottom-up methodology as there is no bottom anywhere as such, or as a top-down methodology, as there is no top privileged view as such. Only more or less connected networks.

Per se, as well, there are no given principles accepted, few in number, which may be able to contain the multiple, almost infinite, actors, or from which they could be derived or deduced[42]. Though such principles may be constructed, by betrayal and

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40 Cf. Latour, 2005: 55: «This is why ANT has borrowed from narrative theories, not all of their arguments and jargon to be sure, but their freedom of movement. It is for the same reason we refuse to be cut off from Philosophy.»

41 Latour, 1996 [1990]: 377: «The price ANT pays to move from one locus to the next is that there are as many metalanguages as there are frames of reference -the only metalanguage required (see above strand 2) being more adequately called an *infralanguage* which has to be poor, limited, short and simple -the equivalent of a Lorenz transformation being called "translation" in ANT. This infralanguage is enough to move from one net to the other and the specific explication will always be a one-shot account exclusively tailored to the problem at hand (Lynch's principle, Callon "explication jetables", Serres "cross over between explanandum and explanans"). If it is more generally applicable it means that it is riding over a network that expands itself.»

42 Cf. Latour, 2005: 59: «The first solution draws maps of the world which are composed of a few agencies, followed by trails of consequences which are never much more than effects, expressions, or reflections of something else. The second solution, the one preferred by ANT, pictures a world made of concatenations of mediators where each point can be said to fully act. Thus, the key question for a social science is to decide whether it tries to deduce from a few causes as many of the effects that were there 'in potentia', or

translation, by reducing, by strengthening a network inside of which they appear to act as such. As if they did contain or derive others straightforwardly. As if they were kings in a court of willing subjects to be ruled. Opposing this, Actor-Network Theory aims at levelling the ground. At a flat associative Ontology where containing, deriving, deducing, are highly controversial. Still, and again, the intended scope of application of Actor-Network Theory allows us to merge the object studied in this thesis with other theoretical and practical tools aiming at a similar scope. Tracing their power, strength and reality in doing so, with philosophical systems or systematicity at the forefront. Questioning, in the process, how such power is to be measured precisely when it comes to what Philosophy and systematicity ought to do, and actually do.

Such questioning may even help us in coming to terms with some sectarian distinctions, truly based on chosen methodology and outspoken goals, on what is called the continental or analytic ways of pursuing Philosophy. A distinction still very much present, albeit opinions on the contrary, and which is a perfect example of the workings of actor-networks at play, clashing among each other in the effort of disseminating and growing.

In the end, the pursuit of an irredutionist Philosophy may assist us in questioning what is doing Philosophy in the present, and or what it should eventually become. By irreducing Philosophy, itself. Possibly, by translating and betraying it.

To such aim, three complementary approaches could be associated when dealing with the subject matter of this thesis as and when it pertains to Actor-Network Theory overall. A first would be mostly diachronic, from 1978 up to the present day, examining the chronology of the theory while relating it with Philosophy. Callon and Latour would be the main references to be followed up to 1990, with the added import of the vast melting pot of internal and external influences contributing to such first forming years. By internal influences one means Latour´s previous works and experiences, first of all.

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whether it tries to replace as many causes as possible by a series of actors—such is the technical meaning that the word 'network' will later take.»

Recent secondary literature[43] has provided insightful considerations on its relevance. Latour is in fact the key author for our goals.

By external, the associations and correlations with other fields and authors. Science Studies, Science and Technology Studies, Engineering and Architecture, Sociology and Ethnology, Public Administration, Rhetoric and Semiotics, Psychology even, hints at Systems Theory. Together with, mainly in Latour´s case, Philosophy and philosophical influences abounding in *Irreductions*. Literature and literary influences likewise, authors mentioned or quoted, debated with, rejected, forcefully translated-betrayed.

From 1990 to 1995 we would find Law to be very important for the determining of novel theoretical routes. From 1995 up to the present there is at least one growing bifurcation, a growing network disseminating through scissions. On one hand reign the diasporas or After Theory where according to Law Actor-Network Theory is, as already said, more aptly designated as Material Semiotics, with their proclaimed *performative turn*, accumulation of case studies as the most reliable access to the theory, and the importance given to the act of enacting. The vastness and diversity of this still growing network borders the overwhelming.

On the other hand, we face Latour´s continued efforts and continuous mutations with a more philosophical streak to whom other than case studies are necessary in the effort of strong holding a systematicity core as distinct from plain accumulation. It too borders the overwhelming but the inquiry is more consequent to be followed, more doable, more conductive to the success of the goals we are aiming to achieve, besides being traceable backwards to *Irreductions*. After 1995 there is a moment[44] when Latour rejects the "Actor-Network" designation as imprecise and useless, to be discarded. Before, in 2005, recovering and strengthening that same designation as the most fitting after all.

Finally, in 2013 and onwards to the present day a third moment can be tracked in Latour´s work, where we find not an After Theory but what can now be described as more

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44 Cf. Latour, 1999: 15: «I will start by saying that there are four things that do not work with actor-network theory; the word actor. the word network, the word theory and the hyphen! Four nails in the coffin. »

and more theory by comparison. Instead of a diaspora one encounters yet greater strong holding of fundamental guidelines, though opening itself to yet more circulation, negotiation, debate, collective authorship. *An Inquiry into Modes of Existence*[45] landmarks this stage.

This first chronological approach has its relevance but it is not the most interesting philosophically. We are not writing a thesis on the history of Actor-Network Theory or on Actor-Network Theory itself. It is important, nevertheless, to understand that it moves through time and fully embraces such a movement with no issues taken to the fact of not standing neatly still.

The second approach would be mostly synchronic. One has to trace and follow the key conceptual and instrumental elements in the theory regardless of when they first appear, as if laid down on a plain board. First the more or less explicit definitions of "actor", "network", "actor-network", "material Semiotics", together with those that follow suit, gaining the role, according to use and designation, of alternative key elements. Examples are: "translation", "translation-betrayal", "mediation", "construction", "association". Going further we would find in each of Latour´s works secondary elements who attach to those mentioned above. Examples are: "modalities", "centres of calculation", "potency" and "force", "factish", "modes of existence". The list flourishes.

Difficult is that clear definitions are not sought, while the status of what it means to define, to give a strict shape to, is highly controversial within the tenets of the theory itself. Plus, a conceptual versus instrumental split would not be neatly accepted, with both terms, if singled and opposed, letting down what they are applied to describe. One could write "conceptual-instrumental", but more conundrums would follow suit. Definitions, here, do grow by association and attaching, by strong holding what is apparently, semantically, distinct. Adding incongruencies up as new relations. Hardly defining in any semblance of non-ambiguity. Meaning, they plan at extending a network by opening added grounds where clashes should and will occur[46]. One cannot, though, call it a

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45 Cf Latour, B. (2012).
46 Cf. Latour, 1996 [1990]: 376: «Every network surrounds itself with its own frame of reference, its own definition of growth, of referring, of framing, of explaining. »

dialectics and put the issue at rest[47]. Extending a network does not equate to solving a thesis and its antithesis, no overcoming is at play. No resolution, no rest.

On the follow, by associating synchrony and diachrony in a third approach we would grab the apparatus above by asking what is it answering to, and if it gives a better answer than other conceptual and instrumental tools already in use which they are meant to replace, often eliminate altogether if they are judged to excessively reduce. Attention would have to be given to how key elements in the theory are methodologically used one by one in a wide array of case study articles from multiple fields of knowledge using them. Here, too, the list flourishes onwards, unattainable for all practical purposes in our scope and theoretically less interesting as the line draws away and away from philosophical research.

Better then, one should, from careful consideration and conjunction of synchrony and diachrony attempt to clarify what role can the theory play for Philosophy, widely, and for an irreductionist Philosophy specifically. Away from mere accumulation of case studies and the restrict goals of those instrumentalizing it in field-oriented backgrounds. But one cannot avoid asking if this is achievable or if it ought to be pursued altogether according to the theory itself. Latour writes that there is science only of the particular[48], a daunting affirmation apparently contradicting possibility of systematicity. The answer will have to be, nevertheless, affirmative, by stressing the irreduction of the sciences and the roads through which the particular spreads, as if it were universal. Extrapolating from particular or local domains is hardly possible coherently as long as the theory is concerned. What is particular or local will have to, accordingly, remain so. Neither actors

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47 Cf. Latour, 2005: 169: «The temptation is all the greater since dialectics, like Ulysses's sirens, might generously offer its profusion of loops to wrap up and tie off such compromises: actors will be said to be simultaneously held by the context and holding it in place, while the context will be at once what makes actors behave and what is being made in turn by the actors' feedback. With circular gestures of the two hands turning faster and faster in opposite directions, it is possible to give an appearance of smooth reason to a connection between two sites whose existence remains as problematic as before. Dialectical thinkers have the knack to bury artifacts even deeper by claiming that contradictions have been 'overcome'– this being the magic word they use for 'covered up' or 'spirited away'. And again, it's not difficult to see why they remain so convincing even though their hands connect non-existing sites.»

48 Cf. Latour, 1996 [1990]: 370: «But the less intuitive philosophical basis for accepting an ANT is a background/foreground reversal: instead of starting from universal laws – social or natural – and to take local contingencies as so many queer particularities that should be either eliminated or protected, it starts from irreducible, incommensurable, unconnected localities, which then, at a great price, sometimes end into provisionally commensurable connections.»

nor networks are capable of becoming universal as much as they may pretend to act as such, even if temporarily achieving effectiveness in such act.

Still, actor-network methodology aims at full applicability in scope while conflating with Ontology at its source. Simultaneously tackling methodology used and ontological commitments entailed, this approach opens up and questions what may support the Ontology at hand as what there is and how it comes to be. Given the conflation of a methodology with an Ontology, if the methodology proves itself, ontological suppositions will have to be seen as, at least, seriously worthwhile to pursue in terms of explaining why they work. How they can make a reality be grasped. To do so, many widespread terms in use and corresponding notions will have to be taken to the examining stand, more or less implicitly.

Among them, reference and meaning, context, truth and truth conditions, representation, subject and object, concept, entity and event, along with those others already mentioned, are to be dealt with while enacted. Thus, a dynamic reconstitution is called for. Taking the actants involved into step-by-step tracing through doing. The end game approach should ask for a twinning of methodology and Ontology. Where acute readers will hopefully start to see a trend. If concepts and words can be taken as discrete, the reality they aim towards, describe or construct, cannot. Forcing language and analysis to flee from closures.

The main promoters of the multiple designations we have mentioned, and of their justification more or less independently from case studies, those that explicitly speak for the theory and defend it willingly after its formative years, besides using it, are Bruno Latour first and foremost, and John Law. But the only one writing something similar to textbooks for the theory as a whole, relentlessly overcoming case study analysis or small articles in specialized publications, while aiming at a possible systematicity with all the reserves that the theory itself contains for this term, is Bruno Latour.

It is specifically with Latour that we find an appeal for the theory to be taken as if it were a Philosophy. Specific and constant references or allusions (often translated-betrayed) to authors directly connected with Philosophy as a discipline. As much as an appeal towards Philosophy both for an understanding of the theory as for its correct

application in case studies[49]. In many passages one even senses that the theory is to become, or already is, a privileged form of Philosophy.

To most authors Actor-Network Theory cannot possibly be thought without referring the case studies it gave birth to and to whom it owns both the fame that it has earned and its resilience as a methodology. Stripping them out is a betrayal to the very own presuppositions guiding those knowledges gaining practices that, case study through case study, apply it in one designation or another. A mistake leading betrayal, distorting in advance the goals fostered without any hint of a possibly faithful translation sliding along in it. Most certainly, one is apt to say that if the theory is alive still the life in it comes from the successive use in successive case studies inspired by it. Not by a systematically treated Philosophy underlying it, tackling a universalization of its principles as if a neat whole could be achieved. Actor-Network Theory is alive in practice because in one way or another it is still used.

Casuistic studies, though, step on one or two of the designations we mentioned, never on all of them. From the specific terminology the theory has developed along its routes they choose one or two terms as the work basis, never grasping the intended scope fully. Mostly rejecting the full theoretical aspect and its full consequences, dispersing the network and specializing the paths taken without strong holding a systematic core. This diaspora of approaches is what Law calls the After-Theory. When dealing with the difficulty of finding a common ground with even the slightest hint of tight systematicity case studies are unified for him under the wide-reaching designation of Material Semiotics[50], a tool kit. Not Actor-Network Theory, and not a theory.

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49 Cf. Latour, 2005: 51: «As anthropologists have tirelessly shown, actors incessantly engage in the most abstruse metaphysical constructions by redefining all the elements of the world. Only a researcher trained in the conceptual calisthenics offered by the philosophical tradition could be quick, strong, daring, and pliable enough to painstakingly register what they have to say.»

50 Cf. Law, 2009: 142: «I've talked of "it," an actor network theory, but there is no "it." Rather it is a diaspora that overlaps with other intellectual traditions. As I have already hinted, it is better to talk of "material semiotics" rather than "actor network theory." This better catches the openness, uncertainty, revisability, and diversity of the most interesting work. Thus, the actor network successor projects are located in many different case studies, practices, and locations done in many different ways, and draw on a range of theoretical resources. How much those studies relate to one another is chronically uncertain, but this is better read as a sign of the strength of material semiotic sensibilities than as a weakness. »

Whenever Law explicitly takes the role of spokesperson for the theory the strategy is to let case studies speak for themselves[51]. Accumulating them in the hope that their voice is loud and clear enough. Eventually choosing some of them (of Callon, of Latour, of himself) as paradigmatic[52]. The underlying thought is that their speech will be better suited in grasping the knowledge gaining practices they show than any global theoretic description flying up away from them[53]. This is certainly coherent, for those using the theory, with the injunctions of always going slow[54], disbelief in epistemological jumps[55] and panoramas, and of always having to *follow the actors themselves*[56]. Any unifiable

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51 Cf. Law, 2009: 141: «First, it is possible to describe actor network theory in the abstract. I've just done so, and this is often done in textbooks. But this misses the point because it is not abstract but is grounded in empirical case studies. We can only understand the approach if we have a sense of those case studies and how these work in practice. Some other parts of social theory (for instance symbolic interactionism) work in the same way, and arguably that's how natural science is too: theory is embedded and extended in empirical practice, and practice itself is necessarily theoretical. This means that if this chapter is not to betray the actor network approach it needs to subvert the definition above by translating it into a set of empirically grounded practices. »

52 Cf. Law, 2009: 146: «This study displays all the ingredients of actor network theory 1990. There is semiotic relationality (it's a network whose elements defi ne and shape one another), heterogeneity (there are different kinds of actors, human and otherwise), and materiality (stuff is there aplenty, not just "the social"). There is an insistence on process and its precariousness (all elements need to play their part moment by moment or it all comes unstuck). There is attention to power as an effect (it is a function of network configuration and in particular the creation of immutable mobiles), to space and to scale (how it is that networks extend themselves and translate distant actors). New for actor network theory, there is an interest in large-scale political history. And, crucially, it is a study of how the Portuguese network worked: how it held together; how it shaped its components; how it made a centre and peripheries; in short, of how differences were generated in a semiotic relational logic. »

53 Cf. Law, 2009: 144: «This is the basic methodological and philosophical principle that I mentioned in the introduction: knowledge lies in exemplars and words are never enough. »

54 Cf. Latour, 2005: 17: «We will have to learn how to slow down at each step. If earnest scholars do not find it dignifying to compare an introduction of a science to a travel guide, be they kindly reminded that 'where to travel' and 'what is worth seeing there' is nothing but a way of saying in plain English what is usually said under the pompous Greek name of 'method' or, even worse, 'methodology'. The advantage of a travel book approach over a 'discourse on method' is that it cannot be confused with the territory on which it simply overlays. »

55 Cf. Latour, 2005: 190: «After 'go slow', the injunctions are now 'don't jump' and 'keep everything flat!'. The three pieces of advice reinforce one another, since it is only once the long distance between different points of the territory has been measured up that the full transaction costs to join them will have been reckoned. How could a walker assess in advance the time it will take to reach some mountaintop if the isometric lines had not first been drawn one by one? How could we discover the breadth of the political task ahead of us if distances between incommensurable viewpoints had not been fathomed first? »

56 Cf. Latour, 2005: 179: «(…)'follow the actors themselves'. No cold objectification has taken place there, no superior reason is being unfolded. Everywhere, blind termites are busy cranking out data. Just keep sniffing through their galleries, no matter how far this takes you. »

systematicity, if needed or asked for, would lay only on those methodological grounds named as material Semiotics. In material Semiotics enacted.

If Latour´s works, *Irreductions* at the front gate weren´t there to stress Philosophy´s role to alternate options and if we were to accept this casuistic stance, the goal of inducing, or associating if one aims for strictness, an irreductionist Philosophy, would fall short before even beginning. At least turn out to be highly questionable up to impossible. I would be forced to, using one tool or another of the theoretical corpus, conduct a case study on Philosophy as it is built in a given institution to be acutely named and precisely described with minute detail, individuals working there, daily activities, publishing strategies and routes, etc, etc, etc. Understanding would be always restricted to such places and times as those under the specific case study lenses. Philosophy would be nothing less than that, but altogether nothing above that. Regardless of how the object of the case study would try to disseminate otherwise while wishing to grow its network of what Philosophy is, as it would intend it to become.

Yet, by following the routes that a case study as described entails one would certainly arrive much further if they were not artificially stopped. Casuistic studies, when relentlessly forced to their limits in the own frame of the theory, necessarily demand the overcoming of their but casuistic scope. Networks expand and expand in connections, added to yet more connections, which overpass their initial delimitations and aim at changing, constructing, re-shaping the collective. Case studies themselves, in the own frame of the theory, force the failures of a casuistic stance.

Conversely, if accepting a primarily casuistic stance the study of Actor-Network Theory itself could not follow dissimilar grounds than those. Could never claim, without plain betraying of the theory, to present in an attempt of systematicity both methodological and ontological presuppositions of a given theory fully claiming the title of a Philosophy that might somehow extend the network beyond accumulation of exemplars. Eventually, a glossary of terms and of diverse theoretical tools could be proposed to unlock the wild nature of the terminology and of the practices thereby put forward case to case.

All things considered this would turn out as another, yet subtler, form of reduction, contradicting the knowledge gaining force the theory stands for when accounting for the growth of actor-networks. To infer from would be forbidden, to induce highly

discouraged, to keep on connecting further into more abstract routes hardly accepted. Diving in shallow waters, or in artificial pools, would become the norm. The actor-network would stop dead and artificially in its tracks and never transgress them, denying any status of it as a Philosophy or as a theory.

One should of course retain the casuistic study stance with its core flattening down to earth questions towards bigger issues. Asking, albeit the weirdness, where is Philosophy, who and which is Philosophy, when is Philosophy, how is Philosophy, to whom is it disseminated, against whom does it respond. As a crucial methodological guideline to strong hold the answers on what an Ontology is. A necessary methodological step, or approach perspective, sure, but never a sufficient one if the goal is to present an irreductionist way of accessing Philosophy. In spite of taking full heartedly the critique that, mostly, this necessary step is very often ignored, its possible consequences disguised under reduced concepts, explanations becoming thinner and thinner through panoramic[57] views.

Fact is that tracing the case does lead to the unstable grounds where traditional categories have to fall. This much is to be retained. Plus, it can be said to be exactly what Latour came to terms within his case studies. *Irreductions*, second half of the case study *Pasteurization of France*, as the prime example. Overcoming the case study per se, while not dismissing what the approach aims to put behind, it is possible to track in Latour´s works reflections on the theory properly, clues to a Philosophy growing from it with a particular systematicity[58]. Such clues cannot of course be taken as pertaining to Philosophy as an established discipline. They are not to be judged as such. As said, no

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57 Cf. Latour, 2005: 187: «In effect, the Big Picture is just that: a picture. And then the question can be raised: in which movie theatre, in which exhibit gallery is it shown? Through which optics is it projected? To which audience is it addressed? I propose to call panoramas the new clamps by asking obsessively such questions. Contrary to oligoptica, panoramas, as etymology suggests, see everything. But they also see nothing since they simply show an image painted (or projected) on the tiny wall of a room fully closed to the outside. The metaphor comes from those early rooms invented in the early 19th century, whose descendants can be found in the Omnimax cinema rooms built near science centers and shopping malls. The Greek word *pan*, which means 'everything', does not signify that those pictures survey 'the whole' but that, on the contrary, they paper over a wall in a blind room on which a completely coherent scenery is being projected on a 360° circular screen. Full coherence is their forte – and their main frailty.»
58 Cf. Latour, 2005: 253: «(…)we surely need a concerted, artificial, earnest, and inventive effort that uses a specific set of disciplines. But those disciplines have to be understood in the same way as chemistry, physics, mechanics, etc., that is, as so many attempts at collecting in some systematic way new candidates to form the world.»

concern is there in taking pains to exhaust what, within Philosophy, was said on notions and terms used in Philosophy but that the theory also uses and abuses. Despite aiming at creating a sort of philosophical fifth column, as if between wars in idle times, the immediate appropriation mingled with a certain disregard is but evident. Up to the point of eluding frontiers, associating with literature.

Fairly enough, the same disregard on states of the art, on historical accepted uses of terms together with their established frames for questioning themselves and what they intend to question, travels to many other fields than Philosophy. Be it Mathematics, Architecture, Engineering, Psychology, Sociology, etc. Suffice to say minimal definitions are given. Minimal as in not to constrain beforehand what is being defined, seemingly contradicting what a definition is indeed supposed to be. Definitions, nevertheless, in which the meanings of terms in the fields abused do end up as relevant, although not final or hierarchically more significant. They work as translators, mediators, betrayers, which need acute familiarity with what is translated, mediated, betrayed. The field specific reader may dismiss them, but only at the stake of enclosing the network, failing the proposal of the theory. Improvisation skills are then required to grasp what is Actor-Network Theory about and how it goes at achieving it.

Such minimal and open definitions, provisional shaping of terms, are coherent with the theory, but hardly acceptable to anyone who believes exact definition of words and concepts is a prerequisite towards rigorous philosophical thinking, shaping onwards and for good the discussions to come. Instead, here they are to come after, if at all. Un-shaping and un-defining take first part. Shapes and strict definitions bear the role of asymmetries, distinctions whose explaining demands flatting[59] them out first, asymmetries and distinctions which need to be explained perhaps even more than what they are meant to define and render transparency to. Theoretical lenses accordingly bracket in the invisible operating tools whose accepting constricts speech, thought, action, in one given direction excluding others.

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59 Cf. Latour, 2005: 174: «What is so important for our project is that, in such a flattened topography, if any action has to be transported from one site to the next, you now clearly need a conduit and a vehicle. In the other landscape, the embedded context and the embedded actor were so incommensurable, they were separated by such an unaccountable gap, that there was never any way to detect through which mysterious vehicle action was carried out. But that is not the case if the landscape is kept obsessively flat. The full cost of every connection is now entirely payable.»

Plus, any definition is said to be, all things considered, performative, something both Law and Latour[60] share. It is being acted out, enacted. If it appears otherwise, look for the institutions, alliances, actors and networks who stabilize it day to day, examining what happens when they fail to do so. Nothing being granted, it turns out to be a theoretical mistake methodologically as much as ontologically-beings are also said to be performatively, to take it as if it is. One outright goal from the start is then to create an, so it is named, "infralanguage", an elementary vocabulary freed from constraints of individualized subfields, without transforming it into a metalanguage or a second order language including and subsuming other languages. Latour is therefore overtly clear in stating that no such thing as a metalanguage exists or effectuates usefully. Unless in a very deflated sense of reflexivity[61]. Only languages are and act. Translating and betraying each other without mandatory hierarchical ruling.

Ontology and methodology conflate here again. Instrumentally the ground is to be flattened out, players laid out in equality. From this laying out differences over time become evident and overarching asymmetries built and resisting are made plain. It is then clear how equivalences and differences are built into them, ontological asymmetries constructed. The methodological goal, then, is to arrive at an elementary vocabulary. Fluid enough for general application and general definition, un-thwarted by the closure in definition of particular subfields. Able to worm between them. Able to describe without ontological constraints what is being watched over[62]. Be it natural, a constraint, social, a constraint, or even symbolic, another constraint.

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60 Cf. Latour, 2005: 37: «This is why I needed to introduce the distinction between ostensive and performative: the object of an ostensive definition remains there, whatever happens to the index of the onlooker. But the object of a performative definition vanishes when it is no longer performed – or if it stays, then it means that other actors have taken over the relay.»

61 Cf. Latour, 2005: 49: «We have to resist pretending that actors have only a language while the analyst possesses the metalanguage in which the first is 'embedded'. As I said earlier, analysts are allowed to possess only some infra-language whose role is simply to help them become attentive to the actors' own fully developed metalanguage, a reflexive account of what they are saying.»

62 Cf. Latour, 1996 [1990]: 375: «It is more an infralanguage than a metalanguage. It is even less than a descriptive vocabulary; it simply opens, against all a-priori reductions, the possibility of describing irreductions. ANT is no mere empiricist though, since in order to define such and irreducible space in which to deploy entities, sturdy theoretical commitments have to be made and a strong polemical stance has to be taken so as to forbid the analyst to dictate actors what they should do. Such a distribution of strong theory for the recording frame and no middle range theory for the description, is another source of many misunderstandings since ANT is accused either of being dogmatic or of only providing mere description.

This highly resonates with *Science in Action*, where nature itself cannot be taken as a given data that would lay there for the taking, but as a result, an end product[63]. Investigation is what puts ahead what nature is or not. To say something is natural forces us to question how in the first place it was determined as such. The same can be said of the social and is made clear in *Reassembling the Social*. To say something is social forces us to explain how it was built as such in the first place. And, naturally, the symbolical follows suit. Be it languages, representations, signs, diagrams, schemes, numbers. To say they represent, stand for, refer, point at something, forces us to say, in quite practical terms, how this comes to be. How a language or a symbol comes to include or unite what is neither just linguistic nor symbolic. In all cases, it forces us to say, without making due of such words as natural, social, and symbolic, what is being translated and betrayed, mediated or intermediated. Actor-Network Theory, as a descriptive tool, starts at this premise.

Things determine themselves mutually but are, as they stand before networks take their toil and actors start moving, undetermined and indeterminable. As a descriptive tool, so, the aim is to give back complexity and depth to what is being studied. Instead of placing such complexity in the frame used to study it. Using the simplest means able to register what actors say or do, how they say or do it, accepting any presuppositions or frames they themselves propose without restraining or reducing what those frames might be. Without imposing a theoretical construction for them to be fitted in. To create a tool that would make this more effective.

Those who fully refuse letting go of case studies end up defending that things should mostly stop at this stage. Expressing that, in fact, no other stage is needed than following the actors and their controversies, using the methodology, for knowledge to be gained on the object of study. Whatever the terminology or designations used, they will not reflect significant ontological or philosophical concerns. It will be but a means to an end. Important, but not relevant in the long run. Even if, by following the actors, it is found

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For the same reason it is also accused of claiming that actors are "really" infinitely pliable and free or, inversely, of not telling what a human actor really is after.»

63 Cf. Latour, 1987: 99: «(…) since the settlement of a controversy is the cause of Nature's representation not the consequence, we can never use the outcome-Nature- to explain how and why a controversy has been settled.»

that a redistribution of what there is and how it relates is very much needed, terminology and Ontology are the actor's business as they move along their courses, and so will a Philosophy eventually come through from their labours. What is studied is always to be richer than those studying it or the frames used to study it. The scholar role is simply to make this more visible.

However, anyone intending to draw the network further, even if supported by case studies methodology and terminology, is forced sooner or later to propose a more robust Philosophy. A more thought-out Ontology. This is nothing else than, in fact, reclaiming an actor role in full. Not reducing the scholar but to an impassive follower of other actors, which, coherently with the theory, it can never be in the first place. Thus, attention has to keep shifting back to the frame and its entailments. Furthering the latter, it is hardly viable to find a case study where greater philosophical and ontological associations do not make their way in, one way or another, often poorly and wildly. In practice, this is already so. Artificially stopping this trend in order to still the theory as an instrumental and methodological tool is, all things considered, stopping the theory itself. It is by following the actors that traditional ontological hierarchies and categories, not just methodologies or tools, are found lacking. But it is also in this way that accumulation of case studies is found lacking and Philosophy has to step in.

It ought to be easily understandable by now why spokes persons or experts of particular disciplines of knowledge can react, and often react, quite negatively to Actor-Network Theory. Including those particular experts or spokes persons for Philosophy or, better yet, for any given Philosophy whose tradition, methodology, even definition, they wish to maintain and further. However, Philosophy among disciplines is to play a central role both in understanding as in presenting the theory, if it can stand the trial of being irreduced. Philosophy ends up collecting and importing the greatest ratio of terms belonging to the set of disciplines that intend to constitute themselves as knowledge. Or as art. Or as action. It reflects on them all in one way or the other, while focusing step by step on the disciplines using them.

We have Philosophy of the sciences up to Philosophy of particular sciences. Without any clear way of stopping this zooming in under the microscope. We also have Philosophy of strange entities those sciences, and philosophies therefore, end up dealing with. As Philosophy of language, of mind, of action, of art, of literature, of morals, of

emotions, etc. Here too the list flourishes onwards as if there is nothing of which one could not grow a Philosophy of. However dissimilar the fields treated may appear between themselves. Hardly, as well, will one find a consensual methodological unity among the way in which such fields are to be treated. As hardly will one find a consensual methodological unity on how Philosophy is to treat itself.

Such lack of unity has another striking characteristic. It is often hard to distinguish, in practice, Philosophy from history of Philosophy. Much philosophical writing is more often than not an interpretation of its constructed history, redoing such a network. Worse, philosophers, when proposing a Philosophy, often work a-new the history of the Philosophy that preceded by searching what lead to them. Methodological dissimilarities go hand in hand, too, with a plethora of styles in which Philosophy can be presented, spoken, written. Where some will see a philosophical style, many others will probably not. And act accordingly.

Still, we see in Philosophy a constant redefinition of terminology and of concepts themselves. Almost as if it were an innate characteristic of the discipline. If agreement in terminology is somehow achieved, differences still subside when it comes to actual theories or nuances being defended. Up to the point where consensus is hardly fully possible in any of the philosophical subfields available to be examined, no one being able to present without rebuttal a definitive Metaphysics, a definitive Ontology, a definitive whatsoever. Regardless of the thousands of years behind these disciplines, there is no certainty. By itself this would approach Philosophy more towards the nature of an artistic or literary endeavour than a scientific one. At least we would have to see in it an inherently re-creative activity.

Whatever comes, eventual philosophical critiques to Actor-Network Theory based on odd terminology, lack of consensus, redefinition of designations, disparity of writing styles, excessive scope, free use of fictional tools via semiotic analysis, fall short in understanding that the same applies to Philosophy throughout its history of practice taken as whole. As with Actor-Network Theory, such characteristics are not immediate flaws but perhaps stand out as strengths of Philosophy-distinctive landmarks for what it intends to achieve. It is inevitable that a theory and practice aiming at describing, with the same overall measure, through a generally applicable infralanguage, any field capable of giving birth to a Philosophy of, will clash with Philosophy and will question Philosophy.

As such, Philosophy ought to occupy itself with Actor-Network Theory. Analysing it in the middle ground between a full conversion and a prejudiced critique which does not look closely at the literature. This demands another middle ground between importing the full terminology authors use and its outright denial as quaint.

All things weighed in, the effort needed to unveil Actor-Network Theory is not that different from the one studying far away philosophical currents demands. Not that different from the one of studying authors with idiosyncratic terminologies demands. The fact that Philosophy deals with other disciplines as it does and with itself as it does is exactly what makes it perfectly capable, more than any other field, of grasping the underlying goals, methods and scope, of Actor-Network Theory. It is not by accident or whim that Latour says that Philosophy is, therefore, needed.

1.2. ANT, Philosophy, and a start at *Irreductions*

I thus propose that (at least) five stages or moments are distinguished when establishing the relations of the theory with Philosophy, properly. These same five stages leading us slowly towards what could be an irreductionist Philosophy. First, we find a set of authors mentioned at one time or another by almost all responsible for the application and dissemination of Actor-Network Theory. These authors are seen as having, such is the term used, shared sensibilities. A sort of common battle ground not greatly defined or made explicit in most cases. Michel Serres is of first relevance here, as a certain genealogical claim is present when it comes to Latour[64]. Translation-betrayal, the exceptional nature of any ordering, the North-West passage[65], these are elements in Serres

64 Cf. Latour, 1996 [1990]: 370: «But the less intuitive philosophical basis for accepting an ANT is a background/foreground reversal: instead of starting from universal laws – social or natural – and to take local contingencies as so many queer particularities that should be either eliminated or protected, it starts from irreducible, incommensurable, unconnected localities, which then, at a great price, sometimes end into provisionally commensurable connections. Through this foreground/background reversal AT has some affinity with the order out of disorder or chaos Philosophy (Serres, 1983; Prigogine/Stengers, 1979)(…)»
65 Cf. Law, 2009: 144: «So how might we study relationality and its productivity? Latour used Greimas, but he and Michel Callon also drew on philosopher of science Michel Serres. Serres writes about order and disorder. In his world there are patches of order in a sea of disorder. The most interesting places lie on the boundaries between order and disorder, or where different orders rub up against one another. Serres generates endless metaphors for imagining the uncertain messengers that pass between different orders or

that the theory uniformly takes on from the beginnings to nowadays. Serres is a first bead in the necklace. Following on his reflections on order and disorder, which comes first, how is one woven from the other, if there is such thing as an order or unity at all[66]. And the key concept of translation-betrayal that stamps Actor-Network Theory throughout its developments as much as it stamps Latour´s works, fundamental if one is to tackle what *Irreductions* aims to achieve. From Serres the Greek god Hermes also comes into play with the theory twinning Hermeneutics with Semiotics as tools to be used on the analysis of reality.

Post-Structuralism also comes handy, according to Law[67]. While for Latour one may stick with a dialogue with structuralism properly, even if with little sense[68], much in the same way as there is sense in questioning modernity but not little in claiming the post-modern flag. Deleuze and Guattari are also retrospectively called on to the pool of correlations both by Law[69] and Latour, namely by the notions of "assemblage", a word Latour often uses but with little concern for Deleuze, and "rhizome"[70]. Slightly more distant are these mentions to Gilles Deleuze. And to Michel Foucault[71]. These occur post

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between order and disorder. Angels, parasites, Hermes, the North-West Passage, all of these make precarious links between places that do not belong to the same world. The notion of translation is another of his metaphors (Serres 1974).»

66 Cf. Law, 2009: 152: «We have seen how the studies of actor network theory 1990 describe the more or less precarious generation of realities. Mol has pushed this logic one step further by washing away a single crucial assumption: that successful translation generates a single coordinated network and a single coherent reality. Any such coherence, if it happens at all, is a momentary achievement. The logic is Serres-like: most of the time and for most purposes practices produce chronic multiplicity. They may dovetail together, but equally they may be held apart, contradict, or include one another in complex ways.»

67 Cf. Law, 2009: 145: «Precarious relations, the making of the bits and pieces in those relations, a logic of translation, a concern with materials of different kinds, with how it is that everything hangs together if it does, such are the intellectual concerns of the actor network tradition. However, this is a combination of concerns also found in parts of poststructuralism. My final contextual suggestion is that actor network theory can also be understood as an empirical version of poststructuralism.»

68 Cf. Latour, 2005: 155: «But your question was: 'What can I do with ANT?' I answered it: no structuralist explanation. The two are completely incompatible.»

69 Cf. Law, 2009: 145: «Even so the logic is not far removed from Foucault's. It can also be understood as an empirical version of Gilles Deleuze's nomadic Philosophy (Deleuze and Guattari 1988).»

70 Cf. Latour, 1996 [1990]: 370: «Put too simply ANT is a change of metaphors to describe essences: instead of surfaces one gets filaments (or rhyzomes in Deleuze's parlance).»

71 Cf. Latour, 1996 [1990]: 370: «This feeling that resistance, obduracy and sturdiness is more easily achieved through netting, lacing, weaving, twisting, of ties that are weak by themselves, and that each tie, no matter how strong, is itself woven out of still weaker threads, permeates for instance Foucault's analysis of micro-powers as well as recent Sociology of technology.»

factum. Foucault[72] and Deleuze would be on parallel tracks[73] to those of the theory with, again, shared similar sensibilities regarding its overall aims.

For Latour, it would not be rather problematic if someone were to replace the expression "network" by Deleuze´s "rhyzomes"[74]. In the sense that it could be translated, and therefore also betrayed, as such. Likewise, no great problems[75] would arise if some would intend to use the Deleuzian "assemblage" as being what occurs when a given actor-network is formed, extends its trails[76]. Designating Actor-Network Theory as Actant-Rhyzome Theory, assembly through assembly, would thus also be acceptable, enriching the corpus by yet one more association and corresponding designation.

With the exception of Serres, and only through the points referred, truth is that none of these authors seems to have had a decisive influence in the effective development of the theory from the start. There is no mention of that being specifically the case and, chiefly, no initial or sustained import (Serres excluded) of either concepts or terminology that could be associated to them. Coherently with the self-defining of actor-networks on performative grounds one concludes that the theory sought little to none associations with these authors. Did not extend significant trails to them.

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72 Cf. Latour, 2005: 181: «As every reader of Michel Foucault knows, the 'panopticon', an ideal prison allowing for a total surveillance of inmates imagined at the beginning of the 19th century by Jeremy Bentham, has remained a utopia, that is, a world of nowhere to feed the double disease of total paranoia and total megalomania. We, however, are not looking for utopia, but for places on earth that are fully assignable.»

73 Cf. Law, 2009: 145: «For instance, "actor networks" can be seen as scaled-down versions of Michel Foucault's discourses or epistemes. Foucault asks us to attend to the productively strategic and relational character of epochal epistemes (Foucault 1979). The actor network approach asks us to explore the strategic, relational, and productive character of particular, smaller-scale, heterogeneous actor networks.»

74 Cf. Latour, 1999: 19: «As Mike Lynch said some time ago, ANT should really be called 'actant-rhizome ontology'. But who would have cared for such a horrible mouthful of words - not to mention the acronym ARO? Yet, Lynch has a point. If it is a theory, of what it is a theory? It was never a theory of what the social is made of, contrary to the reading of many sociologists who believed it was one more school trying to explain the behaviour of social actors.»

75 Cf Jensen, C.B, 2019 to in fact conclude there would be several. Latour is, all things considered, dismissive of the designation.

76 Cf. Law, 2009: 145: «Latour has observed that we might talk of "actant rhizomes" rather than "actor networks," and John Law has argued that there is little difference between Deleuze's *agencement* (awkwardly translated as "assemblage" in English) and the term "actor network" (Law 2004). Both refer to the provisional assembly of productive, heterogeneous, and (this is the crucial point) quite limited forms of ordering located in no larger overall order. This is why it is helpful to see actor network theory as a particular empirical translation of poststructuralism.»

The same is even more evident with other philosophical authors mentioned post factum, as Whitehead, for example. They come to the field only when the field is already laid down. Taking this stage alone the specific and strict relevance of Philosophy as a discipline for the overall growth of the theory is diminutive. What is here analysed owes little to it. Or as much, at least, as it owes to a wide multiplicity of "shared sensibilities". As a matter of fact much less than it eventually owes to others. No central role can be assigned to Philosophy. Whatever comes, this stage is to be retained. It helps to explain the non-relation, in practical terms, of much Philosophy with Actor-Network Theory.

Greater shared sensibilities would derive from Ethnology[77], forcefully and willingly. Applied not to the study of so called non-western or so called non civilized societies but to the study of exactly those. Mostly sharped as to track and question what in them can be called modern, so called new, so called different since so called modernity took on[78]. This is object of many developments later on in Latour´s career with *We have never been modern*[79] as a key stepstone.

An aspect of this quest can be easily forgotten. If we have never been modern, as the thesis somehow proposes, post-modernity itself loses much of the sense it may carry. Thus, taking the theory or Latour at face value post-modernism is inexact, at best[80].

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77 Cf. Latour, 1993 [1991]: 114: «Ethnology is one of those measuring measures that resolves the question of relativism in practical terms by constructing a certain commensurability. If the question of relativism is insoluble, relativist relativism - or, to put it more elegantly, relationism - presents no difficulty in principle. If we cease to be completely modern, relationism will become one of the essential resources for relating the collectives that will no longer be targets for modernization.»

78 Cf. Latour, 1993 [1991]: 91: «While ethnographers were quite capable of retracing the links that bound the ethnosciences to the social world, they were unable to do so for the exact sciences. In order to understand why it was so difficult to apply the same freedom of tone to the sociotechnological networks of our Western world, I needed to understand what we meant by modern. If we understand modernity in terms of the official Constitution that has to make a total distinction between humans and nonhumans on the one hand and between purification and mediation on the other, then no anthropology of the modern world is possible. But if we link together in one single picture the work of purification and the work of mediation that gives it meaning, we discover, retrospectively, that we have never been truly modern. As a result, the anthropology that has been stumbling over science and technology up to now could once again become the model for description that I have been seeking. Unable to compare premoderns to moderns, it could compare them both to nonmoderns.»

79 Cf Latour, 1991.

80 Cf. Latour, 1993 [1991]: 90: «We might well escape from the postmodern prostration itself caused by an overdose of the four critical repertoires. Are you not fed up at finding yourselves forever locked into language alone, or imprisoned in social representations alone, as so many social scientists would like you to be? We want to gain access to things themselves, not only to their phenomena. The real is not remote; rather, it is accessible in all the objects mobilized throughout the world. Doesn't external reality abound

Regardless, as a descriptive method, however, who cannot fore shine particular grids of a society in a favour of others, being forced to understand them right there where they connect in hybrid entities, ethnology is present from the start. Garfinkel´s Ethnomethodology Program[81], for example, is a recognized influence[82]. This thread heavily marks Actor-Network Theory and is still strong nowadays as one of the most relevant bindings, though not followed to the letter[83] by severely mistrusting any strict opposition between formal and informal as analytic tools[84].

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right here among us? Do you not have more than enough of being continually dominated by a Nature that is transcendent, unknowable, inaccessible, exact, and simply true, peopled with entities that lie dormant like the Sleeping Beauty until the day when scientific Prince Charmings finally discover them? The collectives we live in are more active, more productive, more socialized than the tiresome things-in-themselves led us to expect. Are you not a little tired of those sociologies constructed around the Social only, which is supposed to hold up solely through the repetition of the words 'power' and 'legitimacy' because sociologists cannot cope either with the contents of objects or with the world of languages that nevertheless construct society? Our collectives are more real, more naturalized, more discursive than the tiresome humans-among-themselves led us to expect. Are you not fed up with language games, and with the eternal scepticism of the deconstruction of meaning? Discourse is not a world unto itself but a population of actants that mix with things as well as with societies, uphold the former and the latter alike, and hold on to them both. Interest in texts does not distance us from reality, for things too have to be elevated to the dignity of narrative. As for texts, why deny them the grandeur of forming the social bond that holds us together? Are you not tired of being accused of having forgotten Being, of living in a base world emptied of all its substance, all its sacredness and its art? In order to rediscover these treasures, do we really have to give up the historical, scientific and social world in which we live? To apply oneself to the sciences, to technologies, to markets, to things, does not distance us any more from the difference of Being with beings than from society, politics, or language. Real as Nature, narrated as Discourse, collective as Society, existential as Being: such are the quasi-objects that the moderns have caused to proliferate. As such it behoves us to pursue them, while we simply become once more what we have never ceased to be: amoderns.»

81 Cf. Latour, 2005: 54-55, note 54: «It would be fairly accurate to describe ANT as being half Garfinkel and half Greimas: it has simply combined two of the most interesting intellectual movements on both sides of the Atlantic and has found ways to tap the inner reflexivity of both actor's accounts and of texts.»

82 Cf. Latour, 2005: 242: «As usual, it's Garfinkel who offers the starkest definition of the 'outside' to which we should appeal in order to complete any course of action: 'The domain of things that escape from FA [Formal analytic] accountability is astronomically massive in size and range. Even though he did not realize the true importance of standardization, Garfinkel's metaphor is not an exaggeration: the ratio of what we have formatted to what we ignore is indeed astronomical. The social as normally construed is but a few specks compared to the number of associations needed to carry out even the smallest gesture.»

83 Cf. Latour, 2005: 122, note 171: «This is where ANT crosses the resources of ethnomethodology – including the key notion of 'accountability' – with those of semiotics. Strangely enough, for all his attention to practice Garfinkel never points out the practice of writing – which might go some way toward explaining his style! After years of teaching in England and America, I have been forced to recognize that semiotics does not survive sea travels. Attention to text qua text remains a continental obsession.»

84 Cf. Latour, 2005: 255: «It's rather astonishing to see even Garfinkel maintain this distinction between formal and informal: 'According to the world wide social science movement and the corpus status of its

Likewise, with Systems Theory, which will play some role in this thesis when analysing what systematicity means in terms of Philosophy as expressed in *Irreductions*. Better yet, we do brink sensibilities not with systems themselves as completed products with well-defined elements and concepts, concrete or otherwise, but on systematicity itself or the act of making them rise and propagate orders or an appearance of. The neat organization embedded in the pursuit of systems, their underlying continuity or discontinuity, their failures and leftovers, illustrates the strife to accumulate orders over orders in a logically coherent way, the drive and need of reducing, forcing clear pathways to be built in order for the catch all intent to be achieved. Of these pathways, logic is one of the strongest. Consequently, it will be one of those to be criticized or, rather, irreduced. A full chapter of *Irreductions* goes about doing it. *Science in Action* engages at it as well by including its whole use as if almost a subset of positioning tactics in the deployment of texts, a Rhetorical weapon[85].

On a second stage we do find, mostly in Latour, substantial and specific references to Philosophy. As much as *Irreductions* is, or I defend it to be, intended as a philosophical work. In the set of Latour´s works it is also unique, content and style very much of its own. We will deal with *Irreductions* later on. Suffice to say that indeed philosophical

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bibliographies there is no order in the concreteness of things. The research enterprises of the social science movement are defeated by the apparently hopelessly circumstantial overwhelming details of everyday activities—the plenum, the plenty, the plenilunium (sic). To get a remedy, the social sciences have worked out policies and methods of formal analysis. These respecify the concrete details of ordinary activities as details of the analytical devices and of the methods that warrant the use of these devices.' And he adds that ethnomethodology 'consists of evidence to the contrary'. Garfinkel, Ethnomethodology's Program, p. 95.»
85 Cf. Latour, 1987: 58: «Convincing is not just a matter of throwing words about. It is a race between the authors and the readers to control each other's moves. It would be enormously difficult for one 'average man' to force off their paths '2000 Demosthenes and Aristotles' in a matter where, at first sight, every direction is equally possible; the only way to decrease the difficulty is to dam up all the alternative channels. No matter where the reader is in the text, he or she is confronted with instruments harder to discuss, figures more difficult to doubt, references that are harder to dispute, arrays of stacked black boxes. He or she flows from the introduction to the conclusion like a river flowing between artificial banks. When such a result is attained - it is very rare - a text is said to be logical. Like the words 'scientific' or 'technical', it seems that 'logical' often means a different literature from the illogical type that would be written by people with different kinds of minds following different methods or more stringent standards.' But there is no absolute break between logical and illogical texts; there is a whole gamut of nuances that depend as much on the reader as on the author. Logic refers not to a new subject matter but to simple practical schemes: Can the reader get out? Can he easily skip this part? Is she able, once there, to take another path? Is the conclusion escapable? Is the figure waterproof? Is the proof tight enough? The writer arrays whatever is at hand in tiers so that these questions find practical answers. This is where style starts to count; a good scientific writer may succeed in being 'more logical' than a bad one.»

authors are often mentioned. Though not exclusively, though not quoted but translated-betrayed instead. These authors are, which is quite relevant, none of those already mentioned in the realm of shared sensibilities. Similarly, the tone in which the text sets pace is all but instrumental.

There is, to further, significant import and use of concepts and terminology whose origin is Philosophy. Concepts or terminology which could, at given cases, replace such central expressions of the theory as "actor" or "actant", from the onset. We can also see direct critics, outright attacks, inflammatory sentences, on Philosophy of Language, of the Sciences, Political Philosophy, Philosophy of Action, even to Logics. The text deems excess and is excessive. Its subtitle is equally revealing when it comes to tracing a philosophical background: *Tractatus Scientifico-Politicus*, an explicit mention to Spinoza´s work, as perhaps a not so explicit one to Wittgenstein. The formal disposition of the text is equally striking, with numbered aphorism or sutras, in a vague resemblance with Spinoza´s geometric method or Wittgenstein´s *Tractatus*.

Any detailed study of the philosophical base or strictly philosophical dimension of Actor-Network Theory will have to, as far as I see it, start first and foremost with a close reading of this text, namely on the principles of irreduction and of relativity. This close reading has not been yet done in full, if at all[86]. By doing it, Philosophy as a discipline may take a central role in Actor-Network Theory.

Besides tackling with *Ireductions* there are two other specific ways in which Latour refers to Philosophy. The first is clarified in *Reassembling the Social*, albeit very much present in *Irreductions* already. It states a peculiar operative distinction between Metaphysics and Ontology. By Metaphysics[87] is understood the way in which any actor describes or composes for himself in reports, actions, sayings, the world or what there

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86 An exception, or the exception in intent would be Graham Harman´s book *Prince of Networks* (Harman, 2009), where he launches his object-oriented Philosophy. There he quotes an email of Latour stating that *Irreductions* is the starting place of his Philosophy, and is an "orphan book" in the sense of, one feels, not having been studied almost at all. The caveat of Harman's work, however, is double: he fits Latour in a metaphysical tradition, supposedly somehow uniform, boxing the novelty or specificity of the work, while using it in fact as a launch pad for his object-oriented Philosophy.

87 Cf. Latour, 2005: 51: «As anthropologists have tirelessly shown, actors incessantly engage in the most abstruse metaphysical constructions by redefining all the elements of the world. Only a researcher trained in the conceptual calisthenics offered by the philosophical tradition could be quick, strong, daring, and pliable enough to painstakingly register what they have to say.»

is[88]. We say "compose", associate, assemble, connect, disconnect, because these actors need not be human agents of agents in a traditional sense of the word[89]. In fact, according to the theory, there is little way of isolating a composition of what there is solely in terms of either human agents or non-human objects. The distinction may work theoretically but, in practice, things are so entwinned and creative[90] as to deny it.

As such, this Metaphysics should not be confused simply with what given human agents say or express about what there is. This composition and description takes into account which, for the given actor stance, are the entities acting in what there is, how and when they are supposed to act as they do, how are their causes and effects thought out and attributed as such, under which figurations[91] or names do they arise, and which differences do any of these names and figurations reveal.

"Figuration" is an awkward term of the infralanguage. But easily understood, first, in an appeal to literary theory. It relates to how a yet unknown character or actant is

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88 Cf. Latour, 2005: 50: «If we call metaphysics the discipline inspired by the philosophical tradition that purports to define the basic structure of the world, then empirical metaphysics is what the controversies over agencies lead to since they ceaselessly populate the world with new drives and, as ceaselessly, contest the existence of others. The question then becomes how to explore the actors' own metaphysics.» Cf. also Latour, 2005: 51, note 50: «Most social scientists would adamantly resist the idea that they have to indulge in metaphysics to define the social. But such an attitude means nothing more than sticking to one metaphysics, usually a very poor one that in no way can pay justice to the multiplicity of fundamental questions raised by ordinary actors. No one has gone further in criticizing this move than Tarde, especially in Tarde *Monadologie et sociologie*.»

89 Cf. Latour, 2005: 51: «And the situation will be even worse if social scientists not only abstain from metaphysics, but take as their duty to cling to the most limited list of agencies, ceaselessly translating the indefinite production of actors into their short one. Actors have many philosophies but sociologists think they should stick to only a few. Actors fill the world with agencies while sociologists of the social tell them which building blocks their world is 'really' made of. That they often do this for high-minded reasons, to be 'politically relevant', to be 'critical' for the good of the actors they wish to 'free from the shackle of archaic powers', does not reassure me. Even if it were excellent politics, which it is not as we shall see, it would still be bad science.»

90 Cf. Latour, 2005: 51: «It means that cutting the social sciences from the reservoirs of philosophical innovations is a recipe to make sure that no one will ever notice the metaphysical innovations proposed by ordinary actors – which often go beyond those of professional philosophers.»

91 Cf. (Latour, 2005: 58: «The choice of a figuration, in other words, is a bad predictor of which theory of action will be invoked. What counts is not the type of figures but the range of mediators one is able to deploy. This is what has so confused the debates among the various schools of social sciences: they have insisted too much on which agency to choose and not enough on how each of them was supposed to act.»

presented in the course of action[92]. A character can be called out by many different expressions, actants as well may[93]. The way such characters or actants are finally given a shape, a figure, is made evident in the course of the story. And hardly ever closed for good. This device is transposed into metaphysical analysis. Figurations of a given entity or process (an incognito in fact) do not refer to it. They associate with and through time compose the shape of an actor.

Practical Metaphysics or empirical Metaphysics is the case-to-case detailed study of a proposed Metaphysics, as above, by accepting wholeheartedly the terminology, concepts, controversies, and world view, of an actor or set of actors. Without imposing external frames of reference to it. The injunction to follow the actors comes handy here and steps in[94]. One does not replace the way an actor speaks or acts for expressions that would transform it according to a previous theory, fitting it in previous brackets. As this is virtually impossible the need does arise of an infra-theory supported by an infralanguage[95], capable of diminishing the overdoing of wanting to provide overarching global explanations through reducing the actor's ways.

Which is exactly what Actor-Network Theory is intending. Practical Metaphysics is thus a descriptive effort of following the actors. Noting controversies that agonistically clash with other actors. Not replacing or reducing actor terminologies in favour of any

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92 Cf. Latour, 2005: 71: «By contrast, if we stick to our decision to start from the controversies about actors and agencies, then anything that does modify a state of affairs by making a difference is an actor – or, if it has no figuration yet, an actant.»

93 Cf. Latour, 2005: 58: «So, figuration and theory of action are two different items in the list and should not be conflated with one another. If they are, the enquirer will be tempted to privilege some figurations as being 'more concrete' and others as 'more abstract', thus falling back into the legislative and policing role of the sociologists of the social and abandoning the firm ground of relativism.»

94 Cf. Latour, 2005: 61: «It is in these kinds of spots that we have to take a decision if we want to trace social connections in new and interesting ways: we must either part company with the analysts who have only one fully worked out metaphysics or 'follow the actors themselves' who are getting by with more than one.»

95 Cf. Latour, 2005: 52: «There is, of course, a more respectable and practical reason to limit in advance the list of agencies that make actors do things. Apart from the social theorists' infatuation with emancipation politics, it is the sheer difficulty of following their proliferation. And it is true that to ask enquirers to indulge in empirical metaphysics, to send them trotting behind the actors themselves, is no easy task. However, if agencies are innumerable, controversies about agency have a nice way of ordering themselves. The solution is the same as with the former source of uncertainty: although there exists an indefinite list of groups, we could devise a small list of handles allowing the sociologist to move from one group formation to the next. In the same way, I think it is possible to propose a limited set of grips to follow the ways in which actors' credit or discredit an agency in the accounts they provide about what makes them act.»

other terminology. More, this is to be done without denying beforehand either the description or the investigation of what is proposed when it does not conform to a more or less established consensus. Practical Metaphysics is the departure stage of any research, be it theoretical or practical, as a matter of fact, when it comes to Actor-Network Theory. It implies taking actors quite seriously. What and how they say and what and how they do, however they go on composing and assembling the world for themselves and however they go on wishing to disseminate such a composition by extending and strengthening hybrid networks. To use a more technical term of the theory, favoured by Latour, one takes quite seriously how the collective[96], a collection with aims of unity, is placed forth by the actors.

Practical Metaphysics cannot be done without registering, recording, asking what is said, by how and what many, through what means, against whose others. Thus, Actor-Network Theory seeks to provide a recording frame[97] that is not tainted. Or, at least, not as tainted as others who take the collective for granted, or take certain collections of the collective as already fixed out. Among these, nature, society, and the symbolic, human, object, are key in terms of fixing practical Metaphysics beforehand. None of these are seen as matters of fact but, instead, as matters of concern[98]. A good recording frame for practical Metaphysics would have to do without them. As it would have to without the neat divisions found in many philosophical systems and ontological hierarchies.

By Ontology, properly, what is meant is a Metaphysics which does not ignore the question of truth, the question of how is and what is exactly the world around, the question of what there is and how it is unified[99]. Truth is a heavily loaded word whose use would

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96 Cf. Latour, 2005: 14: «The factors gathered in the past under the label of a 'social domain' are simply some of the elements to be assembled in the future in what I will call not a society but a collective.»

97 Cf. Latour, 1996 [1990]: 375: «Such a distribution of strong theory for the recording frame and no middle range theory for the description, is another source of many misunderstandings since ANT is accused either of being dogmatic or of only providing mere description. For the same reason it is also accused of claiming that actors are "really" infinitely pliable and free or, inversely, of not telling what a human actor really is after.»

98 Cf. Latour, 2005: 114-115: «A natural world made up of matters of fact does not look quite the same as a world consisting of matters of concern and thus cannot be used so easily as a foil for the 'symbolic-human-intentional' social order.»

99 Cf. Latour, 2005: 117: «To go from metaphysics to ontology is to raise again the question of what the real world is really like. As long as we remain in metaphysics, there is always the danger that deployment of the actors' worlds will remain too easy because they could be taken as so many representations of what

in Philosophy demand the examination of different theories to that respect. The meaning here is in a sense deflated and, in another sense, does not demand or presuppose a rooting in philosophical tradition[100]. What is true, as many aspects in Actor-Network Theory, comes afterwards. It is a result of composition and strife and is, fundamentally, subject to revision. As with knowledge or knowing.

It is considered that one cannot speak of knowing, period, independently of how a given concrete knowledge is gained[101]. The same can be said of truth. It is useless to speak of it without speaking of how a given truth is gained and established. Including truth in metaphysical reflection. Ontology then means testing which Metaphysics actually resist. At least observing which ones are predominant. How they have come to be so. How did they gain and win by becoming true? Which forces do they compose along for that end? By appealing to force, or forces, it is implied that a Metaphysics will win only if it becomes stronger than others. A strength resulting from the association of many heterogeneous actors in it, and not from it being right beforehand.

Ontology is material, so to speak, and wins materially, by force. A first point is that Ontology, thus considered, is impossible (tendentially false) without a previous exhaustive effort in practical Metaphysics. An effort that considers all actors in a position of equality, just as actors, with no extra terminology added. The second point is that no worthwhile research, philosophical or not, can ignore this Ontology. Or these ontologies, that are in the making. According to Latour there is a generalized flaw in accelerating[102]

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the world, in the singular, is like. In which case we would not have moved an inch and would be back at square one of social explanation – namely back to Kant's idealism.»

100 Cf. Latour, 2005: 117, note 166: «I made no pretence to follow standard definitions, given the long and variable history of those words. In what follows, 'ontology' is the same thing as 'metaphysics', to which the question of truth and unification have been added.»

101 Cf. Latour, 1987: 6: «The equipment necessary to travel through science and technology is at once light and multiple. Multiple because it means mixing hydrogen bonds with deadlines, the probing of one another's authority with money, debugging and bureaucratic style; but the equipment is also light because it means simply leaving aside all the prejudices about what distinguishes the context in which knowledge is embedded and this knowledge itself.»

102 Cf. Latour, 2005: 258: «In this sense, the more disinterested the science, the more engaged and politically relevant it already is. The ceaseless activities of the social sciences in making the social exist, in churning the collective into a coherent whole, make up a large part of what it is to 'study' the social. Every account added to this mass also consists of a decision about what the social should be, that is, on what the multiple metaphysics and singular ontology of the common world should be. Rare are the group formations today that are not equipped and instrumented by economists, geographers, anthropologists, historians, and sociologists, who are hoping to learn how the groups are made, what are their boundaries and functions,

towards the Ontology stage from initial metaphysical intentions without paying due cost to practical Metaphysics. Albeit certainly trivial, the consequences of such acceleration are not trivial, by turning matters of concern in matters of fact, when they are not.

Actor-Network Theory intends to slow down such leaps, therefore slowing down reduction, laying bare the hybrid instruments of which Ontology is composed. Triviality, as such, does not equal platitude. Knowing that icebergs go deep under water does not stop boats from sinking into them. Such panoramic leaps entered visibility first in the social studies sphere. Seemingly more predominant there than in domains thought as not so keen to abruptly change. But they were found to occur in a much larger scale. Simultaneously in a much closer one. Everywhere that reduction takes its toil the birds eye view becomes paramount.

Philosophy alone, or most of all, would contain enough complexity and sophistication as to allow a (more) unprejudiced recording and understanding of the case-to-case Metaphysics proposed and launched by actors and their codetermined networks. Being used as it is, to multiplicity of perspectives coexisting, analysed in depth and in detail, Philosophy is lacking, according to Latour, for practical Metaphysics to be dully registered. For Ontology to be examined further away from plain accumulation of cases. This mimics Latour´s own work where case studies worked created a lack for Philosophy when pushing for Ontology. Philosophy, indeed, lacks[103].

This second other way in which Latour mentions Philosophy allows me to shift focus towards what is a third stage of possible relations between Actor-Network Theory and Philosophy. Philosophy taken as a whole is, quite literally, considered by Latour as a discipline with no specific domain, from its genesis to present days. This thesis is, however, somehow consensual. Be it supported or not more by complex references regarding the hierarchy, ordering and scope of disciplines towards others. Not having a

and how best to maintain them. It would make no sense for a social science to wish to escape from this ceaseless work. But it makes a lot of sense to try to do this work well.»

103 Cf. Latour, 1988: 150: «However, in order to reach that aim, we have to abandon many intermediary beliefs: belief in the existence of the modern world, in the existence of logic, in the power of reason, even in belief itself and in its distinction from knowledge. I have to write, not as a sociologist or even as a historian of the sciences, but as a philosopher, and to define those trials of strength of which I have made such extensive use in this history of microbes. That is the aim of the second part of this book.»

specific domain, Philosophy calls to herself many of those domains other disciplines are case to case exclusively devoted to.

To do so, diverse instruments and methods have been constructed or used. Some of these (Logics, Hermeneutics, Phenomenology, Semiotics and literary analysis, even experimental Philosophy, even the proposed naturalization of several areas of Philosophy) were thought at stages as alternatives to Philosophy itself. Or as the only single method Philosophy ought to use. Furthering ongoing discussions as to which is the method, if any, of Philosophy. To which there is no definitive consensual answer. Common places such as rationality, use of arguments, totality, are not consensual, or not specific enough. Or themselves subject to constant revision according to practices, currents, influences, and/or scientific findings. Coherently, the multiplication of philosophies and of methods is not to be taken as a weakness, unless Philosophy is deemed as weak, but as a matter of the constitution of the discipline itself as it is and has been concretely done.

Another matter of its constitution is transversal, complex, and peculiar terminology used and adopted. Up to the point where, if taken as a whole, philosophical terminology could be considered as an example of chaotic vagueness with no consensual solution. Though particular philosophies attempt at defining what they mean by terms they use or create, the overall picture often demands that terms are backtracked to the given Philosophy they come from. In others the meaning would be different, proper only to the systems and theories they are used on. Philosophical terminology tends as well to conflate, intersect, or even clash with the terminologies of those other disciplines it too conflates, intersects, or clashes with. This is easily verifiable. Such difficulty, let us call it so, is not dissociable of the absence of a specific domain or, it is another perspective, of the scope of domains, or domain, reclaimed or intended.

Also, easily verifiable is that the relation of Philosophy as a discipline with other disciplines it focuses on, establishes correlations with, is not known to be simple or easy. This is not mitigated by considering Philosophy a second order activity. Even more, still, we find in Philosophy conflicting and contradictory relations towards itself. Meaning, philosophies who wish to end Philosophy or wish to drastically reduce its scope. As we also find sub-disciplines who reference themselves as much as they reference Philosophy. Meta-ethics, meta-Metaphysics, meta-Philosophy even. In a process that little stops from

going on up. The picture here traced does not stand too far from Actor-Network Theory as it is traced both by outsiders to it as, paradigmatically, it does not differ much from how insiders to the theory look at it and at how it has been developed all along. Which is not that common when it comes to philosophical thinking wanting to justify the pertinence of the discipline while dissociating it from other pursuits. Scientific or otherwise.

As with Philosophy overall, Actor-Network Theory suffers simultaneously from the absence of a specific domain as actor-networks cannot be constrained to any single one of them, as consensually described, and from a scope of domains or domain too vast for highly closed definitions and terminologies. As such, a philosopher, if grounded in the practice and the history of Philosophy, ought to approach and eventually understand these characteristics of Actor-Network Theory knowing that they share and point to the same problems that Philosophy as a whole does deal with. In fact, that they are characteristics of Philosophy as much as they are of Actor-Network Theory. While not being, necessarily, flaws.

Within such Philosophy there is a subdiscipline, for some the first, whose scope is traditionally the greatest possible and whose applicability, intended at least, should be able to grasp the entirety of what there is. I speak, again, of Metaphysics or Ontology. Naturally, these two terms do not mean the same thing when it comes to how philosophical tradition usually dealt with them. The former originates in a successor, or compiler, of Aristotle. Making it explicit, its understanding in multiple ways, has crossed the whole history of Philosophy until now. Aristotle, Avicenna, Scotus, Suárez, Kant, Heidegger, to unjustly mention but a few, have written countless pages on it whose analysis is not possible without diving deep into Philosophy as a discipline. Extended critiques, very distinct proposals, even attempts to eliminate Metaphysics altogether, attempts one could better consider after all as replacements of one metaphysic for another, are also very much present in the history of Philosophy. From Kant to Peirce, to Positivism (logical or otherwise), to Wittgenstein and Derrida, again to unjustly name but a few, the authors pile up on attacking Metaphysics or a certain form of Metaphysics, and do pile up even more from the nineteenth century onwards. Still, it is virtually impossible, even in the authors and period mentioned, to find a Philosophy where metaphysical reflections and themes do not find their way in.

The term "Ontology", on the other hand, seems to be more accepted, even in present times. It appears to have been popularized by Wolff and invented by Jacobus Lohrardus[104]. Regardless, its disambiguation is all but consensual. However, unlike "Metaphysics", the term is operative in several other disciplines than Philosophy with several characterizations of it being widely used (formal, regional, etc). What is clear is first that neither of the terms mean or have meant the same both regarding each other as regarding themselves when used alone. Second, that there is no Metaphysics or Ontology that can be taken as definitive (for good) and taught as such, at least in Philosophy. We have only a more or less diverse and mutable set of concepts, notions, terms, ideas (being, entity, event, object, property, relation, cause, effect, existence, necessity, possibility, matter, form, identity, among many) and often contradictory theories on each element in the set.

I thus propose that the fourth stage/moment of the possible relation between Philosophy and Actor-Network Theory is to understand the latter as, ultimately, an Ontology. An Ontology who does not feel comfortable, by instrumental reasons but not only, neither with the terms associated with Ontology in Philosophy nor with almost all theories with which Philosophy reports to them. It gives us other terms and methods, instrumentally, and a theory, deflated or not, while keeping the aspiration of a full scope and of correctness. That is, of as faithfully as possible grasping what there is, how it is, and how it comes to be.

The fifth moment/stage of the relations between Actor-Network Theory and Philosophy is, beyond taking it as an Ontology, the one where many accepted ways of posing questions, and their respective answers, in philosophical subdisciplines, begin to be put on the stand. One has to say "many" and not "all" as the diversity and richness of philosophical tradition would allow us to find contact points with particular philosophies, case to case. It is also up to discussion if such a reformulation of questions and answers is to be treated singly from subdiscipline to subdiscipline or if it must always refer to a reformulation of both methodology and Ontology to which it is linked. I use "linked" on purpose, instead of saying, for example, that reformulations of particular subdisciplines

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104 Cf. Lorhard, 1606; Wolff, 1730.

would "derive" from an Ontology. The relation at hand, for reasons that will be clearer later on, is associative and not deductive.

Given Actor-Network's Theory hints at monism it would be hard to press on subdisciplines singled out, un-associated with others, thus implying that methodology and Ontology cross the discreteness of subdisciplines. Whatever comes, in this fifth stage, one has to question the role of Metaphysics and Ontology in Philosophy, in the generalized knowledge gaining practices of humans while, at the same time, questioning the relations of both with other subdisciplines as Ethics, Aesthetics, Philosophy of Action, of Language, of Science, of Mathematics, of Psychology. At least. This includes asking if such subdisciplines or diverse philosophical domains can be seen, as such, different and individualized. The full achievement of the above aims cannot be done in a single thesis, a testimonial both to the richness of the theme as to dispersion of materials one would have to dive into. This is one of the secondary reasons why, besides the nature of the text itself, we will conduct a close reading of aspects of *Irreductions* as an Ariadne thread further on.

One can, however, begin to scarcely point some of the issues above, fifth stage related. Letting it be clear that each would be ample material for an individual thesis. Letting it be clear that we will keep addressing them throughout this thesis, while strong holding them in the study of *Irreductions*. A preliminary subject that must be brought to mind in what follows is the role of dichotomies in philosophical thinking. Let us say that if one of the terms is emptied out of meaning its dichotomic counterpart tends to lose all relevance, depending as it does of the other term for the shaping of its borders. The dichotomies I will be mentioning are operational in Philosophy. Any philosopher deals, has dealt, or will deal with them in the course of formation or work. However, they are not operational at all when it comes to Actor-Network Theory. An understanding of it based on them would begin wrong footed.

Instead, what is operational in Actor-Network Theory, to correctly understand it, is the constant appeal to their dissolution simultaneous with the constant practice of their dissolution[105]. In case-oriented studies and corresponding theoretical framework.

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105 Cf. Law, 2009: 147: «The single-minded commitment to relationality makes it possible to explore strange and heterogeneous links and follow surprising actors to equally surprising places: ships, bacilli, scallops, and scientific texts (Latour 1987). It highlights practices off-limits or uninteresting to non-semiotic

Nevertheless, these dichotomies do appear in the theory. If not otherwise as examples of what is to be cleared out. And some of their aspects are favoured towards others up to the point where what is favoured shows relevance to grasping an underlying philosophical stance. I will indicate briefly how this translates into standing philosophical dichotomies in Ethics, Aesthetics, Philosophy of Action, Philosophy of Language, Philosophy of Knowledge and of Science, Philosophy of Mathematics, of Psychology.

In Ethics the dichotomy to be dissolved and/or denied is the one between "right", reported to reason, to having reason, and "might", reported to force, to having strength for. The theme runs rampant through *Irreductions* being one of the key motivations in the work. Denying such a dichotomy would first mean that the two aspects are linked in osmosis. That no possibility of splitting them is possible in practice while being a problem when it comes to analyse whatever practice we focus on. Meaning, as well, that the opposition between reason and force, right and might, gives birth to a flawed Ontology which surpasses the problematic of ethical questions alone, and effectively stops short any concretization both of intended objects as of intended changes in the assembly of the collective.

But an option towards the force aspect of the equation is clearly visible if one dismisses reason, right, as just an add-on which does not need to be there. An excrescence. Force, might, is preferred in the end, but this can only be fully grasped if it is made very clear that reason, right, is simply not there in the world, as the theory goes. To illustrate this point, the word "force" can be replaced, and is in the book often, by the word "weakness". Strengthening "weaknesses", taken as a noun and not as an adjective, is what causes force, might, and whatever is then termed as pertaining to the sphere of right. Of what in the end fits or doesn´t fit. Acts or does not act. The dissolving of this dichotomy has many returns throughout the book and should be considered fundamental. We will see later on. Reason is but an ancillary element of force, might, which can be eliminated, which is not needed in an Ontology. Being right is even seen as the loser's game wanting

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approaches: navigational innovations, biological bench work, the habits of larvae, the practices of farmers, food (Mol and Mesman 1996). It does this by eroding distinctions in kind, ontological distinctions. In short, the toolkit can be understood as a powerful set of devices for levelling divisions usually taken to be foundational. These are demoted and treated as the effect of translations. Human and non-human, meaning and materiality, big and small, macro and micro, social and technical, nature and culture – these are just some of the dualisms undone by this relationality.»

to gain what was already lost through lack of might. Through lack of strengthening weaknesses by associating them with more resilient elements[106]. Reasons do not turn the world around. Thus, nothing can be understood by wanting to understand who or what was right. But by working out what failed or not failed. How and why, it did.

Pushing the dissolution of traditional dichotomies, in aesthetics what is to be found wanting is the opposition, or frame of reference, that splits interest and disinterest in so called aesthetic judgements. As much as the idea of aesthetic judgement in itself. With it, the traditional determination of aesthetic categories such as the beautiful or the sublime also falls short of the point, dismissible for understanding. Again, if the dichotomy is banished, if disinterest is seen as just another form of interest, preference goes for the interest side of the equation. Considering acts or even so-called judgements from a perspective of them being disinterested is seen as, for lack of better words, bordering absurdity.

On the other hand, there is a point where Actor-Network Theory can be seen as having a strong foot on Aesthetics, which is the role that the sensible plays in all its forms. Up to the demand of an empirical Metaphysics, together with the importance given to actantial roles. Actants are said to be so if and only if they make sensible differences, preferably measured and measurable, in a given state of affairs. In this way, that of the sensible, aesthetics gains high ground. But, then again, this ground is so mingled with others, such as the ethic or the one pertaining to knowledge, that to consider it as separate would do us no good, irreducing their separation being the key. What for now is to be retained is that, for an Ontology, the interest and disinterest dichotomy is to be abandoned with a slight preference for the first. While aesthetics itself, when it asks for a knowing who comes from the sensible, is of paramount importance. No form of knowledge, be it concrete or abstract, can ever clutch away from the compromises of the sensible.

Those that wish to do so by clutching away, according to Latour, will only do poorly by providing reduced understanding of Ontology. There is no knowing where constant tinkering and constant toiling with sensible data plus their forms of presentation and

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106 Cf. Latour, 1996 [1990]: 370: «To remain at this very intuitive level, ANT is a simple material resistance argument. Strength does not come from concentration, purity and unity, but from dissemination, heterogeneity and the careful plaiting of weak ties.»

metrology is not mandatory[107]. A particular interest, which could be loosely classified under aesthetics, is given by Latour to the two dimensionalities of the world in pages, diagrams, graphs. In fact, this ability gains the status of an alternate explanation to why occidental civilization is, in given aspects, more successful than others. Such success would be mainly related with the development, over centuries, of very prosaic techniques of bidimensional registering of the world[108].

In Philosophy of Action, briefly, agency, the thematic of, and intention, the thematic of, are at start disconnected from each other, together with the pondering on rationality/irrationality of agents[109] at this regard. At the launching point, too, agency is given to objects as much as to humans. Tough it does remain a deflated version of agency.

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107 Cf. Latour, 1990 [1986]: 28: «If this little shift from a social/cognitive divide to the study of inscriptions is accepted, then the importance of metrology appears in proper light. Metrology is the scientific organization of stable measurement and standards. Without it no measurement is stable enough to allow either the homogeneity of the inscriptions or their return. It is not surprising then to learn that metrology costs up to three times the budget of all Research and Development, and that this figure is for only the first elements of the metrological chain (Hunter, 1980). Thanks to metrological organization the basic physical constants (time, space, weight, wave-length) and many biological and chemical standards may be extended "every-where" (Zerubavel, 1982; Landes, 1983). The universality of science and technology is a cliché of epistemology but metrology is the practical achievement of this mystical universality. In practice it is costly and full of holes (see Cochrane, 1966 for the history of the Bureau of Standards). Metrology is only the official and primary component of an ever increasing number of measuring activities we all have to undertake in daily life. Every time we look at our wristwatch or weigh a sausage at the butchers shop; every time applied laboratories measure lead pollution, water purity, or control the quality of industrial goods, we allow more immutable mobiles to reach new places. "Rationalization" has very little to do with the reason of bureau and technocrats, but has a lot to do with the maintenance of metrological chains (Uselding, 1981). This building of long networks provides the stability of the main physical constants, but there are many other metrological activities for less "universal" measures (polls, questionnaires, forms to fill in, accounts, tallies).»
108 Cf. Latour, 1990 [1986]: 26, note 16: «The link between technical thinking and technical drawing is so close that scholars establish it even unwillingly. For instance, Bertrand Gille, when accounting for the creation of a new "système technique" in Alexandria during the Hellenistic period, is obliged to say that it is the availability of a good library and the gathering of a collection of scale models of all the machines previously invented, that transformed "mere practice" into techno-logy (1990). What makes the "système technique" a system is the synoptic vision of all the former technical achievements which are all taken out of their isolation. This link is most clearly visible when an inscription device is hooked up to a working machine to make it comprehensible (Hills and Pacey, 1981; Constant, 1983). A nice rendering of the paper world necessary to make a computer real is to be found in Kidder (1981). "The soul of the machine" is a pile of paper…»
109 Cf. Latour, 1987: 185: «We may understand why until now I have tried to avoid the notions of belief, knowledge, rationality and irrationality. Whenever they are used they totally subvert the picture of science in action, and replace it by minds, phenomena and distorting factors, If we wish to continue the study of the networks of technoscience, we must straighten up the distorted beliefs and do away with this opposition between rational and irrational ideas.»

This is one of the points giving more fame to Actor-Network Theory. For an Ontology in practice as Actor-Network Theory wishes it, action, agency, intention, are distributed in the word of what there is. As Latour points out, *action is overtaken*[110]. Meaning that action is an uncertainty with no definite stages marking its beginnings, it's so called reasons, it's so called intentions behind, whatever so-called beliefs might endure or not endure in it. The subject forcefully enters ethical grounds, carrying on the tendency of practical overlapping of philosophical domains, showing once more why splitting them apart, albeit neat, may induce ontological errors on what there is.

From ethical grounds it enters into politics, which occupies much of Latour´s latest career, but is there from the start. We will see it in *Irreductions* when it is considered that *science is politics through other means*[111] which, unlike fast interpretations, does not imply that they are equal. As means, in Actor-Network Theory, do make up for ends and do constrain ends besides, once again, being hardly distinguishable in practice. We will see it very much present in *Reassembling the Social* where the task of assembling the collective is paramount[112]. What is to be retained is that politics, as seen, is not contained merely in human relations and human issues but extends to all areas including those usually reserved for knowledges taken as exact. Those knowledges who are at first glance more proved than debated. This expanding of the arch of politics becomes evident, if it wasn´t, in the ecological turn of Latour´s thought.

In Philosophy of Language the dichotomy to be overridden is the age long division between words and things. To Material Semiotics it is more or less irrelevant if what is

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110 Cf. Latour, 2005: 44: «In the long and variegated history of their disciplines, the social scientists, sociologists, historians, geographers, linguists, psychologists, and economists had to multiply— like their colleagues in the natural sciences—agencies to account for the complexity, diversity, and heterogeneity of action. Each had to find a way to tame those many aliens who barged in as uninvited guests in everything we seem to be doing. That these examples have spurred on the development of the social sciences is something we nowadays take for granted. And ANT wishes for nothing else than to inherit this tradition and this intuition. Action is overtaken or, as one Swedish friend transcribed this dangerous Hegelian expression, action is other-taken!»

111 Cf. Latour, 1988: part 2, 4.6.2.1., 229: «Science is not politics. It is politics by other means. But people object that "science does not reduce to power." Precisely. It does not reduce to power. It offers other means. But it will be objected again that "by their nature, these means cannot be foreseen." Precisely. If they were foreseeable, they would already have been used by an opposing power. What could be better than a fresh form of power that no one knows how to use?»

112 Cf. Latour, 2005: 16: «Finally, I will conclude by showing why the task of assembling the collective is worth pursuing, but only after the shortcut of society and 'social explanation' has been abandoned.»

under the scope is said to be a thing, a representation, or a word. While the split itself between meaning and reference is considered as having no immediate utility. Words and things come to be by the same processes, both, meaning and reference come to be distinguished, if they are, by the same processes, both. Words do not refer things, they come to be associated with other things or with other words, or with both. Such associations are strengthened or weakened in the course of time, failing or succeeding according to the resources used in associating them. As occurs with any given actor-network.

Trivial as it may seem what is to be sought after are the associations that make certain connections resist more than others. And how these connections have been constructed. In fact, Actor-Network Theory has no problems in pushing apparent trivialities into the forefront. Keeping them there unclenched. Ignoring what is trivial would often result in a mistaken Ontology. That the king is naked is at least as relevant as that the king is considered a king. In this sense, Actor-Network Theory draws attention to what, being so visible that it is often taken for granted and moved away from systematic analysis, constitutes the net where experiences take place and Ontology is formed, through the work of actors. Examples which are philosophically rich, present in *Irreductions*, besides the language themes above, relate to the role of space and time, of the possible, the impossible, the necessary. This we will explore further on.

In Philosophy of Science, and/or of Knowledge, the positions hinted at are equally radical. First, nothing would distinguish, essentially, science from any other trade or activity. Apart from the apparent success in, as a whole, constructing facts which resist more than those other activities are able to construct. However, explanations to why this occurs based on a methodological or intrinsic difference are seen as precipitated, unfit, and too simple. Even when the goal intended is to explain the relevance of science. Science would succeed by the same material processes, overall, by which any other activity succeeds or fails, according to the criteria it accepts for success.

It is better to study how these processes occur in practice, materially, up to the most prosaic aspects of fact construction. Resources and technology used, number of attempts, degree of collective engagement, etc. Without mythicising methods, engaging in presuppositions of realism, or even without considering it a one-of-a-kind activity away from ordinary toils. S*cience in Action* is filled with examples at this regard. Evidently, it

follows that a strict dichotomy between rationality and irrationality is abandoned as useless. That, in epistemology, the notion of a justified true belief is seen as a complex cul de sac with no end game. Similarly, the supposed difference between believing in p and knowing that p has little use at this regard. It is favoured instead by the material description and following of how that which is presently called as knowledge came to be accepted as such.

A Philosophy of Mathematics is proposed, albeit uncertainly, as a research project to-be, mingling Mathematics, abstraction, and forms. The dichotomy at stake is the one between Mathematics and other fields. Often supported on a special nature of Mathematics regarding exactitude, methods of proof, general applicability and a more or less debated aprioristic nature. The pursuit here is not concluded, but hints at Mathematics as having no such privileges essentially but by virtue of the many resources it is able to muster and concentrate, *immutable mobiles*[113] of successive degrees, gained via cycles of accumulation[114] where forms are simplified while keeping touch with what they are abstractions of. Again, the issue is not fully developed but in it seems to lie a strong reason for the success in gaining knowledge scientific networks do show.

Also not overtly developed is a Philosophy of Psychology, that dismisses dichotomic splits between I and others, inner and outer, along the lines of everything being distributed among many and the lack of inner and outer elements the notion of network allows[115]. As seen, the scope of rebuttals is already too vast in the above, notwithstanding that other philosophical subdisciplines could still enter the picture.

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113 Cf. Latour, 1987: 227: «(…) the first to sit at the beginning and at the end of a long network that generates what I will call immutable and combinable mobiles. All these charts, tables and trajectories are conveniently at hand and combinable at will, no matter whether they are twenty centuries old or a day old; each of them brings celestial bodies billions of tons heavy and hundreds of thousands of miles away to the size of a point on a piece of paper. Should we be surprised then if Tycho Brahe pushes astronomy further on 'the sure path of a science'? No, but we should marvel at those many humble means that tum stars and planets into pieces of paper inside the observatories that soon will be built everywhere in Europe.»
114 Cf. Latour, 1987: 93: «The endless spiral has travelled one more loop. Laboratories grow because of the number of elements 'fed back' into them, and this growth is irreversible since no dissenter/author is able to enter into the fray later with fewer resources at his or her disposal – everything else being equal. Beginning with a few cheap elements borrowed from common practice, laboratories end up after several cycles of contest with costly and enormously complex set-ups very remote from common practice.»

Whatever comes it should be enough to make clear that such a wide critique and reformulation would be meaningless if not supported in an underlying metaphysical practice. From which an Ontology grows. Such Ontology, in the way Actor-Network Theory sees the word, has to be the Rosetta stone of the revision. Forcing the revision if Ontology is to reflect not how we end up thinking what there is, but instead reflect what there is as it is.

Alternate designations could be, if one whished, added to the circulating pool for the ends we are to achieve, those of more accurately discriminating where we depart from while tracing and doing it. Such as "Theory of Effects", of my own making, as causes are seen with great suspicion when Ontology is sought after. Or "Mediatism", of my own making, according to how the cause-effect relation is replaced by the notions of mediation and intermediation, more faithful or more unfaithful translation. Object Oriented Philosophy[116] is, possibly, a recent properly philosophical current who also grew from the already presented melting pot of designations. Thus, eventually making it another viable naming of what Actor-Network Theory stands for under the discipline of Philosophy as established. Regardless, we will not dig deep in it at this regard. It can stance, in fact, for another diminishing of the intended scope, clutching only in the novel role that objects, non-human inhabitants of the collective, gain through many, if not all, of the designations available.

Objects in general, the non-human, and particularly technologies, are paramount to how what there is comes to be stabilized and shaped, disseminated and grown. However, Actor-Network Theory is, if the terms are to be minimally used as they were intended, within and through the whole of designations, as much oriented to subjects as to objects. If and when these are seen by their more or less traditional roles according to most philosophical viewpoints. Likewise, it is oriented to none of them under the criteria of those same more traditional roles and viewpoints. Subject and object distinctions turn out eventually as barely useful to the senses accolated in the theory, accordingly gaining the status of a dichotomic trap Actor-Network Theory wishes to elude.

We will have thus to draw on key methodological and ontological notions of that which is also called Actor-Network Theory. And of its close sister, called Material

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116 Cf. Harman, 2009.

Semiotics. By tracing some chronological assimilations and translations, some theoretic correlations with diverse fields of knowledge which are translated and betrayed by the theory. We will have to trace consequences of the proposed methodologies and Ontology at stake, where and when they allow new connections with Philosophy, uncovering a relevance surpassing the application of the theory to social sciences and to case studies, its most outwardly successful field. Entering into themes proper to Philosophy as an apparently contained discipline. Within Philosophy, Philosophy of Language, of Action, of Knowledge and of the Sciences do seem at a first glance evident in the context. Epistemology, above all, as the immediate launching point. But certainly not exclusively, not essentially.

Mainly, one must progressively dive in the key goal of Latour´s *Irreductions*, Ontology and Metaphysics, as originally stated. Clutching into this less travelled thread. Making do of its relevance to what might grow as an irreductionist Philosophy yet to be. Conducting thoroughly a close reading of aspects of *Irreductions*, the central work to expand upon within this thesis, associating with other texts of Latour´s corpus when needed, one may end questioning, though, if Philosophy itself can still be seen as a contained discipline. Whose methods and objectives are distinct from other´s methods and objectives. Be they disciplines of the social, of the symbolic, or of the natural. An apparent contradiction with the role Philosophy is to assume.

Latour´s *Irreductions*[117], itself, is still a largely ignored text. Both among philosophers as in the narrower scope of Actor-Network Theory and its multiple designations. As for Actor-Network Theory, itself, it is a theory, or it is not a theory, as we shall see, which at first glance highly mistrusts the explanatory power of closed systems, the explanatory power and actuality of predetermined divisions in fields of experience such as natural, cultural, or social, and the explanatory power and reality of fields of thought such as aesthetics, epistemology, ethics. *Irreductions* does follow this trend of explicit mistrust. This much can be said. By doing so, both would appear to negate philosophical systems, which coordinate and articulate among these fields.

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117 Cf. Latour, 1988: part 2.

Together with negating the practice of intelligible systematicity that leads to them being accomplished.

Thus, forcing on the other hand, it would appear, the over stressing of case studies, one by one, without great rapport with general rules. Therefore, limiting a coherent progressive build-up of knowledge, step by step abstracting from individualized domains. As much as the theoretical validations that allow for it to be achieved. Negating systems and/or systematicity, Actor-Network Theory, if proper to what there is and how it is when Ontology is concerned, would greatly diminish the scope and use of Philosophy as systematic understanding of how whole and parts articulate in an Ontology. In spite, most of Philosophy actually is or intends to be systematic. An affirmation needing no other proof than the history of Philosophy as it has grown. Where definite systems are not found, exceptions granted as exceptional, at least systematicity is. More or less coherently so, more or less logically so. Marking a tendency for this activity we tend to call the discipline of Philosophy.

However, against many generalized discourses on Actor-Network Theory on the lines above, *Irreductions* does aim at being a book of Philosophy, if not a book on Philosophy. It aims at a form of systematicity, better yet of systematizing, where logical coherence is not mandatory. Where rationality is not the touching stone of system, effectiveness is. It aims at explaining how knowledge is built up and actually validated in practice. It aims at explaining how it is that things are made effective, made to act in and act towards an Ontology. How they are made real or resilient, made to be things altogether. By doing so, the scope of the work overcomes case-oriented studies and pushes for a wide arching understanding of reality, of how reification occurs. It touches borders with Philosophy. With as vast a scope as those scopes who require ontological trees, making do of discrete domains communicating between themselves, in continuity or discontinuity, organized in any sort of attempted coherent whole capable of making the parts intelligible and articulated.

The book does this by will, not by chance or accidentally, overcoming case studies. Similarly, Actor-Network Theory is not meant to remain but theoretical or but practical, meaning that ultimately it entices the goal of effectively building the collective by both. Which translates into building an Ontology. As a result, we are not faced with a mere

proposal of deconstruction and destruction. While Machiavelli's[118] analysis of the on goings and logics of power, however ruthless, may be of use in either overcoming it or in gaining it, forcing attention on how it actually is maintained and built-in practice, the same would occur with Actor-Network Theory. In terms of understanding how Ontology and ontologies are built and maintained.

Back to the designations at hand, none of the actual, or eventual, already mentioned or yet to be mentionable, aims at being or is fully consensual and fully exhaustive. By nature of the theory, this can hardly occur and hardly be acceptable[119]. None is, certainly, reducible to any other. All can and are to be connected. All can and are to be compared to each and every other. Even to agonistically face each other, while allying to one another. They are to be added, one to the others, others to the one. Stuck and stitched together in a weave, attached and linked on, associated network wise. As "Associology", one of the designations available, methodologically hints towards.

"Actor-Network Theory" is, nevertheless the canopy or gross entry I have chosen to stand beneath. Regardless of having to include many others under which connections may be built. Chronologically it is one of the first, on pair with Callon´s "Sociology of Translation". A viable first stronghold for both describing and understanding what is meant. Actor-Networks and how they relate by translating, by betraying, by associating as quasi-objects whose nature is being constantly performed, whose definitions are never ostensive.

Many more designations ensue, sure, behind this first or behind any other available one, with conflicting relations between themselves, as they should. Gaining ground on the theory is extending the network, none the less. Gaining designations and new associations is how extending works itself throughout. Each adds a piece to an unfinished

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118 Cf. Machiavelli, 1988 [1513-1514].
119 Cf. Law, 2009: 142: «Three, I've talked of "it," an actor network theory, but there is no "it." Rather it is a diaspora that overlaps with other intellectual traditions. As I have already hinted, it is better to talk of "material semiotics" rather than "actor network theory." This better catches the openness, uncertainty, revisability, and diversity of the most interesting work. Thus, the actor network successor projects are located in many different case studies, practices, and locations done in many different ways, and draw on a range of theoretical resources. How much those studies relate to one another is chronically uncertain, but this is better read as a sign of the strength of material semiotic sensibilities than as a weakness. In short, actor network theory is not a creed or a dogma and at its best a degree of humility is one of its intellectual leitmotifs.»

puzzle. Strongly punctuating one of its aspects, undermining others, hiding behind it a particular focus of practice, letting us be aware that conflict is not contradiction. Or, even if it is, the key point is that, for an Ontology, conflict and controversy are unavoidable. Formally contradicting views are at the heart of diving into Ontology in the making. Any given designation is a thread that if pulled can begin to un-weave, by weaving it further, what is this non discrete entity that is also called "Actor-Network" theory. The being and becoming of it along the tracing of the routes it endures by expanding network wise.

Irreductionism is perhaps what most applies to its route when working, first, on the case of Philosophy itself, second, on the encompassing views on knowing, knowledge gaining, Ontology, it fosters. Not non-reductionism, or a-reductionism, as reduction is in the end as much unavoidable to gaining knowledge as irreduction is necessary not to lose it. But irreductionism, the condition, not the complete act, of not reducing, the state of, not the end result, of not being reduced, of not reducing.

The plethora of designations does not, yet again, forcefully prove confusion. Unless the real, therefore Ontology, is confusing, which may very well be the case. If a reader believes otherwise, considering that to each thing its own clear name is a must, panopticons[120] a necessity, the theory will be locked out to such an approach. Vagueness is not an issue to Actor-Network Theory as it is placed alongside with the primary characteristics of what it studies, Ontology. As it is in practice and as it is built. One can say, by now, expanding it further ahead, that if something is not vague, at the onset at least, then it is artificial. Made deliberately to hide vagueness away, to choose reducing at front.

While Ontology is, weighing it further, as much a matter of choosing as choosing is a matter of many other processes from which, erroneously, choosing or being chosen seems to exist not. To make itself not coherently follow from. This available plethora of

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120 Cf. Latour, 2005: 181: «Oligoptica are just those sites since they do exactly the opposite of panoptica: they see much too little to feed the megalomania of the inspector or the paranoia of the inspected, but what they see, they see it well – hence the use of this Greek word to designate an ingredient at once indispensable and that comes in tiny amounts (as in the 'oligo-elements' of your health store). From oligoptica, sturdy but extremely narrow views of the (connected) whole are made possible – as long as connections hold. Nothing it seems can threaten the absolutist gaze of panoptica, and this is why they are loved so much by those sociologists who dream to occupy the center of Bentham's prison; the tiniest bug can blind oligoptica.»

designations tells us exactly of the particular choosing's of the entity at hand. How it grows, at what it aims, disseminating an actor-network in its own right, not reducible to a single denominator or property. The entity is multiple, heterogeneous, and theoretically intends to continue being so. Its frontiers are to be shaped, contracted or extended, shaken or stabilized, according to the theoretical perspective and mostly the concrete uses needed to unlock any given situation it works upon. Not aiming at being discrete, in both senses of the word.

Speaking of "both senses" we could in fact speak of many senses of any word or of any so-called thing. A deliberate play with polysemic apprehensions of what are called as if words, or as if things, or as if neither words nor things. Such polysemic apprehension does not run from metaphors, from literature, from fiction[121]. It does not run from thinking associatively at least as much, if not more, than logically thinking arguments as they are exposed. Such polysemic apprehension runs parallel with an outright privilege of Rhetoric[122] in the construction of Ontology. In the stabilization or destruction of ontologies. A Rhetoric of things as of words, persuading each other much further than the realms of texts alone[123]. If the reader shies away from, the theory will also be locked.

The chronological keystone for us to start associating now with greater precision is the theory, more the associated than the designated, as it appears in its forming moments

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121 Cf. Latour, 2005: 55: «This is why ANT has borrowed from narrative theories, not all of their arguments and jargon to be sure, but their freedom of movement. It is for the same reason we refuse to be cut off from Philosophy. It is not that Sociology is fiction or because literary theorists would know more than sociologists, but because the diversity of the worlds of fiction invented on paper allow enquirers to gain as much pliability and range as those they have to study in the real world. It is only through some continuous familiarity with literature that ANT sociologists might become less wooden, less rigid, less stiff in their definition of what sort of agencies populate the world.»

122 Cf. Latour, 1987: 30: «There are many ways to win over a jury, to end a controversy, to cross-examine a witness or a brain extract. Rhetoric is the name of the discipline that has, for millennia, studied how people are made to believe and behave and taught people how to persuade others. Rhetoric is a fascinating albeit despised discipline, but it becomes still more important when debates are so exacerbated that they become scientific and technical.»

123 Cf. Latour, 1987: 30: «Scientific or technical texts – 1 will use the terms interchangeably – are not written differently by different breeds of writers. When you reach them, this does not mean that you quit rhetoric for the quieter realm of pure reason. It means that rhetoric has become heated enough or is still so active that many more resources have to be brought in to keep the debates going.»

from 1978 up until 1990. Before the self-contradicting tendency to *black box*[124] it into faithful intermediations would gain more ground, run a straighter course. Self-contradicting, as the theory itself was and is a tool to instrumentally unbox those events, concepts, disciplines, whose stability and distinctness seems given and already framed in consensual stabilization. None of such occurring with Actor-Network Theory as neither it is stable, nor can it be fully distinct from where it looks at. Neither can it be presented as if it were a system, neat in well-defined concepts, constricting agreement or disagreement through clear pathways.

By *black boxing* what is meant at first are statements being passed onwards as if true, taken as already fully stabilized. Doubting them involving costs most cannot pay or do not wish to pay. At second a *black box* is a flawlessly working machine[125], making its way through faultlessly and unquestioned. In spite, machines and statements fail often. When they do not fail that often much of it results from careful maintenance of parts by specialized workers, institutions. Even the whole collective converging into their operation. Black boxed statements and machines, when not failing, can be used to further on ahead claims or actions, while disappearing into a background of unquestioned assumptions. Making them fail or tackling then when they have not yet succeeded is a taste greatly cherished in the practices of the theory. Paying the costs until it is no longer possible to.

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124 Cf. Law, 2009: 147: «Whether we are "big" or "small," the largest part of the webs we draw on and allow us to act are hidden. An actor is always a network of elements that it does not fully recognize or know: simplification or "black boxing" is a necessary part of agency.»

125 Cf. Latour, 1987: 29: «Buying a machine without question or believing a fact without question has the same consequence: it strengthens the case of whatever is bought or believed, it makes it more of a black box. To disbelieve or, so to speak, 'dis-buy' either a machine or a fact is to weaken its case, interrupt its spread, transform it into a dead end, reopen the black box, break it apart and reallocate its components elsewhere. By themselves, a statement, a piece of machinery, a process are lost. By looking only at them and at their internal properties, you cannot decide if they are true or false, efficient or wasteful, costly or cheap, strong or frail. These characteristics are only gained through incorporation into other statements, processes and pieces of machinery. These incorporations are decided by each of us, constantly. Confronted with a black box, we take a series of decisions. Do we take it up? Do we reject it? Do we reopen it? Do we let it drop through lack of interest? Do we make it more solid by grasping it without any further discussion? Do we transform it beyond recognition? This is what happens to others' statements, in our hands, and what happens to our statements in others' hands. To sum up, the construction of facts and machines is a collective process. (This is the statement I expect you to believe; its fate is in your hands like that of any other statements.) This is so essential for the continuation of our travel through technoscience that I will call it our first principle: the remainder of this book will more than justify this rather portentous name.»

It is not that Actor-Network Theory symmetrically treats successes and failures, though it pretends to. If it does aim at such equanimity, practice shows that a constant in its development is to emphasize conditions of failure. How failures could have occurred and mostly occur. The exceptional nature of success. The hard conditions it must meet, forcing those explanations of success not to be plain.

The theory thrives by, from simple basic concepts and approaches in the recording frame of an Ontology, a bit more than aids to description one could say, complexifying and adding elements and elements in multiple and heterogeneous interpretations to that same Ontology, woven web like as explaining attempts. Argument being that this, confusing as it may be, is more truthful to what there is, when and what there is, as it is, is not too soon reduced. Accordingly, no such thing as absolute or final conclusions are indeed possible on the theory itself and on what it deals with. Strong as they may appear the shattering blow is always nearby. Unless the absolute is taken as temporary, conditional and relative, which the theory can accept as well.

Totalitarian discourse, as in grasping the world in the palm of the hand, thereby deducing all not in the palm of the hand, is put out as treason to Ontology in practice. Victories if any are short and local. Able to accumulate, though, one on top the other, appearing as if global. Answers being performed, or not being answers at all. If ongoing attempts of black boxing the theory were never achieved for good, as the many designations and controversies surrounding it keep proving, such attempts did determine its more general reception. At least in fields away from the social sciences, where it begun, albeit bearing a view on the social not limited to the very distinction between exact sciences and social sciences. And in fields away from case studies, where it mostly ends when Philosophy, and specifically Ontology, do not enter the building.

Despite Philosophy having to enter the building, also in Philosophy the theory runs the risk of being fruitlessly black boxed into the already mentioned dichotomic terms and dichotomic concepts. Familiar to the philosophical tradition but not easily applicable to the theory without reframing them new. A dual symphony results from such attempts to thwart the confusion into a neat intermediary. Into a well-constructed premise without vagueness. Not being black boxable the work became marginal in Philosophy and in Ontology. Thought off as unworthy of serious attention by inability of clearly defining it. Dismissed or reduced according to any particular discipline approaching it. Mostly used

but as a tool to open out closed parcels of unsolved problems. At best a tool for deconstruction in the post-modernism wagon that it never wanted to ride on.

Not being black boxable, though, it could well maintain its extended scope and network among apparently distinct domains. Therefore, keeping its scope and aims, if a didactic presentation of the theory is sought which could simplify it beforehand, disappointment will surely follow. It is presupposed that Ontology is hands on hard toiling which cannot be done without dirtying the concepts down. Hammering worlds of forms as if they never ceased to be hot steel in the forge or anvil.

It is from 1978 up until 1990 that things were still freshly hammered and hot. The network was being woven frantically. Associations first laid out and engaging connections deployed. Of those, immediate and accepted ones are established from the start with Science Studies. More accurately with Science and Technology Studies[126], as seen in *Laboratory Work*, *Science in action*, and *Pasteurization of France*. *Pasteurization of France* whose second part is the text we are mostly dealing with. A text bearing a style different from any other at this stage, highly indicative in itself of the turn away from casuistic. Dwelling deep in transliteration of meaning from one domain to another. Overcoming in fact the case study who is published along with it. Connecting with Philosophy.

However, neither of these texts can be reduced to such a subfield of Science or Science and Technology Studies without choosing to heavily distort them. Science and Technology Studies themselves, then again, must be distinguished from Sociology of Science. Per se, they are to be exactly what would come after the failure of usual

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126 Cf. Latour, 1993 [1991]: 3: «For twenty years or so, my friends and I have been studying these strange situations that the intellectual culture in which we live does not know how to categorize. For lack of better terms, we call ourselves sociologists, historians, economists, political scientists, philosophers or anthropologists. But to these venerable disciplinary labels we always add a qualifier: 'of science and technology'. 'Science studies', as Anglo Americans call it, or 'science, technology and society'. Whatever label we use, we are always attempting to retie the Gordian knot by crisscrossing, as often as we have to, the divide that separates exact knowledge and the exercise of power - let us say nature and culture. Hybrids ourselves, installed lopsidedly within scientific institutions, half engineers and half philosophers, 'tiers instruits' (Serres, 1991) without having sought the role, we have chosen to follow the imbroglios wherever they take us. To shuttle back and forth, we rely on the notion of translation, or network. More supple than the notion of system, more historical than the notion of structure, more empirical than the notion of complexity, the idea of network is the Ariadne's thread of these interwoven stories. Yet our work remains incomprehensible, because it is segmented into three components corresponding to our critics' habitual categories. They turn it into nature, politics or discourse.»

sociologic explanations coming from Sociology of Science, in addressing the construction of hard facts. Those facts that resist significantly more than others. According to the theory mainly because they are better built, with more resources, by more people even, by more and more[127]. Tough this failure story is literally expressed in writing by Latour much later in *Reassembling the social*, while eluding the apparently strict distinction between matters of fact and matters of concern, it is easily seen since at least *Science in Action*.

Now would be the time to discriminate some key terms of the theory in a quasi-orderly fashion. In one way or another I am already doing that in what I believe is the best way to. But, on one hand, such presentation gains if inserted in the correlations, sensibilities and betrayals established through clashing with other disciplines and domains translated/betrayed/associated with. Showing how distinct designations and terms were and are being performed. How such performing borders are revealing conflicts. Controversies where the truths of the matters are laid out. On the other hand, such key terms are, as expected, not orderly defined, consensual, or stabilized into a static once and for all foundation stone. Never axiomatic and never non revisable.

The same can be said less, but still can, of given rules whose nature is more heuristic than formal. Landmarking's to instigate and initiate. Heuristic rules edging between the instrumental and Ontology, mostly found in Latour. Present in most of his crucial texts as calls to arms through a certain way of deploying. Contrary to others, though, such rules are not intended to logically follow one from the other. A bit more than pretexts, much

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127 Cf. Latour, 1987: 138-139: «We may now generalize a bit from what we have learned. If you take any black box and make a freeze-frame of it, you may consider the system of alliances it knits together in two different ways: first, by looking at who it is designed to enroll; second, by considering what it is tied to so as to make the enrolment inescapable. We may on the one hand draw its sociogram, and on the other its technogram (…) Carefully take note that the black box is in between these two systems of alliances, that it is the obligatory passage point that holds the two together and that, when it is successful, it concentrates in itself the largest number of hardest associations, especially if it has been turned into an automaton. This is why we call such black boxes 'hard facts', or 'highly sophisticated machines' or 'powerful theories', or 'indisputable evidence'. All these adjectives that allude to strength and power rightly point out the disproportionate number of associations gathered in these black boxes, so disproportionate indeed that they are what keep the multitude of allies in place. However, this disproportion often leads us to forget that they hold things and people tightly together only as long as all the other strategies are successful. Do these products of science and technics escape from the system of complicated alliances with which politics are managed, for instance? Are they less 'social' as people often naively say? Most unlikely; if they had to be qualified in these terms – which they don't - they would have to be 'described as more, much more 'social'.»

less than commandments or musts. There are seven, in *Science in Action*. Five in *Reassembling the Social*. Many more dispersed through *Irreduction*s and *We have never been modern* or *Modes of Existence*. Some to be mentioned across our exposition. To understand how such rules are meant to be deployed it is best to remember that properly applying the status of a theory to Actor-Network Theory is far less than consensual. Remaining aware that this is yet again not seen as a weakness but as a characteristic.

On the issue, for John Law Actor-Network Theory is not a Theory[128]. Even if it can be occasionally presented as such, doing it thus amounts almost to a worthless detour, an empty of use and utility pursuit of disentangling the gordian knot. The theoretical battlefield is not the privileged spot where he wishes to confront the tasks of Ontology in his Material Semiotics. To concur, one has but to remember the conundrums and specificities of how theories would articulate, as if apart while juggling each other in a play of equilibrium, with practices and with truths, or confirmations, or corroborations, or falsifications. Or one could call to arms, as if they happened sequentially and neatly split, neatly contextualizing each other, contexts of discovery, contexts of justification. Or pursuits of what is observational or not in a theory to finally put along intricate treatises on what makes a theory be a theory. Lining up most of the time how statements logically follow in it or from it[129].

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128 Cf. Law, 2009: 142: «Second, the actor network approach is not a theory. Theories usually try to explain why something happens, but actor network theory is descriptive rather than foundational in explanatory terms, which means that it is a disappointment for those seeking strong accounts. Instead, it tells stories about "how" relations assemble or don't. As a form, one of several, of material semiotics, it is better understood as a toolkit for telling interesting stories about, and interfering in, those relations. More profoundly, it is a sensibility to the messy practices of relationality and materiality of the world. Along with this sensibility comes a wariness of the large-scale claims common in social theory: these usually seem too simple.»

129 Cf. Latour, 1987: 58: «Convincing is not just a matter of throwing words about. It is a race between the authors and the readers to control each other's moves. It would be enormously difficult for one 'average man' to force off their paths '2000 Demosthenes and Aristotle's in a matter where, at first sight, every direction is equally possible; the only way to decrease the difficulty is to dam up all the alternative channels. No matter where the reader is in the text, he or she is confronted with instruments harder to discuss, figures more difficult to doubt, references that are harder to dispute, arrays of stacked black boxes. He or she flows from the introduction to the conclusion like a river flowing between artificial banks. When such a result is attained – it is very rare – a text is said to be logical. Like the words 'scientific' or 'technical', it seems that 'logical' often means a different literature from the illogical type that would be written by people with different kinds of minds following different methods or more stringent standards.' But there is no absolute break between logical and illogical texts; there is a whole gamut of nuances that depend as much on the reader as on the author. Logic refers not to a new subject matter but to simple practical schemes: Can the

One may as well postulate resemblances to worlds of ideas and forms where given statements, some or all or just one, float away from empirical revision disconnected fully or partially from any possible practice. Or where certain opposing statements turn undecidable questions in the end often by the way in which they are posed at. Worthwhile a pursuit as this may be, the spectrum of practice, if it must be clearly distinguished from the theoretical, appears from the onset as more able to cut the gordian knot and move on with other bindings who may bear greater crops.

Accordingly, for Latour «in theory theories exist, in practice they do not»[130]. Claiming the status of theory in any strong non deflated way would run alongside the risk of losing the essential focus, as much theoretical as it is practical but certainly practical, of what is aimed at through the multiple designations birthing out of Actor-Network Theory. Including the one of Actor-Network Theory. That it is or not a theory, relevant as it may turn or not to be, becomes lesser relevant comparingly. Likewise, the word itself is the least important, almost a side note or an extra, in the whole expression "Actor-Network Theory".

Finding a small set of fundamental assertions from which to deduce or propose observational consequences is crucial, no doubt, so the word "Theory" is also there[131]. But it is not all that very much relevant when the conditions of success and failure of an Ontology are described and followed. Sets to it are, according to Actor-Network Theory, never small enough and never neat enough for the flight to theory to be done for long without skipping back the practicalities and particularities aimed at[132]. While pursuing

reader get out? Can he easily skip this part? Is she able, once there, to take another path? Is the conclusion escapable? Is the figure waterproof? Is the proof tight enough? The writer arrays whatever is at hand in tiers so that these questions find practical answers. This is where style starts to count; a good scientific writer may succeed in being 'more logical' than a bad one.»

130 Latour, 1998: part 2, 2.1.7.1, 178.

131 Cf. Latour, 1987: 243: «Perhaps it would be best to do away altogether with the tainted words 'abstraction' and 'theory'. However, even if it is easy to do away with them, and with the cult rendered to them, we still have to account for the phenomena they point at so clumsily.»

132 Cf. Latour, 1987: 134-135: «Going further and further into their fantasies, they invent geniuses who did it all, but only 'in the abstract', only 'seminally', only 'in theory'. Sweeping away the crowds of actors, they now picture geniuses that have ideas. The rest, they argue, is mere development, a simple unfolding of the 'original principles' that really count. Thousands of people are at work, hundreds of thousands of new actors are mobilized in these works, but only a few are designated as the motors that move the whole thing. Since it is obvious that they did not do that much, they are endowed with 'seminal ideas'. Diesel 'had the idea' of his engine, Pasteur 'had the idea of asepsis'... It is ironic to see that the 'ideas' which are so

this novel problem, to add to the pile, we can at least draw some productive mottos on the designated or associated entity under trial.

First that if applied to Philosophy it would make very hard to accept theoretical life as the standing goal of the discipline. Also, it would make it very hard to accept that, if it were such the defining goal, would such a goal be the best possible goal it could aim towards. Or at least that such a goal cannot be directly aimed without failing Ontology and failing an effective intended composition of the collective. Positively, we do get more ground on methodological presuppositions to which general principles and rules give voice. How they may lead to the furthering of an Ontology which resists. Exemplifying, accelerated explanations, where the diverse is subsumed by general terms are to be overridden. Categorization can never work top down, to use the expression, climbing into concepts as a metaphor proves as erroneous as descending into phenomena does.

The ground is to be made flat[133], allowing travel from peculiarity to peculiarity, from singularity to singularity, under the metaphor of the network which does not necessitate neither a up or a down. The mistrusts mentioned as per the full integration of the theory aspect do extend to the split between method, as abstracted and abstract with an organization of its own, and methodology. In practice, a step-by-step dirtying of hands in the realities under guide lining lenses, where universality is surely dismissed, but also where apparent clusters of it may be built locally with great pains, great resources, great collective collaboration. Whatever appearance of universality coming of such clusters is to be dully recorded, empirically described. A radical empiric stance in the most concrete

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valued when people talk of science and technology, are a trick to get away from the absurd consequences of the diffusion model, and to explain – away – how it is that the few people who did everything nevertheless did so little.»

133 Cf. Latour, 2005: 174: «What is so important for our project is that, in such a flattened topography, if any action has to be transported from one site to the next, you now clearly need a conduit and a vehicle. In the other landscape, the embedded context and the embedded actor were so incommensurable, they were separated by such an unaccountable gap, that there was never any way to detect through which mysterious vehicle action was carried out. But that is not the case if the landscape is kept obsessively flat. The full cost of every connection is now entirely payable. If a site wants to influence another site, it has to levy the means. The tyranny of distance has been underlined again. Actors have become accountable. But if something is allowed to be 'inside' something else, then the third dimension of society is added and the whole of Merlin's castle pops up out of the lake. To stop this magic, we have to make sure that no extra dimension will be added.»

down to earth terms is then at stake. To be exhausted before any hint of an explanation is attempted.

On explanations, predominantly when worked out apart and away from what they mean to explain, mistrust rises higher still, as we already stressed. Explanations, predominantly if spoken for as conclusive and final, are almost always exchanged for greater and greater, more and more detailed, emphasis on descriptions and recordings. A guide lining motto for Actor-Network Theory could then be expressed as explaining less, describing more, registering better. The emphasis is as much on the act of describing as a tracing and as a doing as in the heuristic assumption that after a trail-like exhaustive description, a trail like exhaustive registering, with a vocabulary which does not presuppose universals, irreducing them, what is left to explain will be tendentially little or will take care of itself by describing pursued to limits.

If intelligibility is still found lacking, this would demonstrate a comparatively poor description after all. Or, in limit cases, the impossibility of intelligibility in the present times and spaces of what is being described. Thwarting such present impossibility with an explanation instead of faulting the describing and the registering, albeit satisfying to the need of framing and understanding, would cease the opening of unknown, yet undescribed, unregistered, unconnected, that the lack of intelligibility reveals. Explanations are, thus, a dangerous animal to be approached with care, severe mistrust, as they may lock Ontology into an idea, a form. A casket of theory to which nothing resonates or resonates lesser and lesser.

The foundational, if any, methodology of work ought to be the complete grasp of descriptions. Not the search for explanations. As much as this implies intelligibility gaps, it is still favourable towards truthful Ontology as, per the guidelines fostered, no better solution is there for the taking. The end game being that Actor-Network Theory will leave us wanting when it comes to grasping the world, or the whole, in theoretical hands. The doubt there entailed is not cartesian, hyperbolic, or preliminary, but constitutional. Certainty is a coin not of this world and never ever is it free, also.

If the greatest effort is to be placed in completing descriptions and recordings, with a vocabulary and tools the less theory laden as possible, not in proposing explanations aiming to subsume or induce from few data, Ontology then depends largely on correctness of description and quantitative collection and treatment of data. Perhaps more than on any

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other factors. Still, to further once more our problems, the possibility of a faithful description, a faithful ultimate pure rendering of the phenomena, phenomena one forcefully mingles with, instead of detachedly observing them as if external to them, is systematically taken as impossible to achieve. Translations and treasons are at the core of any description, of any Ontology in the making. Leading description itself to become just another form, saner perhaps, of reduction.

Collecting data suffers a similar detour. For data to be collected a choosing is ever at stake plus translation and treason from the means of collecting them. Be they technological or human, more or less sophisticated. Plus, translation and treason in the metrologies that populate experience so that it may be collectable and framed. Metrology[134], sampleable as how to measure, is a fundamental in Actor-Network Theory and a favourite target of all efforts at irreducing.

Adding to the impossibility, fact is whatever is collected or described is already being said differently, translated and betrayed. Moved and exchanged in circulation through the work of a multiplicity of heterogeneous actors. With describing tools, the same occurs. With means of data collection even more still, with great accent at this regard placed on the invisible role of bureaucrats or, as Latour calls it, *paper shufflers*[135]. Archivers and classifiers, the often-ignored armies who entangle, compare, and correlate data in forms others can have access to. All of these are brought to the forefront before any explaining is sought.

Success or unsuccess of any explanation analogues, that they linger more and linger further, is traceable mainly on these three key areas. Description and needed tools, data collection and needed tools, paper shufflers and needed tools. Tools need not be homogeneous. They may be given objects, given ideas, given thus called theories, or, most likely, all of these. Network wise related in a way where splitting them apart is but

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134 Cf. Latour, 1990 [1986]: 28: «Metrology is the scientific organization of stable measurement and standards. Without it no measurement is stable enough to allow either the homogeneity of the inscriptions or their return.»

135 Cf. Latour, 1987: 254: «If we extend the meaning of metrology to include not only the upkeep of the basic physical constants but also the transformation of as many features as possible of the outside in paper forms, we might end up studying the most despised all the aspects of technoscience: the paper-shufflers, the red-tape worms, the bureaucrats.»

artificial. Guide lining rules to navigate Ontology are then ultimately as negotiable, translatable and betrayable, as the Ontology they make indissociable part of.

Here, to advance further, we grasp yet one more strong presupposition of Actor-Network Theory. A presupposition which travels as much in the realms assigned to hard facts as in those of Sociology and politics. The latter usually assigned to softer, more changeable facts. A presupposition present and active in all applications of it from Science and Technology Studies to Sociology, which must be included in any Ontology coming from it. The presupposition is simply that it is not possible to do better[136]. That those believing it is possible to do better by ignoring the revisable and unstable translation-treason of gaining knowledge as much as the revisable and unstable translation-treason of collective building, those will always do a worse job as Ontology occurs in negotiation and is ever being negotiable.

It is just that negotiation, gains and losses, conflicts and outright wars, are being played out by multiple forces of which humans, to whom negotiation is usually exclusively applied, are but one. One in which much of what is usually called non-human already plays part. One which nevertheless is already a multiplicity. From the impossibility of doing better also follows that the accumulation of descriptions is, all things considered and, in most cases, favoured to pushing for explanations. However, what is intended as favoured are descriptions as often as possible replacing "what" for "how". Not immediately, for example, what is science, but, instead, how is science. Descriptions are to be a description of how.

Ontology becomes first a work of following the how's of translations, betrayals, stabilizations, movements. Why and what, if needed, come much later on. Up to a great degree to be made evident by the conflicts and controversies descriptions reveal where nodules of networks clash. When they do not, and if still pushing for intelligibility, or if wishing to make change effective, yet more irreduction turns out needed. With it, while extending the possibilities for description, Philosophy will enter the building. Before it does, however, one must tackle the vital correlation with Science and Technology

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136 Cf. Latour, 1988: part 2, 4.7.11, 235: «Those who think that they can do better and work more quickly will always do worse because they will forget to share their only means of knowing and testing. They will believe that they have done enough when they have "diffused" reasons, codes, and results. In fact, all of these wither once they are removed from the scorned networks that keep them strong.»

Studies. As in making known what, in them, made such a striking contribution towards the growth and overall tone of Actor-Network Theory.

1.3. ANT and Science and Technology Studies

Science and Technology Studies aimed, awkward as this may seem, to provide a realistic depiction of scientific practice and of the production of hard facts. At explaining, by a careful description, not only how it worked but also, in the end, why it worked successfully when it did. Realistic meaning down to earth. That was the original intention. Highly successful as it may be, scientific practice could not be so, recovering a famous argument, due to a miracle. As much as one would be hardly pressed, for example, to keep referring to a supposed birth of Philosophy as the Greek miracle. Realism in the description of scientific practice would hardly entail, on the other hand, that one would be forced to adopt a realistic stance on its conclusions. This would amount to a *non sequitur*.

What can be said is that it often works spectacularly, having often failed many times throughout time. The exceptional successes it fosters do not allow, at first, a strong stance of realism belief. Not only because it fails many times, repeated failures almost being a pre-condition to exceptional successes but, mainly, because such conclusion appeared to ignore, methodologically as Actor-Network Theory takes it, full attention to how science is done in practice. The full description of such a practice as nothing more than a practice. The question of success, and ontological consequences thereof, seemed wrongly placed without it. Or highly restricted to some selected elements of that success. Why it works ought to be directly related, if with anything and not miraculously or not by assuming immediately a realistic stance, with how it works when it does.

Then, neither theory nor methods actually do the work. People and institutions and resources and technologies and networks do. Reducing such success to a few lines of theory and methodological guidelines seemed, for lack of a better word, devastatingly naïf. However sophisticated the presentation of such methodologies and theories might have become. A parallel can be brought out with politics. One who would try to explain politics realistically by doctrines on legal constitutions would soon be dismissed as ignoring reality. Same as one who would, from the success of a given political regime, explain it as being the real system underlying human nature. No Ontology could detonate

from such a reduced blind sightedness. Evidently, the above thesis apparently wants to imply that a neat separation between science and politics, when it comes to Ontology, does not stand if practice is the touchstone[137].

Whatever comes, the connection with Science and Technology Studies is vital. Only on pair with the role Sociology ended up taking. The connection with Sociology is strong from the start, with Callon at the forefront, ending, and beginning, with a Sociology of translation. It entailed the denial of usual tenets of the discipline in methodology (the so called studying down), most explanatory tools and concepts (power, gender, capitalism). This will be expanded later on Latour´s career, showing itself in a Sociology of associations, an "associology"[138], via the recovery of Gabriel Tarde[139] as opposed to a Sociology mainly grounded on Durkheim. Highly present in *Irreductions* already as a core element, while calling forth the slopes where reason and force collide[140].

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137 Cf. Latour, 1988: part 2, 4.7.11., 235: «When Voltaire wanted to pillory religion, he used to sign his letters "ecrelinf" – eradicate the infamous." Religion had done its worst, and more than the worst. Today we find ourselves in the same position. We would never have been able to dream up such a source of marvels, enthusiasm, and warmth, an epiphany to match what we vulgarly call "the sciences." And yet until the millennium ends, we must sign our letters with the same word, "ecrelinf." To have knowledge in the next millennium, to be able to talk of exactness without being abused by the irradiated, we must save the knowledge from "the sciences" just as the divine has been saved from the empty shell of religion. Through love of the divine we have had to extirpate everything that was religious within us. Through love of knowledge we must disentangle ourselves from "the sciences."»

138 Cf. Latour, 2005: 9: «To clarify, I will call the first approach 'Sociology of the social' and the second 'Sociology of associations' (I wish I could use 'associology').»

139 Cf. Tarde, 2012 [1893]: 52: «All Philosophy hitherto has been based on the verb Be, the definition of which was the philosopher's stone, which all sought to discover. We may affirm that, if it had been based on the verb Have, many sterile debates and fruitless intellectual exertions would have been avoided. From this principle, I am, all the subtlety in the world has not made it possible to deduce any existence other than my own: hence the negation of external reality. If, however, the postulate I have is posited as the fundamental fact, both that which has and that which is had are given inseparably at once.»

140 Cf. Latour, 1988: part 2, 4.7.8., 234: «To oppose right and might is criminal because it leaves the field free for the wicked while pretending to defend it with the potency of what is right. But what is right is without force except "in principle." And so being unable to ensure that what is right is strong, people have acted as though what was strong was wicked. The strong have simply occupied the space left vacant by those who despise them in all innocence. As a result of a comprehensible reversal, Machiavelli and Spinoza have been held to be immoral, even though they were right to refuse to distinguish might from right. But the present precis differs from Spinoza's *Tractatus Theologico-Politicus*. Times have changed. The exegesis of religious texts has now been replaced by the exegesis of "scientific" inscriptions. For this reason I think of this essay as a *Tractatus Scientifico-Politicus*. Even so, the object is the same. We are still right at the beginning of the exegesis, and the link between science and democracy has become tenuous in the course of the "wars of science." Like Spinoza, we look cruel in order to be fair.»

Science and Technology Studies would have brought two key notions into Actor Network Theory´s development. The first amounted to the impossibility of clearly discriminating, in practice, between what is said to be natural, what is said to be social, and what is said to be symbolic. For Latour, in 1990[141], Actor-Network Theory is also an answer to providing a vocabulary able to cope with this impossibility. As it unfolds when one follows the movement of actors and networks while Ontology is built. Science and Technology Studies would have shown that, in practice, these three categories come mingled and mixed in contradictory ways. Regardless of how they are being defined previously to diving in practice. However coherent they may appear in theoretical treatises their relation is as tumultuous and conflicting as to make their distinction impossible when wanting to track what there is.

Worse, they are once again the after results of tinkering, not the starting points that have to be established first to surely move on afterwards. Effects as performed and constructed as anything else as controversies on their limits and interactions show. What follows this gordian knot like impossibility is a methodological rejection of these three categories in the description of what there is, moreover as if possessing different logics of analysis making their asymmetrical treatment worthwhile. The methodological rejection states that it is prejudicial to, given the impossibility of clear discrimination and the amount of displaced work it entails, accept these three fields as a given by including them from the onset, in general, as a guiding principle, concretely, in any investigation at hand.

A new vocabulary was needed, one which dispenses splitting phenomena between them, dispenses packing them in previous sets to further ahead apply. From the methodological rejection an ontological rejection is soon to be added. By finding gains in not grounding descriptions on the distinctions between natural, social, or symbolic, it

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141 Cf. Latour, 1996 [1990]: Abstract: «Three resources have been developed over the ages to deal with agencies. The first one is to attribute to them naturality and to link them with nature. The second one is to grant them sociality and to tie them with the social fabric. The third one is to consider them as a semiotic construction and to relate agency with the building of meaning. The originality of science studies comes from the impossibility of clearly differentiating those three resources. Microbes, neutrinos of DNA are at the same time natural, social and discourse. They are real, human and semiotic entities in the same breath. The article explores the consequence of this peculiar situation which has not been underlined before science studies forced us to retie the links between these three resources. The actor-network theory developed by Callon and his colleagues is an attempt to invent a vocabulary to deal with this new situation.»

remains to be shown that, at the end of a research, such distinctions have to be recovered or regained. That they are useful or shed any extra light on the nature of what is being studied along. The conclusion is negative. By making clearer how qualifications of social, symbolic, or natural, are accolated to any given object or entity, which effects are induced by such qualifications (to whom or to what, against whom or against what), what is the process by which they are attributed, as much empirically described as possible (who, where, when, how), it is found that these three categories are limiting and do not correspond to a more faithful depiction of what there is, how it is.

At most, they are but badly constructed abbreviations. Memory handles to be eliminated if the how and what of Ontology is to be sought. The methodological rejection coming out of an impossibility turns into an ontological rejection towards making a better constructed and more complex Ontology possible. Such an Ontology may only be done by becoming aware that discriminating between nature and of nature, social and of society, symbolic and of the symbolic, does not resist basilar trials. Therefore, they cannot be taken as real and cannot be included in an Ontology.

To an Actor-Network terminology and corresponding heuristic rules, acting as guiding principles, some words used above are fundamental. Effect, attribution, how. Of the how we already spoke but, still, it is key to keep remembering that answering to how is crucial both in the methodology and in the Ontology. In the Ontology, knowing what a thing, what an "x", is, is almost equated with knowing how it is. Including knowing how it is performed, enacted. The point is stressed by Latour as «Knowledge does not exist - what would it be? There is only know-how.»[142].The rule here is adamant, even when it borders a certain triviality. It is impossible, practically, to speak of anything without speaking of how it is, how it is gained, how it wins or fails.

 Articulating how a thing is equates as well to articulating which tests, trials, or proofs, make it accepted as being such, for now. Regarding knowledge, under which trials it becomes accepted as such, by whom, when, and where. The applicability of the how is not tainted by previous definitions of the objects it is applied to. Be they material, said to be ideal, said to be abstract or concrete, natural, social symbolic. The how would apply to "love" as much as to any given technological machine, without necessarily reducing

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142 Latour, 1988: part 2, 3.4.2, 218.

one domain to the other[143]. Suffice to say that "how is love", for example, would be a perfectly well-placed question. That any worthwhile answer to "what is love" would entail a thorough description, first and foremost, of such a how. This takes us away from formal definitions of knowing, as used in epistemic logics for example. From formal Ontology, on the same grounds.

It does not mean that formal theorizations have to be banished for good in favour of a naïf pragmatism. It does mean that the question of the how is valid towards those same formalities in the same concrete and down to earth terms. *Science in Action*, the book most easily relatable with Science and Technology Studies, where the very much present Actor-Network Theory is never directly mentioned, stops short exactly on the problematization of forms and of abstractions. *Irreductions*, dealing more within an ontological perspective, takes the issue at a new light where forms become shapes, a word with a much more concrete feel.

"Attribution"[144] works side by side with "construction", to be dealt further ahead in detail. As for the relevance of "effects", it can be first explained by a reflection not very deep in philosophical analysis. Somehow quite easy to understand both methodologically and ontologically and already mentioned when we mentioned causality. To find the exact causes of something is to regress tendentially towards infinity, with a great degree of

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143 Cf. Latour, 1987: 58: «It is crucial to grasp that these two adjectives ('objective', 'subjective') are relative to trials of strength in specific settings. They cannot be used to qualify spokesperson or the things he or she is talking about once and for all.»

144 Cf. Latour, 1987: 118: «So as not to be confused, we should distinguish the recruiting of allies so as to build a fact or a machine collectively, from the attributions of responsibility to those who did most of the work. By definition, and according to our first principle, since the construction of facts is collective, everyone is as necessary as anyone else. Nevertheless, it is possible, in spite of this necessity, to make everyone accept a few people, or even one person, as the main cause for their collective work. Pasteur, for instance, not only recruited many sources of support, but also strove to maintain his laboratory as the source of the general movement that was made up of many scientists, officials, engineers and firms... Although he had to accept their views and follow their moves – so as to extend his lab – he also had to fight so that they all appeared as simply 'applying' his ideas and following his leads. The two movements must be carefully distinguished because, although they are complementary for a successful strategy, they lead in opposite directions: the recruitment of allies supposes that you go as far and make as many compromises as possible, whereas the attribution of responsibility requires you to limit the number of actors as much as possible. The question of knowing who follows and who is followed should in no way be asked if the first movement is to succeed, and nevertheless should be settled for the second movement to be completed. Although Diesel followed many of the people he recruited, translating their common interest in an ambiguous mixture, in the end he had to make them consider his science as the leader they followed.»

impossibility towards practically doing it[145]. Behind a cause one would always find another[146]. A chain where to find a beginning is quite problematic, unless severe artificial restrictions are placed onwards. Either a multitude of causes too large to be counted is included in the causal explanation, making the instrumental utility of using it fall, too many for one to explain the effects, or choosing a small set while stopping artificially the following of actors through enquiry is how to proceed. Philosophy has no doubt debated this difficulty since its inception.

Then, what is exactly a cause, and how it is, is far from consensual, hardly easy to discriminate. It is not the least immediate to understand what is meant by A causing B, or B being caused by A[147]. Not to mention the already established critiques to causality itself when it comes to considering it a relation occurring in the world, not just in our minds. Against the methodological utility of searching for causes, in Actor-Network Theory, also stands the theoretical claim or prejudice that by knowing causes, knowledge of effects would ensue as if they were contained in the cause, which is ontologically not true. No thing, to use the term "thing" would contain another. Instead, some things do associate with others in ways where stability may become predominant[148].

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145 Cf. Latour, 2005: 58: «If it were really the case that input predicts output, then it would be better to disregard the effects and be attentive to the causes where everything interesting has already happened – at least potentially. For mediators, the situation is different: causes do not allow effects to be deduced as they are simply offering occasions, circumstances, and precedents. As a result, lots of surprising aliens may pop up in between.»

146 Cf. Latour, 2005: 59: «As long as they are treated as causes simply transported through intermediaries, nothing will be added by the vehicles chosen to carry their effect forward. Causes, in such a strange and very archaic theology, are supposed to create things ex nihilo.»

147 Cf. Latour, 2005: 39, note 30: «That the relations between causes and effects are to be altered requires nothing out of the ordinary. Before the lily has learned to extract the sun energy through photosynthesis, the sun is not the 'cause' of the lily; before Venice learned to rise out of the water, the lagoon was not one of the reasons for its development. Causes and effects are only a retrospective way of interpreting events. This is true of 'social' and 'natural' events.»

148 Cf. Latour, 2005: 59: «Again, it might look like hair-splitting, but the differences in the type of cartography are immense. The first solution draws maps of the world which are composed of a few agencies, followed by trails of consequences which are never much more than effects, expressions, or reflections of something else. The second solution, the one preferred by ANT, pictures a world made of concatenations of mediators where each point can be said to fully act. Thus, the key question for a social science is to decide whether it tries to deduce from a few causes as many of the effects that were there 'in potentia', or whether it tries to replace as many causes as possible by a series of actors—such is the technical meaning that the word 'network' will later take.»

If it does, regularity and difficult reversibility appearing, other things must be brought to the description as to make clear why this is so. Without justifying it by taking one thing as the cause of another. Actor-Network mistrust on the use and search for causes and on the realty of causality relations themselves comes, also, from the above, preferring to eliminate, at first, causality and causes as not useful for description. Further on, for attempts at explaining. Whatever is faced in a research is then seen as an effect coming from a potentially infinite set of other things acting's. Be they events, situations, objects, humans. Most usually all of these together according to associations not easily uncovered. Attributing the status of cause to one or several elements of such a set is deemed as unsatisfactory. Such element, or elements, will as well be an effect of an equally potentially infinite set of other things[149].

It would seem wrong to speak of effects without necessarily appealing to causes. A sort of illusionist strategy from the get-go. But it seems more straightforward practically, to Actor-Network Theory, that effects, effectuations, things becoming effective, do occur. And it is not necessarily the case, even in Philosophy, that causes and effects must bind. On the long run, Actor-Network Theory will search for sets of effects, sets of effectuations. Ways in which things are made effective and associate with other effects. With other things who are effective or are being effectuated. Therefore, no search is there for causes, be they adjectivized as natural, social, or symbolic. Methodologically, causes are emptied out.

What follows through is that, albeit somehow more visible, somehow acceptable, it becomes theoretically poor to keep referring to effects when causes are banished for their

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149 Cf. Latour, 2005: 104: «With my voluntarily narrowed mind I'd say that if social element A is said to 'cause' the existence of B, C, and D, then not only should it be able to generate back B, C, and D, but it should also account for the differences between B, C, and D, except if it can be shown that B, C, and D are the same thing, in which case their differences can be declared unimportant. If you peruse the social history literature and look at the number of things that are supposed to be caused by 'the force of society', the rise of the modern state, the ascent of the petty bourgeoisie, the reproduction of social domination, the power of industrial lobbies, the invisible hand of the market, individual interactions, then the relation might just be one where a single cause has a million effects. But a cause is a cause is a cause. Is the causing element able to account for the differences between millions of effects – in which case can I generate B, C, and D as consequences when I hold A as a cause? Or are these differences between millions of events really immaterial – in which case sticking simply to cause A implies that I hold everything as important, minus marginal perturbations? In both cases, the A cause is indeed, for all practical purposes, substitutable with the millions of B, C, Ds, etc. But with the 'ascent of the petty bourgeoisie', do I really grasp what happened in England, France, and Germany from the 15th to the 20th century?»

explanation. By eliminating causes successfully, the need for a new terminology is made clear. With it, only the general principle of effectiveness is to be kept as a handle. Causality, as a whole, cannot after all survive for long the banishing of one of its polarities. Its descriptive utility being overridden it is the relation itself that must be replaced. This extra step is achieved by putting forward translation-betrayal[150], mediation and intermediation, association, as the irreduction of what exactly occurs when, falsely, one speaks of causes and their effects. This is not that original a movement, Hume coming to mind. Whatever goes, it is at the core of Actor-Network Theory, a novelty that may bear the biggest fruits[151].

The second key notion that Science and Technology Studies brings to Actor-Network Theory comes from what may be seen as a spectacular failure. The failure that Sociology of Science would have debated with, when using its instruments and conceptual apparatus, to explain the construction, dissemination, and survivability of scientific facts[152]. Mainly the way of the how in which such facts, if successful, resist.

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150 Cf. Latour, 2005: 108: «So, the word 'translation' now takes on a somewhat specialized meaning: a relation that does not transport causality but induces two mediators into coexisting. If some causality appears to be transported in a predictable and routine way, then it's the proof that other mediators have been put in place to render such a displacement smooth and predictable.»

151 Cf. Latour, 2005: 107: «The direction of causality between what is to be explained and what provides an explanation is not simply reversed, but thoroughly subverted: the contagion redraws the social maps. The British Empire is not only 'behind' Lord Kelvin's telegraph experiments, it is also given a reach, a faster reaction time, a durability it will never have without the tiny cables laid out on the ocean. Kelvin's science creates, in part, the Empire, which is no longer in the background manipulating him unwittingly but made to exist by telegraph wires that are turned into full-blown mediators. It is this reversal in causality that ANT tried to register first for science and technology and then for every other topic. This is where it got the strange idea that the social was to be explained instead of providing the explanation. We all began to wonder: if we were good enough at describing so many mediators, we would realize that there is no need any more for a society that lies 'behind'. As I have said in the introduction, to use the word social for such a process is legitimated by the oldest etymology of the word socius: 'someone following someone else', a 'follower', an 'associate'. To designate this thing which is neither one actor among many nor a force behind all the actors transported through some of them but a connection that transports, so to speak, transformations, we use the word translation – the tricky word 'network' being defined in the next chapter as what is traced by those translations in the scholars' accounts.»

152 Cf. Latour, 1988: part 2, 4.5.2, 224: «The supplement of force gained in the laboratory comes from the fact that lots of small objects are manipulated many times, that these microevents can be recorded, that they can be reread at will, and that the whole process can be written for people to read. Skill is needed and lots of money, but witchcraft is not involved. • It does not matter whether they are nebulas, corals, lasers, microbes, Gross National Products, or I.Q. scores. It does not matter whether they are "infinitely large" or "infinitely small." They are only talked about with confidence when they are brought to a small space where

Are resilient, are able to show a great degree of permanence, grow into effectiveness and efficacy. These overall characteristics can be translated by two words, ideas or forces, intimately associated in Actor-Network Theory. The first is "reality", the second is "strength". They are co-dependent to the point one could, as in Actor-Network, place a hyphen among the two. Not quite that different, not quite that equal.

The binding hyphen between them are tests, trials of strength[153], trials. Another fundamental guiding principle, key notion. It is taken as more real what is more able to resist to tests, trials. Those capable of placing what is being tested under duress. Such tests, trials, are what measures the actual strength, relative to them, that a given "x" possesses. Such tests, trials, are not to be seen as homogeneous, uniform, or limited to a single kind. One may fit multiple "x", other only one, another may even be invented for an "x" who is not yet there or not yet named. Trials can be extremely varied, extremely simple or extremely complex, multiple and heterogeneous. While a given "x" resists such trials that apply to it, it is said to be more real, in a gradient of strength. Or still real, in a gradient of strength. When it doesn´t, it is said to be less real, in a gradient of strength, likewise. Thus, nothing can be said to be real per se[154]. Only according to the specific tests, trials, it suffers in a given time, also subject to trials, a given space, also subject to

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they can be dominated by a few people and made to display signs-curves, figures, points, rays, or bands-which are so simple that agreement is possible. We can only stutter about the rest.»

153 Cf. Latour, 1987: 79: «What is behind the claims? Texts. And behind the texts? More texts, becoming more and more technical because they bring in more and more papers. Behind these articles? Graphs, inscriptions, labels, tables, maps, arrayed in tiers. Behind these inscriptions? Instruments, whatever their shape, age and cost that end up scribbling, registering and jotting down various traces. Behind the instruments? Mouthpieces of all sorts and manners commenting on the graphs and 'simply' saying what they mean. Behind them? Arrays of instruments. Behind those? Trials of strength to evaluate the resistance of the ties that link the representatives to what they speak for. It is not only words that are now lined up to confront the dissenter, not only graphs to support the words and references to support the whole assembly of allies, not only instruments to generate endless numbers of newer and clearer inscriptions, but, behind the instruments, new objects are lined up which are defined by their resistance to trials.»

154 Cf. Latour, 1987: 93-94: «Laboratories are now powerful enough to define reality. To make sure that our travel through technoscience is not stifled by complicated definitions of reality, we need a simple and sturdy one able to withstand the journey: reality as the Latin word *res* indicates, is what resists. What does it resist? Trials of strength. If, in a given situation, no dissenter is able to modify the shape of a new object, then that's it, it is reality, at least for as long as the trials of strength are not modified. (…) The minute the contest stops, the minute I write the word 'true', a new, formidable ally suddenly appears in the winner's camp, an ally invisible until then, but behaving now as if it had been there all along: Nature.»

trials, by given people, also subject to trials, by given objects or tools, also subject to trials.

Tests and trials, thus, do not occur in a conceptual limbo. Though they may use concepts they use much more than just concepts. Apart from such tests and trials, there is no underlying absolute reality and no underlying absolute reservoir of strength which may be made present in an Ontology. One aspect of what irreducing is all about is the uncovering and the refinement of such trials. Conjoining the most trivial with the most elaborate. Strength is then nothing more and nothing less than the ability shown or not in resisting given trials. Which cannot be determined beforehand for good, as neither their results can. More, any given "x" is defined and definable only by how it resists to, deals with, specified tests, trials. By the how of its performance as it is acted on, acted with, and enacted.

Thus, tests and trials compromise what they are applied to, when they are applied, into a given shape, shaping Ontology further and further on[155]. The more extreme and elaborate the trials involved in the shaping of an "x", the more extreme and elaborate the trials to which an "x" is able to resist, the more precise will be its shape and shaping, its so called definition. Its differentiation from other "x". Its asymmetry towards other "x". Its current strength. Its current reality. It is not allowable, in Actor-Network Theory, to attribute reality or unreality to an "x", as much as any other characteristic, without making perfectly available to the greatest possible extent by which trials is this achieved and achievable. Nor can one propose a definition, an attempt at explaining even, without enumerating to the greatest possible extent by which trials, of multiple natures, is such definition constructed, and by which trials, of multiple natures, could such a definition fail.

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155 Cf. Latour, 1987: 172: «The similarity between the proof race and the arms race is not a metaphor, it is literally the mutual problem of winning. Today no army is able to win without scientists, and only very few scientists and engineers are able to win their arguments without the army. It is only now that the reader can understand why I have been using so many expressions that have military connotations (trials of strength, controversy, struggle, winning and losing, strategy and tactics, balance of power, force, number, ally), expressions which, although constantly used by scientists, are rarely employed by philosophers to describe the peaceful world of pure science. I have used these terms because, by and large, technoscience is part of a war machine and should be studied as such.»

Such tests and trials need not be anthropomorphic. Of humans towards a nature for example. But exert themselves mutually in many layers[156]. Objects test objects and humans, humans test humans and objects. The scope of trialling encompasses everything, is to leave nothing out, be it a concept of being, a motherly love for a child, the beauty of a ceramics piece, the meaning of a word and/or what it is used for. No other viable methodological option is available than to take the reality-strength of anything as intrinsically linked with trialling. Aesthetically wise, ethically wise, epistemologically wise, to call upon accepted philosophical domains. As much as, following from it, the relation between what tests and what is tested is not to be seen as single handed, unidirectional. But as one constant mingle in whose meeting ground Ontology is being made.

According to Actor-Network Theory, all the "x" composing our collective, a collection with aspirations of unity subsumed under words as "world" or "whole", whose intelligibility is sought after, already enter such collective through such trials. To describe them with the goal of not missing what there is implies naming and describing the tests to which they resist and the tests to which they do not. Of all possible and actual "x", those related with scientific practice are the most resisting. Those whose trials are more costly and elaborate. Those with the greatest number of heterogeneous resources and heterogeneous actors juggling within, laboratories and technologies at the forefront[157]. By

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156 Cf. Latour, 1987: 200: «We do not have on the one hand 'knowledge' and on the other 'society'. We have many trials of strength through which are revealed which link is solid and which one is weak.»

157 Cf. Latour, 1987: 179: «In the first part of this book we studied how to go from a weak rhetoric to a strong one, and in the second we followed the scientists and engineers in their many strategies as they go from weak points to the occupation of strongholds. If we wanted to summarise the first four chapters, we could say that they showed a fantastic increase in the number of elements tied to the fate of a claim – papers, laboratories, new objects, professions, interest groups, non-human allies – so many, indeed that if one wished to question a fact or to bypass an artefact one might be confronted by so many black boxes that it would become an impossible task: the claim is to be borrowed as a matter of fact, and the machine or the instrument put to use without further ado. Reality, that is what resists all efforts at modification, has been defined, at least for the time being, and the behaviour of some people has been made predictable, in certain ways at least. Another way of summarising the same four chapters is to show the other side of the coin: such an increase in the number of elements tied to a claim is to be paid for and that makes the production of credible facts and efficient artefacts a costly business. This cost is not to be evaluated only in terms of money, but also by the number of people to be enrolled, by the size of the laboratories and of the instruments, by the number of institutions gathering the data, by the time spent to go from 'seminal ideas' to workable products, and by the complication of mechanisms piling black boxes onto one another. This means that shaping reality in this way is not within everybody's reach, as we saw at length in Chapter 4.»

their complexity, modelling and simulation[158] included, and depth, laboratorial conditions included, of trialling and construction, their co-dependent strength and reality are, successful or not, far superior to the ones attained by so called social explanations wanting to assimilate them. Sociology of Science, as it was, could not but fail. As, for example, swords of wood would almost certainly fail against swords of steel.

The argument, as is seen, is one of material realization. The quantitative superiority of scientific trialling, number of heterogeneous resources, heterogenous actors, carefully constructed networks, makes their quality of results exponentially increase, with a far greater probability of given "x" entering the collective through them. That explaining scientific success in providing hard facts needs more factors than one (method, for example) can be thought as trivial, even if is such triviality is often overlooked in explanations as something to be recognized first and then forgotten afterwards. That there is no prior hierarchization between those factors, so as to force description and eventual explaining to add them all symmetrically in a theory, is not as trivial.

That, if a hierarchization is found afterwards, this is not on the predominance of reason, method, or theoretical grounds, but on strength, resources, technologies, networks constructed and disseminated, is less trivial even. Or if trivial, still even more forgotten.

No miraculous explanation may enter the picture. But no forced scientific realism needs to, either. What would seem miraculous to Actor-Network Theory is instead to explain exceptional success in constructing and providing Ontology by some chosen ideas, methods, cognitive superiority, rationality. No previous hierarchies existing, it seemed common sense to unite worldly success with, to put it bluntly, worldly tools and

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158 Cf. Latour, 1988: part 2, 4.5.4, 225: «The only way to be strong again is to reproduce relations of force that were once favorable. There is no such thing as prediction. Prediction is the repetition of something that has already taken place, scaled up or scaled down. Only magicians believe that they can foretell the future. • If we find miraculous the fact that unvaccinated sheep die at Pouilly-le-Fort or that Voyager II passes through the rings of Saturn at the prescribed moment, then we should find Hamlet's death in the last act equally amazing. No prediction is more than stage management, learning how to repeat the dress rehearsal-though this does not prevent stage fright and suspense. As far as forecasts are concerned, Pasteur, Shakespeare, and NASA are indistinguishable. If they had to improvise or predict, they would jabber incoherently like the Pythia, just as we do when we leave the shelter of our trades. And Shakespeare would probably be less incoherent than any of the others. In the theater of proof, or in the theater, plain and simple, all directors are the same, equally erratic and equally honest. How could they be different?»

worldly entities. Actor-networks where most of the collective plays a part. «Nothing is known – only realized.[159]»

It thus becomes fundamental, avoiding understanding errors towards Actor-Network Theory, to grasp well that Science and Technology Studies is neither equal to Sociology of Science, using common sociological trialling tools to bear on scientific practice, nor equal to just Science Studies, later reframed by Latour as meaning, simply, epistemology[160], translating-betraying the common use of the word as referring to an established philosophical discipline. Science Studies, then again who must as well be distinguished, since its inception, from Sociology of Science. In fact, and the point cannot be overstated, Science and Technology Studies are what would, or had to, come after becoming aware of the gross failure of Sociology of Science in giving account of its object, science.

By becoming aware of such a failure, where limiting the scope to pretence social aspects off is also seen as failure, the leap is taking such failure as proof of existing Sociology's inadequacy to deal with any of its traditional objects. As most objects in our collective and in our Ontology are or seem so intimately connected to Scientific Practice, backing out of giving a more faithful account of how it goes, as it goes, equals backing out of any worthwhile description or explanation of the collective and the Ontology or ontologies which compose it. The argument is that Sociology, when aiming at a study of science, found multiple objects and corresponding disciplines, with corresponding practices, whose strength and reality was far superior than the one Sociology had been able to achieve. Relevant actors, those said to be human and those said to be non-human, did not accept to be fitted in the explanations being given as if by above and out[161]. Their

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159 Latour, 1988: part 2, 1.1.5.4, 159.
160 Cf. Latour, 2005: 87: «Sociology of science, or what is known as 'science studies', is a convenient although banal translation into English of the Greek word 'epistemology'. After having doubted the 'socio' in the word socio-logy, we now have to doubt its 'logy'. Once this double revision is completed, we might finally be able to use the word positively again and without too many qualms.»
161 Cf. Latour, 2005: 33-34: «For the sociologists of the social, Sociology should strive to become a science in the traditional disinterested sense of a gaze directed to a world outside, allowing for a description that is somewhat independent of the groups being materialized by the actors. For the sociologists of associations, any study of any group by any social scientist is part and parcel of what makes the group exist, last, decay, or disappear. In the developed world, there is no group that does not have at least some social science instrument attached to it. This is not some 'inherent limitation' of the discipline due to the fact that sociologists are also 'social members' and have difficulties in 'extracting themselves' out of the bonds of

objections were explicitly stated, impossible to be overlooked or passed by at ease. Contrary to those of other actors, previously studied in other domains and in other field-oriented studies.

What stood at the stake is that so called but human or so called but social actors, of so-called social sciences, are much more easily driven into silence than the objects[162] hard scientific practice dealt with: the technologies it used, the trials deployed. As much as that the human actors realizing science were too strong to easily comply with being accordingly ill described. Sociology would be, such is the expression used, *studying up* for, apparently, the first time. It had neither the tools, nor the knowledge, nor the theoretical frame to cope with scientific practice. At the same time, the object of study would not let itself be ignored away. Often fighting back and winning[163].

From this failure two options made themselves clear. The first would be to run from such domains as scientific practice, restraining Sociology to fields in which explanations

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their own 'social categories'. It is simply because they are on par with those they study, doing exactly the same job and participating in the same tasks of tracing social bonds, albeit with different instruments and for different professional callings. Although in the first school actors and scholars are in two different boats, in the second they remain in the same boat all along and play the same role, namely group formation. If the social is to be assembled, every hand is needed. We will draw only at the end the consequence of this fundamental equality.»

162 Cf. Latour, 2005: 71: «The main reason why objects had no chance to play any role before was not only due to the definition of the social used by sociologists, but also to the very definition of actors and agencies most often chosen. If action is limited a priori to what 'intentional', 'meaningful' humans do, it is hard to see how a hammer, a basket, a door closer, a cat, a rug, a mug, a list, or a tag could act. They might exist in the domain of 'material' 'causal' relations, but not in the 'reflexive' 'symbolic' domain of social relations. By contrast, if we stick to our decision to start from the controversies about actors and agencies, then anything that does modify a state of affairs by making a difference is an actor – or, if it has no figuration yet, an actant. Thus, the questions to ask about any agent are simply the following: Does it make a difference in the course of some other agent's action or not? Is there some trial that allows someone to detect this difference?»

163 Cf. Latour, 2005: 98: «Science represented a completely different challenge and this is exactly the reason why we tackled it first—even though, for reasons of logic, I place it fourth in this book. Not only did social scientists care wholeheartedly about science, but it was also their only treasure left after the cruel disenchantment of modernism had struck down all the older ideals. Beyond objectivity, universality, and scientificity, there was nothing worth clinging to. Their only hope was to become full-fledged scientists. And yet, for the first time, social scientists had to study something that was higher, harder, and stronger than them. For the first time, the explanandum resisted and grinded the teeth of the explanans' cogs to mere stumps. Not only that, but the screams of those being studied could be heard loud and clear – and they were not coming from Bali, the ghettos, TV studios, corporate board rooms, or the US Senate, but from departments next door, from colleagues in the very same hiring and grant committees.»

and descriptions given were more or less consensually accepted as worthwhile[164], if not fully correct, if still suffering from scope limitation. Stronger domains were to be banished. Making in fact that Sociology would keep, according to the expression, studying downwards into domains where descriptions and explanations would not fail so spectacularly. Crucial to this is that respective actors would not overly deny such descriptions or explanations with stronger and realer intakes on their practice. Or that, if they did, such denials could be overlooked as lacking a full perspective, mere passive objects of study to be enlightened, mere informants to be mistrusted. Unaware of how their roles actually played in the bigger pictures.

Actor-Network Theory strongly objects. Thus, the key line where following the actors is placed as mandatory against the general notion that scholars know best and are able to detach themselves from, and explain away, actors better than what they do themselves. Summing up what is good in their reports, and what not. Instead, solutions to controversy and conflict are, apart from the golden rule of who ends up winning in a relatively wide time spectrum, solved step by step by how actors deploy objections agonistically trialling each other, winning or losing ground.

Banishing this so-called upwards study would carry two extra consequences. One, that knowledge does climb and strengthen, that there are in that sense ups and downs in society or in the collective, or in knowledge, as a given and not as a result or effect, and that therefore Sociology climbs quite low. Two, that a certain number of facts, besides upper, are harder than others, intrinsically different, unable to be dealt with by any outsider unequipped with the same tools those supposedly hard facts were hermetically being laid out. Such consequence would entail a circular process depending, weirdly enough, of a somehow miraculous take on scientific practice. With similar tones with

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164 Cf. Latour, 2005: 8: «They believed the social to be made essentially of social ties, whereas associations are made of ties which are themselves non-social. They imagined that Sociology is limited to a specific domain, whereas sociologists should travel wherever new heterogeneous associations are made. They believed the social to be always already there at their disposal, whereas the social is not a type of thing either visible or to be postulated. It is visible only by the traces it leaves (under trials) when a new association is being produced between elements which themselves are in no way 'social'. They insisted that we were already held by the force of some society when our political future resides in the task of deciding what binds us all together. In brief, the second school claims to resume the work of connection and collection that was abruptly interrupted by the first. It is to help the interested enquirers in reassembling the social that this book has been written.»

some understandings of artistic practice, of religious practice, of ethical practice, of political practice.

One needs only to ponder on inspiration, muses, direct un-expressible knowledge of the so called divine, innate ethical principles who are not to be questioned but have to be experienced in mystical overtones, or rulers know best as they are rulers. Strength and reality, though, to extend the metaphor, are not hard but pliable, not ontologically or innately distinct from softness. Strength is achieved by careful linking of weaknesses, softness's, called forces[165], under trials. And if and only if related to trials.

The second option from the failure runs together with Actor-Network Theory and is at the core of the journey to Science and Technology Studies. It will fully lead to an Associology later on. Per a revised understanding of what "social" is[166]. Becoming evident that any social explanation of scientific practice does no more, in the best scenarios, than to mildly touch a periphery of scientific activity with little import to the specificity and exceptionality it appears to show, what had to follow was a reworking of Sociology itself and of the "social" dimension it explicitly reclaims to be based on and to study upon. Summing it up, as Sociology of science had failed its trials it was Sociology overall that ought to be built again in order to meet them[167].

Success in the pursuit would entail that neither the scope had to be restricted, Sociology applicable only to softer domains, neither the demand of exactitude, descriptions should attain the most preciseness available and still be concrete and subject to trials, nothing more but nothing less. If Sociology turns out, regardless, as not capable of dwelling into so-called hard domains, the consequence to be taken was that Sociology, as a discipline, is either minor or can be eliminated for good. That it had been wrong,

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166 Cf. Latour, 2005: 8: «Whereas, in the first approach, every activity – law, science, technology, religion, organization, politics, management, etc. – could be related to and explained by the same social aggregates behind all of them, in the second version of Sociology there exists nothing behind those activities even though they might be linked in a way that does produce a society – or doesn't produce one. Such is the crucial point of departure between the two versions. To be social is no longer a safe and unproblematic property, it is a movement that may fail to trace any new connection and may fail to redesign any well-formed assemblage.»

167 Cf. Latour, 2005: 99: «Objects of science may explain the social, not the other way around. No experience was more striking than what I saw with my own eyes: the social explanation had vanished into thin air.»

plainly put. Which, according to Science and Technology Studies it indeed is. If done as it had been done, a fact the failure reveals when before it had passed unchecked.

The effort to push through this second alternative by assuming the failure of Sociology of science is intimately derived from Actor-Network Theory's proposals. Streaming in and from Science and Technology Studies. Even if Science and Technology Studies never intended or claimed to be a Sociology but, instead, were to be seen as an epistemology. Nevertheless, webs began to weave as solving the failure of Sociology demanded that a revised epistemology stepped in. Science and Technology Studies called themselves an epistemology, at first, because "Science Studies" is one possible translation to English of the Greek words, *logos* and *episteme*, combined. A translation carrying the extra advantage of directing epistemology immediately to the most paradigmatic, and according to Actor-Network Theory the strongest, example of an *episteme*: the scientific one.

Confluences begin to go both ways. If the strongest *episteme* had made Sociology backtrack and ought to force its admission of inadequacy, the strongest *episteme* must be, as well, what epistemology ought to trial against and trial with. Studying and describing scientific practice as producing the strongest facts able to insert newer data in the composition of the collective, paradigmatic in the networks where knowledge plays a part, an unavoidable conclusion was the interrelatedness, almost simultaneity, between science and technology.

Technology is not by this limited to its uses in scientific practice. The notion will become much wider than most consensual applications to fully fledged machines, tools or instruments. Technology needs not be strictly machine related. Someone solving an equation[168] is making do of technologies for that effect which began their development

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168 Cf. Latour, 1988: part 2, 4.4.5, 221: «So you believe that the application of Mathematics to the physical world is a miracle? If so, then I invite you to admire another miracle; I can travel around the world with my American Express card. You say of the second, "That's just a network. If you step out of it by so much as an inch, your card will be valueless." Quite so. This is what I am saying about Mathematics and science, nothing more and nothing less. • The second-degree equation has an area of diffusion that can be mapped like everything else. Its invention, translation, and incorporation into other practices may be followed in the same way that we document the spread of the harness, the stern-mounted rudder, the bow tie, the clock escapement, or intelligence tests. But we cannot resist separating trades into two heaps. Some are firmly embedded in their contexts, while others float like spirits out of context. I want to bury those spirits at the bottom of their networks to stop them from returning after dark to haunt us.»

long ago. But, when it comes to scientific practice what jumped to a descriptive look is how it is, in practice, impossible to be understood and done without a vast array of technological apparatus with the implications this carries further. From the most prosaic, investment and resources, to the most epistemologically conflicting. Still, nowhere in the knowledge gaining network of scientific practice is, currently for sure and in the past most probably, science found without technology. Science Studies give then ground to Science and Technology Studies. For the key goal to give a most detailed account of the strongest *episteme*, with technology and technoscience[169].

Then, epistemology would become a vain pursuit if not making appeals to technology in its descriptions. In its eventual attempts at explaining how is knowledge gained and validated. Traditional epistemology, if wanting to split knowledge from technologies becomes tainted. Its usefulness to understand the strongest *episteme*, as it unfolds in Ontology, always missing the mark, accompanying trials showing it as unequipped to deal with science. Actor-Network Theory extends this conclusion stating that not only scientific practice of so-called hard sciences needed such a focus on technology[170]. It states that history, for example, cannot be split apart both from scientific practice and from technology. As, naturally, neither Sociology could or can. Understanding a society or the social demands, at least as a necessary condition, that the technologies composing it are brought to the front. As much as the technologies used to track that composition also need to come into full view. There cannot be history on the

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169 Cf. Latour, 1987: 174-175: «To remind us of this important distinction, I will use the word technoscience from now on, to describe all the elements tied to the scientific contents no matter how dirty, unexpected or foreign they seem, and the expression 'science and technology', in quotation marks, to designate what is kept of technoscience once all the trials of responsibility have been settled. The more 'science and technology' has an esoteric content the further they extend outside. Thus, 'science and technology' is only a sub-set which seems to take precedence only because of an optical illusion.»

170 Cf. Latour, 2005: 101: «ANT does not assert that all the other domains of social science are fine and that only science and technology require a special strategy because they are so much harder, so much more important, and so much more respectable. It claims that since social accounts have failed on science so pitifully, it must have failed everywhere, science being special only in the sense that its practitioners did not let sociologists pass through their turf and destroy their objects with 'social explanations' without voicing their dissent loud and clear. Elsewhere the 'informants' had always resisted but in a way that was not so noticeable because of their lower status or, when it was noticed, their furor was simply added to the data of the critical theorist as further proof that 'naive actors' cling to their pet illusions even in the face of the most blatant refutations. Scientists do not offer a special case of recalcitrance: we have simply rediscovered, thanks to science studies, that it should have remained the case everywhere, be it in the social or natural sciences.»

one hand and history of the sciences on the other hand. With an extra offshoot pursuing history of technology on the side. If Ontology is to face its challenges[171].

Now, technologies almost always imply carefully played out networks, a key term, where those called humans and those called objects associate together with roles not so easily definable. As ignoring technology and technologies seemed to be a main culprit, to be remembered at the start but then forgotten in at length sociological or epistemological descriptions, Science Studies becomes Science and Technology Studies, as to not forget it. While Actor-Network Theory further proposes a generalized symmetry[172] in treating the rapports from objects and of humans. Simply, both are taken as actants or actors. If Science and Technology are, in all practical senses, inseparable, then that is, has to be, the hybrid subject or object matter of Science and Technology Studies.

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171 Cf. Latour, 1987: 222: «This cumulative character of science is what has always struck scientists and epistemologists most. But in order to grasp this feature, we have to keep in view all the conditions that allow a cycle of accumulation to take place. At this point the difficulties seem enormous because these conditions cut across divisions usually made between economic history, history of science, history of technology, politics, administration or law, since the cycle drawn by King John may leak at any seam: it may be that a legal contract is voided by a court, or a shifting political alliance gives Spain the upper hand, or the timber of a ship does not resist a typhoon, or a miscalculation in the Regiment sends a fleet ashore, or a mistake in the appraisal of a price renders a purchase worthless, or a microbe brings the plague back with the spices... There is no way to neatly order these links into categories, since they have all been woven together. like the many threads of a macrame, to make up for one another's weaknesses. All the distinctions one could wish to make between domains (economics, politics, science, technology, law) are less important than the unique movement that makes all of these domains conspire towards the same goal: a cycle of accumulation that allows a point to become a Centre by acting at a distance on many other points.»

172 Cf. Latour, 1996 [1990]: 379: «To say that it is a generalized narrative path would immediately mean that texts are extended to everything; to say that it is a force, or an energy, or a gene, or a culture-gene would mean that everything would be naturalized including society and discourses; to say that it is a social interest or a social action or labor would extend society to nature and to texts. It is to get out of this essential difficulty that ANT played with a generalized symmetry (Callon 1986; 1990) and made a principle of using whichever words are connoted in one of the former realm to describe the others, thus showing the continuity of networks and the complete disregard for the artefactual gaps introduced by prerelativist arguments. However this solution is rather tricky since it may combine all the misunderstandings – and this is indeed what happened to ANT, readers and users alike saying at once that it is a social constructivist argument, the return of naturalism or a typically French belief in the overall extension of texts... Which of course it is in a sense, but only in so far as ANT is the simultaneous rejection of naturalisation, socialisation and textualisation. ANT claims that these "(x)-lisations" have to be dissolved all at once and that the job is not done better if one of them gains hegemony or if the three are carefully circumscribed. All (x)-lisations are the filling in of what is "in between" the networks, and which one is chosen or rejected makes no practical difference since nets have no "in between" to be filled in.»

Thus, they are not just a Sociology of Science and no longer just Science Studies. They focus on Science-Technology or Techno-Science. Granting that is what actually exists and is seen when scientific practice is thoroughly described. Any explanation of scientific success or strength would have to be intimately related first with how it merges with the technologies that make unavoidably part of its practice. With the investments, in many senses of the word, made in such science-technology, over time and over space. Nothing miraculous[173]. Combining Science and Technology in one expression, Science-Technology or Techno-Science, follows very nearly the combining of actors and networks in one expression as actor-networks. But Actor-Network Theory, as previously mentioned, extends the point by widening the spectrum of what counts as a technology. By taking further the science studies translation of *episteme* and *logos*.

The inseparability of *techno* and *episteme* is not particular to the thus now called strongest *episteme*, the scientific. But, on the contrary, seen as effective in any *episteme*. This is explicitly assumed as too evident to deny. For any description aiming at a sufficient degree of correctness one cannot find knowledge without technologies. Or technologies without knowledge. Regardless of the relative strength of such an *episteme*. Regardless of which technology or technologies one speaks of. Regardless of their degree of sophistication or complexity. To an assertion of Y knows X, mandatory questions following would be on the lines of under which trials, how, by which technologies, how. From this position, *techno* and *episteme* are seen as not only unthinkable and virtually impossible one without the other, if an Ontology of what there is proves to be a worthy goal, but as a single entity from practical to theoretical purposes, techno-episteme. Thus,

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173 Cf. Latour, 1988: part 2, 4.5.11, 228: «We can perform, transform, deform, and thereby form and inform ourselves, but we cannot describe anything. In other words there is no representation, except in the theatrical or political senses of the term. • The difficulty with the "sciences" perhaps arises from the fact that work with the hands brings inscriptions that are read by the eyes. Perhaps epistemology is a confusion of the senses. We follow the dazzled gaze but forget the hands that write, combine, and mount. But there is no "theory", no "contemplation", no "speculation", no "prevision", no "vision", and no "knowledge". Plato's sun neither burns nor turns in the sky. But inside the networks there are electrons, light bulbs, and projectors which consume electricity and are objects like anything else. Such lamps are not surrounded by a halo of mystery. They are plugged into their sockets by real hands.»

can Latour say in *Irreductions* that there is no knowledge, only know-how[174]. Know-how-to[175].

What becomes the problematic consequence, stepping into Philosophy, for the study of scientific practice coming from Science and Technology Studies, strictly? And why is Actor-Network Theory needed, what does it do? Widening the scope from Techno-Science to a Techno-Episteme makes greatly difficult to justify, on the conjunction-identification alone, that the strongest *episteme* is stronger just for a detailed merging with technology, per se. At least, it will not do to simply postulate this as an abstract principle where explanations would stack on. Something on the how and why of such merging, case to case, may account for such increased strength, for sure. And case to case, Science and Technology Studies' wise, it does. But even so, the practical inseparability of *techno* and *episteme*, being everywhere present, stops short any hope of a dichotomic qualitative distinction or demarcation between those knowledge gaining practices we end up calling as scientific and those that we don't. A demarcation, if at all, will have to be quantitative, thus none, to rest in detail building. The problem is overreaching as a whole. Deeper still when knowledge gaining practices are, in one way or the other, more successful, answers based on methods called as scientific soon falling into philosophical pits.

Not only scientific practice is extremely successful, as the world goes. Many outstanding successes are found in other domains. The most apparently prosaic, the most apparently complex. Shifting has to change from science to Knowing. Technologies to that effect and its concurring trials will have to be sought after in many domains where no hint of technology´s role is usually placed. Domains seen as subjective, or as internal, or as of the mind, or yet of reasoning itself. And of objectual matter as well, the material entourage stabilizing the collective which is involved in its building as much as the

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174 Cf. Latour, 1988: part 2, 4.3.2, 218: «Knowledge does not exist – what would it be (1.4.3)? There is only know-how. In other words, there are crafts and trades. Despite all claims to the contrary, crafts hold the key to knowledge. They make it possible to return "science" to the networks from which it came (Introduction).»

175 Cf. Latour, 1988: part 2, 4.5.8, 227: «One form of know-how is no more "true" than another. It is neither more nor less true than a coffeepot, a tree, or a child's face. There they are, a momentarily stable line of forces (1.1.6). The word "true" is a supplement added to certain trials of strength to dazzle those who might still question them.»

previous factors. Knowing, then, has its focus shifted to action, a set or sets of actions actants and actors-networks put forward, making the issues run deeper still.

A preliminary distinction between knowing and not knowing can be somehow, if wrongly, taken for more or less granted. But if action and acting, performing, realizing, how-to, is what we are talking about, distinctions begin to hopelessly blur. Again, a new theory and language is called to arms, where from techno-science, by techno-episteme, we arrive at a techno-action whose work is both of cooperating and competing. Of actor-networks acting. Accordingly, casuistic studies centred on the description and analysis of particular knowledges and particular technologies, case to case filling a borderless puzzle, are still today the main gambit of Science and Technology Studies. Maybe such case studies are increasingly relevant for having adopted, using it, actor-network methodologies and terminologies. As, more implicitly than explicitly perhaps, the Ontology it points to.

We have already spoken of Sociology of Science having failed. Of Science Studies emerging descriptions leading to Science and Technology Studies. Of Actor-Network Theory as tracking parallel to the growth of Science and Technology Studies, extending the scope further way from just so-called scientific practice. For Actor-Network Theory the failure clearly indicates that systematic wrongs in Sociology had been left unchecked, wrongs not dependent of the object of study being science. As if by clashing with hard scientific practice Sociology had been falsified. An argument to justify it was the ignoring of technology under a new role. But not enough. Technology's doings were to be much more present, but the mistakes also stem from silencing, ignoring, the stabilizing role of objects, how they possess a type of relevant causality and even agency.

If we speak in terms of causality and mingle with it terms of agency, which Actor-Network Theory does scarcely. If not, what was ignored was the mediation and intermediation roles of objects[176], symmetrically considered with the same roles assigned

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176 Cf. Latour, 2005: 72: «For sociologists of associations, what is new is not the multiplicity of objects any course of action mobilizes along its trail – no one ever denied they were there by the thousands; what is new is that objects are suddenly highlighted not only as being full-blown actors, but also as what explains the contrasted landscape we started with, the overarching powers of society, the huge asymmetries, the crushing exercise of power. This is the surprise from which sociologists of associations wish to start instead of considering, as do most of their colleagues, that the question is obviously closed and that objects do

to humans. Sociology had been, generally speaking, plucking humans out of objects and technologies. Or treating these last two as mere backgrounds[177]. As it had been plucking humans out of non-humans, even in the study of scientific practice. Trivial as it may seem, there is no bacteriology, for example, without associating with bacteria. The network of bacteriology is composed of bacteria as much as it is of humans. Which Latour quite illustrates in *The Pasteurization of France*.

Still, two more mistakes are at the stake when Sociology is considered. Two more mistakes which will single out an Ontology coming from Actor-Network Theory. Actor-Network Theory's conclusion is that Sociology had always been, even when dealing with so called social phenomena, studying upwards, to use the metaphor. It appeared differently by silencing non-humans, objects and technologies, but also by the similar silencing of the human actor's perspectives. Of how they gave account of their own practices and whys, as they were doing them. Again, the guiding principle of always following the actors, following what they do and say, much more than imposing a set of questionnaires to which they ought to conform in order to establish or refute a given theory on the previously discriminated social forces at play. Sociology and so-called Social Sciences had always been studying something stronger than themselves[178].

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nothing, at least nothing comparable or even connectable to human social action, and that if they can sometimes 'express' power relations, 'symbolize' social hierarchies, 'reinforce' social inequalities, 'transport' social power, 'objectify' inequality, and 'reify' gender relations, they cannot be at the origin of social activity.»

177 Cf. Latour, 2005: 73-74: «It is even more startling when you realize that this discipline emerged a full century after the Industrial Revolution and has been evolving in parallel with the largest and most intensive technical developments since the Neolithic. Not only that, but how to explain that so many social scientists pride themselves in considering 'social meaning' instead of 'mere' material relations, 'symbolic dimension' instead of 'brute causality'? Much like sex during the Victorian period, objects are nowhere to be said and everywhere to be felt. They exist, naturally, but they are never given a thought, a social thought. Like humble servants, they live on the margins of the social doing most of the work but never allowed to be represented as such. There seems to be no way, no conduit, no entry point for them to be knitted together with the same wool as the rest of the social ties. The more radical thinkers want to attract attention to humans in the margins and at the periphery, the less they speak of objects. As if a damning curse had been cast unto things, they remain asleep like the servants of some enchanted castle. Yet, as soon as they are freed from the spell, they start shuddering, stretching, and muttering. They begin to swarm in all directions, shaking the other human actors, waking them out of their dogmatic sleep. Would it be too childish to say that ANT played the role of the Charming Prince's kiss tenderly touching Sleeping Beauty's lips? At any rate, it is because it was an object-oriented Sociology for object-oriented humans that this school of thought was noticed in the first place—and that it makes sense to write an introduction to it.»

178 Cf. Latour, 2005: 83: «The only way to plead for a little autonomy was to forsake the vast territories they had given up and stick forcefully to the shrinking plot allotted to them: 'meaning', 'symbol',

This is the first extra mistake, which could be forgotten if by making appeal to the second further mistake. The second further mistake is a thwarted notion of strictness in causality which, not being achievable in so-called non-natural domains, in said to be social domains, results in diminishing demands for exactitude from the start when social sciences are called in[179]. Such compromise with a lesser demand of exactitude, not to be confused with having to be necessarily certain, is for Actor-Network Theory a compromise with ignorance downgrading any possibility of an Ontology[180].

This dual view on causality is criticized even without inflowing the replacement of the whole notion by the roles of mediation, intermediation, translation-betrayal, by stating that social researchers arm themselves with a frame where some causal relations would occur non-problematically in natural domains, those of the hard sciences, but not in the so-called social domains, or in those domains where human subjectivity plays a central

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'intention', 'language'. When a bicycle hits a rock, it is not social. But when a cyclist crosses a 'stop' sign, it becomes social. When a new telephone switchboard is installed, this is not social. But when the colors of telephone sets are discussed, this becomes social because there is, as designers say, 'a human dimension' in the choice of such a fixture. When a hammer hits a nail, it is not social. But when the image of a hammer is crossed with that of a sickle, then it graduates to the social realm because it enters the 'symbolic order'. Every object was thus divided in two, scientists and engineers taking the largest part – efficacy, causality, material connections – and leaving the crumbs to the specialists of 'the social' or 'the human' dimension. Thus, any allusion by ANT scholars to the 'power of objects' over social relations was a painful reminder, for sociologists of the social, of the clout of the other 'more scientific' departments on their independence – not to mention grant money – and on the territories they were no longer allowed to walk through freely.»
179 Cf. Latour, 2005: 83: «Many other examples can easily be found since this version of social theory has become the default position of our mental software that takes into consideration the following: there exists a social 'context' in which non-social activities take place; it is a specific domain of reality; it can be used as a specific type of causality to account for the residual aspects that other domains (Psychology, law, economics, etc.) cannot completely deal with; it is studied by specialized scholars called sociologists or socio-(x) – 'x' being the placeholder for the various disciplines; since ordinary agents are always 'inside' a social world that encompasses them, they can at best be 'informants' about this world and, at worst, be blinded to its existence, whose full effect is only visible to the social scientist's more disciplined eyes; no matter how difficult it is to carry on those studies, it is possible for them to roughly imitate the successes of the natural sciences by being as objective as other scientists thanks to the use of quantitative tools; if this is impossible, then alternative methods should be devised that take into account the 'human', 'intentional', or 'hermeneutic' aspects of those domains without abandoning the *ethos* of science…»
180 Cf. Latour, 2005: 85: «Even as textual entities, objects overflow their makers, intermediaries become mediators. But in order to learn this lesson, the research field should be made wide open to begin with and it cannot be opened if the difference between human action and material causality is maintained as adamantly as Descartes's distinguished mind from matter (*res extensa* from the *res cogitans*) as a proof of scientific, moral and theological virtue – and even he kept open the tiny conduit of the pineal gland that sociologists of the social have cut off as well.»

role[181]. Social phenomena would not be as easily predictable as natural ones. To certain causes certain effects would not necessarily follow, added with the notion that humans are much less controllable than non-humans or objects. Such asymmetry in dealing with causality would not be justified by lack of means, lack of tools, lack of investment, lack of knowledge, but rest on the specific essence of social domains and of human idiosyncrasy, a thesis prevailing in many philosophies, humanity being assigned an Ontology where freedom is the key wheel turner while nature is throttling under the doings of necessity.

Aiming for explaining or describing nature one is entitled to seek, regardless of attaining them or not, increasing forms of certainty and of determination[182]. Objects may be determined, to put it simply, and once determined, their behaviour is to be ruled as it was ruled, for good. Aiming for explaining or describing social phenomena or human phenomena, uncertainty and non-determination are to be always taken into account, one ending up having to discuss, use arguments, even persuade by proceeding Rhetorically. While science ought to dismiss Rhetoric when nature is being trialled, it could never dismiss it if humans and society were being dealt with. Humans and social objects can never be fully determined as they linger in an underlying ocean of freedom and choice, where determination and exactitude are constitutionally banished from their actual and virtual ontologies.

This, however, makes it quite hard to solve the schizophrenic use of causality that entails from using it as such in both domains, while subsuming both domains as falling under scientific practice, unity of science fading. Even before doing away with causality

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181 Cf. Latour, 2005: 105: «I am inventing of course an experiment that has never occurred because social observers never meant to test their causalities that harshly. They would easily grant that social gravitation is not like Newtonian gravitation. Forced to retreat, I guess they would say that they tried to imagine a more modest, fuzzy, and uncertain type of causality: 'some relations' and 'correlations' between different 'factors'. But this is just the place not to be fuzzy: What is precisely the relation imagined between a social factor and some other phenomenon?»

182 Cf. Latour, 2005: 109: «To make this possible, we have to free the matters of fact from their reduction by 'Nature' exactly as much as we should liberate objects and things from their 'explanation' by society. Without this double move, our argument is nothing more than a return to classical materialism that closely resembles a 'Sociology of engineers' complete with its 'technical determinism'. The problem is that if it's already difficult to show that the social is an artifact produced by the application of an ill-adapted notion of causality, it is even trickier to show that 'Nature', conceived as the gathering of all non-social matters of fact, should be dispensed with as well. And the utterly puzzled reactions to ANT over the years is proof enough that this is quite tricky and that the chances of success are indeed slim.»

as a whole and with causes in particular, even without having alternative tools to grasp Ontology, the consequence is that social research is doomed to accept, grossly, explanations and descriptions detached from the demands of rigour that are sine qua non elsewhere. Human and social objects cannot be, by definition, as precisely measured or as precisely measurable as those of nature, therefore they cannot ever be as precisely described as their supposed natural counterparts.

For Actor-Network Theory this shows fundamental flaws both in causality as in the particular notion of causality being thus used and being thus split. If it is to be applied, causality has to apply to Ontology as a whole. It cannot relax, constitutionally, when one domain is researched and tighten, constitutionally, when the other is researched. Either the ocean of underlying freedom is everywhere, regardless of how it is ignored or constrained, or it isn´t at all. Either necessity is everywhere, regardless of one being able to determine how it is, or it isn´t at all. Or, the dichotomy itself as expressed is not proper to Ontology.

For Actor-Network Theory and Science and Technology Studies it is quite obvious that neither the natural domain accepts a strict causality of necessity and is easily predictable or fully determinable, neither the social domain has to ride on an open causality of freedom or is that hardly predictable, its objects that hard to determinate. One appears so because of the work done and accepted as doable in it. The other appears differently because of the lack of work it has gone through, and because of the kind of work accepted as doable in it. In the best cases, what Sociology and the Social Sciences had been undertaking, schizophrenically running way from a strict causality while working under the causality apparatus, was to abbreviate, calibrate, construct, and highly restrict the domain they so previously defined as the social[183].

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183 Cf. Latour, 2005: 232-233: «The very metrological power of the social sciences is just what makes it difficult for them to encounter the social as associations. It's precisely because it is so good at calibrating and benchmarking stabilized definitions of the social that it finds so impractical the sizing up of newcomers that are constantly imported in the course of controversies. The better you are at defining the 'older' social, the worse you are at defining the 'new' one. The situation is exactly the same with the technical fields of metrology: they allow all the other laboratories to do science, but they are not themselves the sources of much discovery – even though they are quick to use any new fact to improve the accuracy of their instruments by a few more decimal places. Metrology is no more the whole of science than the Sociology of the social is the whole of Sociology. The social that makes up society is only one part of the associations that make up the collective. If we want to reassemble the social, it's necessary, aside from the circulation and formatting of traditionally conceived social ties, to detect other circulating entities.»

Consequently, they were neither researching the social domain, unable to follow it through the full deployment of its networks, where some go heads on with other opposing domains and heads on assimilate them, neither were they, by any means, describing what such domain may eventually be if untainted by the poorly built metrology allowed to apply to it and which, ironically, further determines it. Social sciences had failed, and Sociology of Science had failed as, according to Actor-Network Theory, notwithstanding the accepting of causality, the role of technology, objects and non-humans, even the silencing of humans, they are no more, all ends met, than an abbreviated metrology. A poorly built metrology whose measuring units are too rudimentary, too deficiently tested. The resulting lack of exactitude, as an example, is similar to the one we might have if wanting to measure atoms or bacteria with no lesser unit than centimetres.

Those actors which are so-called social would have no choice than to conform themselves to a measure that mostly never fits, too loose to assimilate what in them is particularity and even connectedness. Or no other choice but to conform themselves to be part of some form or another of alienation, as in not being aware of their so-called social nature. If research subjects of hard scientific practice resist explanations and accounts given of them, this can hardly be ignored. But when research subjects of so-called social sciences do resist, denying conclusions put forward on them, objections can easily be overcome by using the same faulty measuring units used to describe them. Actors never seem to have, as it seems, class conscience, for example, or of most notions wanting to apply to them as describing tools, unless they are forced to do so by a calibration and abbreviation posing as scientific.

All these factors are severe to an Ontology of what there is when what there is tends to be, at an immediate glance, made of components where the adjective social slides in. But they are also severe when the goal is to effectively change the assembly of the collective. Accepting causality as a theoretical frame, mistreating the role of technology and of metrology, of objects and non-humans, the silencing of human actors, the forgetting of trialling, threatens both knowledge and effective action, at once and as one. Science and Technology Studies, accordingly, bring into Actor-Network Theory the extra of a strict emphasis on metrology when the justification and explanation of the successes of scientific practice is to be uncovered. As much as when the understanding of science, as a whole, is deemed to be relevant for any end.

Actor-Network Theory expands the relevance of metrology to domains other than scientific practice. In fact, to all domains up to the point where the composing of an Ontology is indissociable from the composing of metrologies, hand in hand. The guiding principle being that constructing the most apt metrology is vital to describing more faithfully, more to the point, what there is. And that any given metrology where the collective is sought after must include results from scientific practice, of course, but also be able to include the multiplicity of entities acting in Ontology[184]. Those that already do and the possibility or space for the including of those that soon will, of which science, but not only, provides many.

The bringing to the forefront of metrology is particularly evident in *Science in Action*, simultaneously a more settled launch of the Science and Technology Studies' project and a theoretical road pavement for the Actor-Network Theory coming out of them. The argument thereof is that no science exists without metrologies of growing complexity. Expanding into other domains Actor-Network Theory will stress in the analysis of Ontology and ontologies what is accomplishing the role of a metrology, case to case, by enlarging the scope of what counts as a metrology to non-metric, non-spatial, non-geographic tools. Albeit the term "network", of nets building, is to be able to encompass all such metrological roles. A given typology of emotions, of political regimes, of genders, of concepts even, of logical operations too, can also satisfy the role

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184 Cf. Latour, 1990 [1986]: 28: «If this little shift from a social/cognitive divide to the study of inscriptions is accepted, then the importance of metrology appears in proper light. Metrology is the scientific organization of stable measurement and standards. Without it no measurement is stable enough to allow either the homogeneity of the inscriptions or their return. It is not surprising then to learn that metrology costs up to three times the budget of all Research and Development, and that this figure is for only the first elements of the metrological chain (Hunter, 1980). Thanks to metrological organization the basic physical constants (time, space, weight, wave-length) and many biological and chemical standards may be extended "every-where" (Zerubavel, 1982; Landes, 1983). The universality of science and technology is a cliché of epistemology but metrology is the practical achievement of this mystical universality. In practice it is costly and full of holes (see Cochrane, 1966 for the history of the Bureau of Standards). Metrology is only the official and primary component of an ever increasing number of measuring activities we all have to undertake in daily life. Every time we look at our wristwatch or weigh a sausage at the butchers shop; every time applied laboratories measure lead pollution, water purity, or control the quality of industrial goods, we allow more immutable mobiles to reach new places. "Rationalization" has very little to do with the reason of bureau and technocrats, but has a lot to do with the maintenance of metrological chains (Uselding, 1981). This building of long networks provides the stability of the main physical constants, but there are many other metrological activities for less "universal" measures (polls, questionnaires, forms to fill in, accounts, tallies).»

of enacting a metrology in practice, if it measures the possible, constrains the possible, is implemented by given actors and can be tracked.

The attention given to metrologies is not limited to describing and, further, questioning which measuring units are being put forward. But also, on equal grounds, to the means, pathways, networks, actors, by which it is disseminated, in the most practical terms. To Actor-Network Theory metrology is operative regardless if the domain in question is said to be natural, social, or symbolic. As it is, such a division is in itself a metrology, or better, it is so by others who disseminate it as such. Regardless of one focusing on a city map, or arithmetic operations, or human relations, or language, metrology always toils in order to stabilize an Ontology through the association and engagement of all actants working for and through it. Consequently, if for Science and Technology Studies metrology is as indissociable of science as technology is, for Actor-Network Theory metrology is as indissociable from gaining knowledge as technology is. It is indissociable from any *episteme* whatsoever. We end up with a practical inseparability between technology, metrology, and knowledge gaining. Therefore, the same inseparability flows throughout Ontology when it comes to Actor-Network Theory.

The weight of metrology is responsible for several expressions which, at a first glance, are if not incomprehensible, at least quite strange when confronted with more accepted terminologies. One of those is "acting at a distance"[185]. Another the "calibration" of the social or of the world as it is acted on at a distance. Yet another the "stabilization"[186] of asymmetries in how that same world is experienced and acted on at

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185 Cf. Latour, 1987: 222: «No, we need to get rid of all categories like those of power, knowledge, profit or capital, because they divide up a cloth that we want seamless in order to study it as we choose. Fortunately, once we are freed from the confusion introduced by all these traditional terms the question is rather simple: how to act at a distance on unfamiliar events, places and people? Answer: by somehow bringing home these events, places and people. How can this be achieved, since they are distant? By inventing means that (a) render them mobile so that they can be brought back; (b) keep them stable so that they can be moved back and forth without additional distortion, corruption or decay, and (c) are combinable so that whatever stuff they are made of, they can be cumulated, aggregated, or shuffled like a pack of cards. If those conditions are met, then a small provincial town, or an obscure laboratory, or a puny little company in a garage, that were at first as weak as any other place will become centres dominating at a distance many other places.»

186 Cf. Latour, 2005: 227-228: «In following the stabilization of controversies, we are greatly helped if we bring to the foreground the crucial notion of standards. We can say that the Sociology of the social circulates in the same way as physical standards do or, better yet, that social sciences are part of metrology. Before science studies and especially ANT, standardization and metrology were sort of dusty, overlooked,

a distance. Another, still, the very own expression of "Actor-Network" which bridges in continuous threads that which seems to be acting at a distance. "Acting at a distance" seems to appeal to a spatial frame, more easily connectable to the term "network", as we will see.

But the same movement can apply to temporal frames by "acting in the future" which is an apt translation-betrayal of what is usually named as a "prediction"[187] or even "simulation" or even "planning". Still another thread can enter into this picture, though not literally mentioned, that of acting without contiguity, which we have when believing that concepts or ideas or theories may act on and be operative when not contiguous and indissociable from something which, touching them, carries them through by quite concretely implementing them in the collective[188].

The exact point is that, even if none of the above is possible, carefully built actor-networks who may be tracked and followed in empirical terms, make it seem as if it is.

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specialized, narrow little fields. This is no wonder since their truly wonderful achievements were cut off by the gap between local and global that we have now recognized to be an artifact. As soon as local and global disappears, the central importance of standards and the immense advantages we draw from metrology – in the widest acceptance of the term – become obvious.»

187 Cf. Latour, 1987: 249: «So how is it that in some cases science's predictions are fulfilled and in some other cases pitifully fail? The rule of method to apply here is rather straightforward: every time you hear about a successful application of a science, look for the progressive extension of a network. Every time you hear about a failure of science, look for what part of which network has been punctured. I bet you will always find it.»

188 Cf. Latour, 2005: 228-229: «Standards and metrology solve practically the question of relativity that seems to intimidate so many people: Can we obtain some sort of universal agreement? Of course we can! Provided you find a way to hook up your local instrument to one of the many metrological chains whose material network can be fully described, and whose cost can be fully determined. Provided there is also no interruption, no break, no gap, and no uncertainty along any point of the transmission. Indeed, traceability is precisely what the whole of metrology is about! No discontinuity allowed, which is just what ANT needs for tracing social topography. Ours is the social theory that has taken metrology as the paramount example of what it is to expand locally everywhere, all the while bypassing the local as well as the universal. The practical conditions for the expansion of universality have been opened to empirical inquiries. It's not by accident that so much work has been done by historians of science into the situated and material extension of universals. Given how much modernizers have invested into universality, this is no small feat. As soon as you take the example of scientific metrology and standardization as your benchmark to follow the circulation of universals, you can do the same operation for other less traceable, less materialized circulations: most coordination among agents is achieved through the dissemination of quasi-standards. For many types of traces the metaphor is pretty easy to follow: What would be the state of any economical activity without accounting codes and summaries of best practices? If, for instance, you shift from the North American to the European Union accounting format, you offer investors different handrails to help them make calculations: profitable European companies will fall in the red, while others will jump into black.»

And, in many occasions, when those actor-networks are quite strong and predominant, things become practically as if acting at a distance is possible, acting in the future is possible, where acting without contiguity is erroneously thought as being able to explain it. Thus, a key goal of Actor-Network Theory is to place those factors that allow for such illusions to be effective on the lenses of both description and analysis. The exact point is that, making all of the above seem possible, we find continuous and compellingly unbroken networks where actors are woven in, where elements touch one another in contiguity by concretely describable channels, all these elements trackable and followable with greater or lesser difficulty.

These unbroken networks where actors are woven in and weave them out are how patterns are implemented, standards are made, measurings and measuring tools or instruments are calibrated and stabilized with great costs and many failed attempts. Without such networks, actors, actor-networks, without the pricey process by which they are calibrated and made to fit, whatever the degree of their complexity, nothing works or soon stops working. Nothing is describable, nothing is, at the limit, able to be thought. We speak of thought as all of the above applies equally to, for example, geographical maps, weather forecast, geometry, politics, hard sciences, or those philosophical concepts we associate as thought[189], passed on by networks of books, people, practices and institutions.

Two quotes by Latour in *Science in Action* may help in illustrating and deepening the above. The first reads as:

> *The only way to prepare "landing strips" everywhere for facts and machines*
> *is to transform as many points as possible of the outside world into instruments.*
> (Latour, 1987: 253)

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189 Cf. Latour, 1988: part 2, 4.3.3, 218: «We do not think. We do not have ideas (2.5.4). Rather there is the action of writing, an action which involves working with inscriptions that have been extracted; an action that is practiced through talking to other people who likewise write, inscribe, talk, and live in similarly unusual places; an action that convinces or fails to convince with inscriptions which are made to speak, to write, and to be read (3.1.0, 3.1.9). • When we talk of "thought", even the most skeptical lose their critical faculties. Like vulgar sorcerers, they let "thought" travel like magic at high speed over great distances. I do not know anyone who is not credulous when it comes to ideas. Yet "thought" is really quite simple, for when we write about other inscriptions, we actually cover great distances in a few centimeters. Maps, diagrams, columns, photographs, spectrographs-these are the materials that are forgotten, the materials that are used to make "thought" intangible.»

The key word here is "instruments"[190]. It is not enough to postulate metrology as essential unless that is combined with populating the world with instruments, therefore inserting them into the fabric of Ontology. Instruments are, in Science and Technology Studies, the producers of inscriptions, another heavily loaded term, inscriptions being the form under which most data used in scientific research and scientific articles is laid out usually in a bidimensional support such as paper or a screen, often in a purely visual form. Or they are what allows for the collecting of data which may in turn be subject to becoming an inscription. Or they act in the world in a certain way able to modify what they act by allowing it to be made into an inscription[191].

That is the technical understanding of what an instrument is, in Science and Technology Studies, and a lot of stress is put on linking scientific success and practice

190 Cf. Latour, 1987: 68: «I will call an instrument (or inscription device) any set-up, no matter what its size, nature and cost, that provides a visual display of any sort in a scientific text. This definition is simple enough to let us follow scientists' moves. For instance an optical telescope is an instrument, but so is an array of several radio-telescopes even if its constituents are separated by thousands of kilometers. The guinea pig ileum assay is an instrument even if it is small and cheap compared to an array of radiotelescopes or the Stanford linear accelerator. The definition is not provided by the cost nor by the sophistication but only by this characteristic: the set-up provides an inscription that is used as the final layer in a scientific text. An instrument, in this definition, is not every set-up which ends with a little window that allows someone to take a reading. A thermometer, a watch, a Geiger counter, all provide readings but are not considered as instruments as long as these readings are not used as the final layer of technical papers (but see Chapter 6). This point is important when watching complicated contrivances with hundreds of intermediary readings taken by dozens of white coated technicians. What will be used as visual proof in the article will be the few lines in the in the bubble chamber and not the piles of printout making the intermediate readings, It is important to note that the use of this definition of instrument is a relative one. It depends on time. Thermometers were instruments and very important ones in the eighteenth century, so were Geiger counters between the First and Second World Wars. These devices provided crucial resources in papers of the time. But now they are only parts of larger set-ups and are only used so that a new visual proof can be displayed at the end. Since the definition is relative to the use made of the 'window' in a technical paper, it is also relative to the intensity and nature of the associated controversy.»

191 Cf. Latour, 1990 [1986]: 6: «The essential characteristics of inscriptions cannot be defined in terms of visualization, print, and writing. In other words, it is not perception which is at stake in this problem of visualization and cognition. New inscriptions, and new! ways of perceiving them, are the results of something deeper. If you wish to go! out of your way and come back heavily equipped so as to force others to go out of! their ways, the main problem to solve is that of mobilization. You have to go and to come back with the "things" if your moves are not to be wasted. But the "things" have to be able to withstand the return trip without withering away. Further requirements: the "things" you gathered and displaced have to be presentable all at once to those you want to convince and who did not go there. In sum, you have to invent objects which have the properties of being mobile but also immutable, presentable, readable and combinable with one another.»

with both progress in instruments and in the production and treatment of inscriptions, under the more global understanding of technology´s role. Inscriptions are able to summarize in a manageable form the amount of information needed to make progress, allowing researchers to grasp much more than they possibly could if they weren´t there. While at the same time effectively being responsible for how data is collected and treated. However, what they also do is to dispel the myth of a direct contact with that entity usually called nature, or the myth of direct observation of what is said to be out there. Instruments, their making and refining, inscriptions, their making and refinement, are the touching stones of metrology and the only tendrils available to collect and treat what will later assemble as a scientific fact. Though, again, perhaps trivial, hardly are they brought into the forefront when epistemology or Philosophy of Science is on trial.

Relevant to say, humans can fulfil the role of instruments as much as machines can, and though the notion is somehow limited to scientific practice in the onset, it needs not be so when Actor-Network Theory, and the problematic of Social Sciences, enters the discussion[192]. Likewise, in a more ample view, those different forms of instruments need not produce only those inscriptions ending up at the core of hard scientific practice and fact making, even if they will eventually be summarized as such when becoming part of a scientific article. Teachers, or parents, or books, or roads, or departments of statistics, among many, are all alternate forms of instruments when Actor-Network theory departs from Science and Technology Studies. Instruments which do not necessarily produce inscriptions, but certainly operate in calibrating and operating an Ontology.

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192 Cf. Latour, 1987: 68-69: «The definition I use has another advantage. It does not make presuppositions about what the instrument is made of. It can be a piece of hardware like a telescope, but it can also be made of softer material. A statistical institution that employs hundreds of pollsters, sociologists and computer scientists gather all sorts of data on the economy is an instrument if it yields inscriptions for papers written in economic journals with, for instance, a graph of the inflation rate by month and by branch of industry. No matter how many people were made to participate in the construction of the image, no matter how long it took, no matter how much it cost, the whole institution is used as one instrument (as long as there is no controversy that calls its intermediate readings into question). (…) With this definition of an instrument, we are able to ask many questions and to make comparisons: how expensive they are, how old they are, how many intermediate readings compose one instrument, how long it takes to get one reading, how many people are mobilised to activate them, how many authors are using the inscriptions they provide in their papers, how controversial are those readings. Using this notion we can define more precisely than earlier the laboratory as any place that gathers one or several instruments together. What is behind a scientific text? Inscriptions. How are these inscriptions obtained? By setting up instruments. This other world just beneath the text is invisible as long as there is no controversy.»

Literature or art or Philosophy do accomplish a similar role. One has but to remember on how Aristotle was a measuring and constricting figure for much of medieval Metaphysics. Or the countless generations of lovers measuring and constricting what love is, or is not, according to *Romeo and Juliet*. Whatever comes, the neatness of instruments for Science and Technology Studies does explode with Actor-Network Theory. Still, the emphasis begins there, and the two-way, or better yet, multiple-way relations between what is by instruments brought and the placing and calibration of those instruments, is in the end kept.

Actor-Network Theory will then ask, as a guiding principle of measuring the measurers, who or what are the instruments, what sort of inscriptions or inscription analogues do they produce, who or what organizes them, how are they calibrated, further extended, and what do they transport back to those locations where landing strips are being built. Mixed in such a cauldron, facts keep coming into existence as much as they keep being left out when know-how of instruments' or inscriptions' networks fails to be taken care of.

The second quote reads as:

In all these mental experiments you will feel the vast difference between principle and practice, and that when everything works according to plan it means that you do not move an inch out of well-kept and carefully sealed networks. (Latour, 1987: 250)

With this quote we may enter a fourth relevant aspect in the correlation of Actor-Network Theory to Science and Technology Studies. To understand what is the most exact meaning of working according to plan and of not working according to plan, Science and Technology Studies, alongside with Actor-Network Theory, introduce first the notion of Science "in Action". Of simply "in Action" afterwards. Behind it lays a stringent distinction between principles, in principle, and practices, in practice, in action[193]. A strong flavour for practice or in action is preferred to lingering on principles

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193 Cf. Latour, 1988: part 2, 4.7.8, 234: «To oppose right and might is criminal because it leaves the field free for the wicked while pretending to defend it with the potency of what is right. But what is right is without force except "in principle". And so being unable to ensure that what is right is strong, people have acted as though what was strong was wicked. The strong have simply occupied the space left vacant by those who despise them in all innocence. • As a result of a comprehensible reversal, Machiavelli and Spinoza have been held to be immoral, even though they were right to refuse to distinguish might from

or theories or in methods, when methods equate to plans. Working according to a plan or a method is to be translated by following trails and trials in practice, first and foremost. Plans do nothing else than abbreviating, before or after, what is neither of the nature of a plan or a method, or of an idea, but of acting and enacting[194]. When the plan appears to have been successful this is further enforced. If it does, as seems to be the case when scientific practice is looked at, Actor-Network Theory takes such success as exceptional, an exception. Plans tend, usually, not to work accordingly. Exceptions are what has to be justified, though not by principles. Principles and plans often fail regardless of the principles associated with them. But by practices, the most empirically described as possible.

For Actor-Network Theory, discussing ideas instead of people is not the fittest approach. What must be looked at and discussed, if Ontology is wanted, are people, objects, actions, practices. Later to be subsumed or not under the far too reaching and far too loose umbrella of principles and ideas. In spite of occasional pragmatist currents, such prominence of practice in action is not dominant when it comes to Philosophy or to theoretical pursuits. Actor-Network Theory will, thus, not ask for principles, measurers in their own right if carefully examined, but for practices and sets of practices instead, actions and set of actions instead[195]. What acts is, nevertheless, not limited to common

right. But the present precis differs from Spinoza's *Tractatus Theologico-Politicus*. Times have changed. The exegesis of religious texts has now been replaced by the exegesis of "scientific" inscriptions. For this reason I think of this essay as a *Tractatus Scientifico-Politicus*. Even so, the object is the same. We are still right at the beginning of the exegesis, and the link between science and democracy has become tenuous in the course of the "wars of science". Like Spinoza, we look cruel in order to be fair.»

194 Cf. Latour, 1987: 4: «The impossible task of opening the black box is made feasible (if not easy) by moving in time and space until one finds the controversial topic on which scientists and engineers are busy at work. This is the first decision we have to make: our entry into science and technology will be through the back door of science in the making, not through the more grandiose entrance of ready made science.»

195 Cf. Latour, 1996 [1990]: 375-376: «Actor-networks do connect and by connecting with one another provides an explanation of themselves, the only one there is for ANT. What is an explanation? The attachment of a set of practices that control or interfere on another. No explanation is stronger or more powerful than providing connections among unrelated elements, or showing how one element holds many others. This is not a property that is distinct from networks but one of their essential properties. They become more or less explainable as they go and depending on what they do to one another. Actors are cleaning up their own mess, so to speak. Once you grant them everything, they also give you back the explanatory powers you abandoned. The very divide between description and explanation, how's and whys, blind empiricism and high theorizing is as meaningless for ANT as the difference between gravitation and space in relativity theory. Each network by growing "binds" so to speak the explanatory resources around it and there is no way they can be detached from its growth. One does not jump outside a network to add

sense and tradition regarding what agency is. To study a given research subject or research object in action, or in practice, means, or is translatable as, many different things.

To study it through a place before it is, or was, accepted as true or consensual, independently of how much it is so considered, or not, in present times or in those times when it became so. To give the most detailed attention to the controversies the research subject or research object gave birth to, up to where it is possible symmetrically treating the several stances and actions and practices such controversies reveal, without previous choice on which is correct. To step by step consider, above all, the options at stake when no winning solution was clearly in sight. To see, step by step, by which forces, which practices, actions, actors, networks, did the controversy become stabilized in a winning solution. Where, when, by whom, by what. If it didn´t, how, where, when, by whom, by what. If it did or didn´t, how is the winning stance or solution disseminated or the failed one kept at bay. How, where, when, by whom, by what. To question with whom, with what, against whom, against what, for whom, for what.

Clusters of resistance to the consensual status of a solution or stabilization must also be tracked. How they come to that resistance. How they keep it being taken into account. To grasp what is under examination through those key turning points where it could have failed but didn´t fail. Where it could have succeeded but didn´t succeed.

Crucially, to Actor-Network Theory, it does mean to take the research subject, or research object, in those moments when the entity, or entities, is not yet capable of having a definition applied to it. When its characteristics are not yet, more or less, stabilized, not fully distinct from others. Before the so-called subject or the so-called object are, more or less, born, created, fabricated, constituted[196]. This is a tricky point to introduce,

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an explanation -a cause, a factor, a set of factors, a series of co-occurrences; one simply extends the network further. Every network surround itself with its own frame of reference, its own definition of growth, of referring, of framing, of explaining. In this process the frame of reference of the analyst does dot disappear more than the physicist's in Einstein's world; on the contrary, at last it is able to extend itself, but there at a price.»

196 Cf. Latour, 1987: 87: «We have reached a point which is one of the most delicate of this book, because, by following dissenting scientists, we have access to their most decisive arguments, to, their ultimate source of strength. Behind the texts, they have mobilised inscriptions, and sometimes huge and costly instruments to obtain these inscriptions. But something else resists the trials of strength behind the instruments, something that I will call provisionally a new object. To understand what this is, we should stick more carefully than ever to our method of following only scientists' practice, deaf to every other opinion, to tradition, to philosophers, and even to what scientists say about what they do (see why in the last part of

enhanced by, according to Actor-Network Theory, no attributions of characteristics or properties to a given so-called subject or so-called object may, ever, be seen as fully stabilized. No definitive constitution being, as a broad guiding principle, achievable for all times to come. Nevertheless, in practice, subjects, objects, people, things, are step by step constrained by reduction into stabilization and definition as if they were able to accept it, or as if they were such from the start, their natures having been discovered instead of having been assembled. The point is fundamental, if unravelling what an Actor-Network Ontology could be becomes a goal.

We begin, so, to clutch together what irreduction may stand for. Explaining it through Science and Technology Studies examples is helpful. In practice, a new chemical substance, a new subatomic particle, a new computer, a new energy source, begin hinting themselves as signs or inscriptions in a given instrument, disperse answers to trials in a laboratory, small and yet unordered empirical data, tangential results from failed attempts, given performances in given conditions. Much later, after more extensive trials, more directed and restrictive observations, even the construction and application of new instruments, more newly devised experiments, does an entity twitch into a definition, becomes clearly and clearly distinguishable from others, properties assigned or denied of it[197].

In Actor-Network Terminology this is translated as gaining and maintaining an asymmetry, constructing a shape, installing a difference, stabilizing characteristics, trial

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this chapter). What is a new object in the hands of a scientist? Consider the GRF that Guillemin and Brazeau were expecting to find: it was defined by its effect on tibia cartilage assay and in cell cultures. The effect was uncertain in the first assay, certain and negative in the second. The definition had to change. The new object, at the time of its inception, is still undefined. More exactly, it is defined by what it does in the laboratory trials, nothing more, nothing less: its tendency to decrease the release of growth hormone in the pituitary cells culture. The etymology of 'definition' will help us here since defining something means providing it with limits or edges (*finis*), giving it a shape. GRF had a shape; this shape was formed by the answers it gave to a series of trials inscribed on the window of an instrument. When the answers changed and could not be ignored a new shape was provided, a new thing emerged, a something, still unnamed, that did exactly the opposite of GRF. Observe that in the laboratory, the new object is named after what it does: 'something that inhibits the release of growth hormone'. Guillemin then invents a new word that summarises the actions defining the thing. He calls it 'somatostatin' that which blocks the body (implying body growth).»

197 Cf. Latour, 1987: 88: «At the time of its emergence, you cannot do better than explain what the new object is by repeating the list of its constitutive actions: 'with A it does this, with C it does that.' It has no other shape than this list. The proof is that if you add an item to the list you redefine the object, that is, you give it a new shape.»

by trial, experience to experience. Gaining the characteristics that make it a distinct entity, that name it[198]. Through a figuration of what it is supposed to be accordingly. Through a process associating many distinct other entities in its making. A process that leads to attributions from fabrications, from creations, from failures and successes into varying forms of collective acceptance, giving meaning to a name and to a naming.

We have then "Iron", "H2O", "Lepton", "Microchip", "Cancer", "Cell", etc. If such names do refer anything at all besides themselves, that has to be nothing than what behaves in such and such a way under such and such conditions. That which is associated with such and such given signs and given inscriptions. That which is fully indissociable from metrologies, technologies, humans, non-humans, from all and everything which took part in performing its relative stabilization. Nothing more than that, remembering no such thing as ostensive definitions are accepted. This process is what Actor-Network Theory calls constructing attributions, or building a figuration. What a Material Semiotics, of the things themselves, tracks narrative wise.

Two intermediate points on the subject at hand follow. First, the issue of reference, highly problematic to Actor-Network Theory. Words are seen as able to be made to refer, constructed as if they do, but not actually doing it, at least when alone. This being the case, words are better said to associate with, to convey and summarize at most, by translating-betraying, sets of associations with and between heterogeneous entities[199]. Be

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198 Cf. Latour, 1987: 89: «At the beginning of its definition the 'thing' is a score list for a series of trials. Some of these trials are imposed on it either by the scientific objector and tradition - for instance to define what is a metal-or tailored by the authors – like the trial by heat. The 'things' behind the scientific texts are thus similar to the heroes of the stories we saw at the end of Chapter 1; they are all defined by their performances. Some in fairy tales defeat the ugliest even-headed dragons or against all odds they save the king's daughter; other inside laboratories resist precipitation or they triumph over bismuth... At first, there is no other way to know the essence of the hero. This does not last long however, because each performance presupposes a competence which retrospectively explains why the hero withstood all the ordeals. The hero is no longer a score list of actions, he, she or it is an essence slowly unveiled through each of his, her or Its manifestations. It is clear by now to the reader why I introduced the word 'actant' earlier to describe what the spokesperson represents. Behind the texts, behind the instruments, inside the laboratory, we do not have Nature – not yet, the reader will have to wait for the next part. What we have is an array allowing new extreme constraints to be imposed on 'something'. This 'something' is progressively shaped by its re-actions to these conditions.»

199 Cf. Latour, 1988: part 2, 2.2.2, 181: «Since nothing is reducible or irreducible to anything else (1.1.1) and there are no equivalences (1.2.1), every pair of words may be said to be identical or to have nothing in common. Thus, there are no clear ways of distinguishing literal from figurative meanings (Hesse: 1974). Every group of words may be dirty, exact, metaphorical, allegorical, technical, correct, or far-fetched.»

them words, or things, or other diverse links in diverse chains and webs. Studying the how to of such associations, following them, is seen as more useful than asking on one hand what they do refer to, what is reference. On the other hand, the issue of what do they mean, what is meaning. Reference, meaning, are taken as simply a form of the associations and translations taking place[200].

Consequently, words are in a way set free to non-intended uses. That they are being used as if referring mainly such and such, meaning such and such, does not constrict them in those same meanings and references. They can and ought to be used otherwise. As a matter of fact, they already are when apart from restricted domains. Such otherwise uses ought not to dismay the inquirers into their roles in Ontology, as it is, a sort of overlooked triviality bearing many fruits if taken full heartedly. Stepping on, hierarchies of meaning do not stand. Literal, metaphoric, fictional. Words and things simply associate, translating. If asking for a reference, the more correct answer indicates "hows" of establishing it, without splitting "hows" of meanings, with answers following on the line of what was put before for the names of entities coming out of scientific practice.

The second point entails from the above. Merging Science and Technology Studies to what Actor-Network Theory does, backtracking into social sciences and forward tracking into a multitude of domains. Stabilization and trialling of translations and associations works also in social sciences terminology, the whole gambit of terminologies in the collective in fact, thus it is able to suffer the same analysis in action or in practice of its constructed attributions.

It can be applied to "Classes", "Power", "Gender", "Capitalism", "Unconscious", "Will", etc. As much as to heavily laden philosophical terminology, "Being", "Time", "External", "Internal", "Ontology" of course, "Philosophy" of course. Likewise, to "emotions", "feelings", "subject", "object", "human", "natural", "social", "symbolic".

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200 Cf. (Latour, 1988: part 2, 2.4.2, 183: «Words are never found alone, nor surrounded only by other words; they would be inaudible. • An actant can make an ally out of anything, since nothing is by itself either reducible or irreducible (1.1.1) and since there is no equivalence without the work of making equivalent (1.4.0). A word can thus enter into partnership with a meaning, a sequence of words, a statement, a neuron, a gesture, a wall, a machine, a face … anything, so long as differences in resistance allow one force to become more durable than another. Where is it written that a word may associate only with other words? Each time the solidity of a string of words is tested, we are measuring the attachment of walls, neurons, sentiments, gestures, hearts, minds, and wallets – that is, a heterogenous multitude of allies, mercenaries, friends, and courtesans. But we cannot stand this impurity and promiscuity.»

All of these are able to be studied under the tenets of action and practice. Following the same general guidelines of tracking towards a place before their characteristics are, more or less, stabilized into acceptance. Judging on the strength-reality of such stabilizations.

Still reporting to Science and Technology Studies, entities coming from scientific practice are, after relative stabilization, constitution, definition, disseminated into the collective, fitting as parts of an Ontology. The name and images by which they are figured sum up the final stage of the whole process described, for given times and given places. As many as the actor-networks at stake can disseminate it through, which must also be tracked. Our Ontology, our collective, is now populated with neutrons, atomic energy, microprocessors, microbes, new particles, new technologies, new lives and new humans even, depending on the scientific subdomain at hand. The fact that scientific practice is of late so active in enforcing so strongly new beings into our collective and having always been a strong component of its constitution makes it unavoidable in studying it. Even for those domains which, also producing new beings or new translations-betrayals of older ones, cubism, expressionism, justice, republic, morals, do not do so as strongly on a first look.

Thus, without understanding science as the strongest producer of facts and new beings, in practice, no understanding, in practice, of the social, is successful for long. Actor-Network Theory reminds, though, that in such domains now not so apparently strong, objects are found, be them words, things, ideas, whose associations show extreme resilience, often regardless of having consensus in terms of their correctness. A lazy look would dismiss them as wrong or right but that describes nothing of their resilience and strength[201]. As collective action is highly engaged in scientific practice, it is also hardly engaged in producing them. It might be not so apparent which tests and associations they prevail with, thus the tendency to reduce them in a few social or political or aesthetic

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201 Cf. Latour, 1988: part 2, 2.4.4, 184: «Languages neither dominate nor are dominated, neither exist nor do not exist. They are entelechies like all others. They seek allies at their convenience and build a whole world from them with the same prohibitions and privileges as other actants. • Only linguists could believe that words associate only with other words to make a linguistic structure. They forget the difficulty that they had in detaching words from their allies when they invented their structures. That words are forces like others with their own times and spaces, their "habitus" and their friendships, is surprising only to those who believe that "men" exist or dominate languages. Have you never fought with a word? Is not your tongue hardened by talking? Whatever resists is real (1.1.5). Who could believe that words have a clean history of their own?»

handles, but survivability shows they do prevail, their strength-reality turns out effective. By calling Science and Technology Studies take on studying in action or in practice up into all possible domains able to fit in an Ontology, no need is there to split different domains to different parts of reality.

Domains, in practice, do contaminate one into the other and Ontology in practice or in action is made of such multiple translations-betrayals performing through the collective. Our collective also begins to contain expressions as "x thinks like a computer", "that speech was a nuclear blast", "he has a heart of lead". They are understood regardless of deep awareness of computation theories, of the nuclear reactions in a uranium atom, of the chemical structure of lead. Still, their use cannot be fully disconnected from how computation, nuclear explosions, iron, entered into our collective. Many such expressions survive well beyond any correspondence with current uses and definitions of terms involved, sticking on. We understand well what it means to have a bad humour, regardless of the theory of humours having been lost to most. Similar reflections apply to philosophical terms, as it is.

Instead of asking what "lead" does, for example, refer to, what does "lead" mean, Actor-Network Theory will ask which attributions are being associated with "lead". What is it that is being translated-betrayed through "lead"? What does it mediate, in practice or in action, as per the characteristics previously described? The goal is to establish all that "lead" is linked and woven to, that make it still be performed in given ways. Between such links, associations, translations-betrayals, much more than just other words will have to be included. Associations of which words are one of the elements forcefully encompass what are not just words. Even if one grants that words are not things, a source of trouble in itself[202]. What is to be tracked, as it is performed, is the circulation and distribution of attributions that collective action keeps moving on through unexpected routes.

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202 Cf. Latour, 1988: part 2, 2.4.5, 184: «It is not possible to distinguish for long between those actants that are going to play the role of "words" and those that will play the role of "things". If we talk only of languages and "language games", we have already lost, for we were absent when the changing roles and costumes were distributed. • Recently there has been a tendency to privilege language. For a long time it was thought to be transparent, to be alone among actants in possessing neither density nor violence. Then doubts began to grow about its transparency. Hope was expressed that this transparency might be restored by cleaning language as we might clean a window. Language was so privileged that its critique became the only worthy task for generations of Kants and Wittgensteins. Then in the fifties it was realized that language was opaque, dense, and heavy. This discovery did not, however, mean that it lost its privileged status and

If, for example, "lead" is the current culprit, the tracking will have to include behaviours, voice tones, emotions, all able to allow someone express that "x has a heart of lead" and be understood by saying it, to others or to himself. And, of course, chemical manuals, schools and institutions, technologies where lead is used, alchemical treatises even, when they assign out of the ordinary properties to making lead into gold. Etc. Naturally, controversies between opposing actor-networks, such as those of a chemist teaching on "lead" and, perhaps, a literary work where "lead" is taken as a totally different thing altogether. No single answer will be true, away from such networks where it is being performed as such, by many more things than just words. Clashing is inevitable when actor-networks collide, while all of them keep contributing to Ontology.

It is somehow a full methodology of inquiry, able to enter Philosophy, that can be induced from this process of in action or in practice. Though, hardly one that can be closed into a self-contained set of directions with strict definitions. Besides the possibility of single answers being generally wrong, as in the goal of explaining the many by just one or by the minimal number, it at least helps in not choosing to soon, through playing by all tunes. Those that survive, survive, regardless of right or wrong, by the heterogeneous forces they are able to muster, right being yet another form of such forces. From here, we can immediately access at least two supplementary practical justifications for the approach in action which is so vital both to Science and Technology Studies and to Actor-Network Theory.

A first is that not to follow such an approach equivalates to, in one way or another, accepting an argument of authority as to the status of a given fact, a given state of affairs, a given description, a given statement, even a given explanation. The argument is called of authority as the number of individuals who may with adequate knowledge judge on a given subject is quite limited, and may still fail, besides. This doesn´t necessitate a prejudicial view on authority per se, as if it were always wrong to be taken. As things are, it is practically impossible to deal without it, at given stages. A point always comes in the

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was equated with the other forces that translate and are translated by it. On the contrary, the attempt was made to reduce all other forces to the signifier. The text was turned into "the object". This was "the swinging sixties", from Levi-Strauss to Lacan by way of Barthes and Foucault. What a fuss! Everything that is said of the signifier is right, but it must also be said of every other kind of entelechy (1.2.9). There is nothing special about language that allows it to be distinguished from the rest for any length of time.»

disseminating of facts, situations, states of affairs, when most are left with only the options of believing or not believing, of accepting or not accepting what is placed to them as truth or untruth, by authorities. There are practical limits to the extent of doubting, but those cannot be decided beforehand and are indeed practical, depending on what is on analysis, the available means and resources needed to analyse and question it, even its current degree of consensual acceptance if highly constricting the investments needed to overcome such limits.

Again, practically speaking, doubting could shut itself up if what is at stake becomes fully consensual with no hint of exceptions, or hindrances of disbelief remaining unchecked. But, on one hand such consensual beliefs are almost never, if not ever, the case at any given time in history, present or past. On the other hand, countless examples can be found where the status of almost fully consensual belief is later reverted back into its opposite or denial. This occurs not only in hard scientific practices but as well in many other domains, from the ethical to the aesthetical to the political. In quotidian pursuits and in theoretical demands.

So, nothing being inherently wrong with authority, how it works and what can, if anything, justify it in practice, has to be brought into the forefront as a vital task for navigating the collective. Practically oriented as it always is, Actor-Network Theory puts forward the argument that doubting ends, actually, almost always through an external imposition that propitiates its silencing. It ends when the costs of keeping it voiced and active can no longer be supported by those wanting to take it onwards consequently. Such costs are the most diverse, often the more prosaic as often the more complex. Grounding from economic factors to legal factors, from social exclusion to plain elimination when authority strikes its tail.

Thus, a key thing being proposed is that doubting ends by force and not by reason. Doubting ends, practically speaking, by authority growing larger through assembling of force and forces. Not by arguments whose reasons are being pondered one against the other, practically speaking. Where arguments are on the table, they are no more than one more force acting out, worthless on itself. This means that doubting is, another underlining principle with the same looseness of others, never to be abandoned in methodological and theoretical terms. While the processes by which doubt is silenced and put over, including resources and alliances and strengths of heterogeneous natures

gathered to that end, will be the crucial aspect when faced with taking or not taking an authority's statements. Again, in consonance with the tenets of in action or in practice. An illustrative question, as an example, is asking out exactly what one would be up against if deciding to keep on a given doubting course. Then, how much work would it demand to successfully turn the wheels of consensual beliefs.

A Machiavellian undertone is at play. Ends end up justifying the means, one being free to take justification as much epistemologically as morally. In practice or in action can be seen as looking foremost at the means whose existence has been justified and done with. Making them speak their alternative endings and concrete actions available when left to fence out for themselves in doubting. Furthering the ploy, Actor-Network Theory does consider consensually held beliefs on the status of facts or statements, themselves indissociable of fabrication and construction in action, as a result of succeeding in, quite literally, shutting out doubts on the same facts or statements.

This implies, again quite literally, succeeding in shutting up those who do not agree with the proposed status and its dissemination. As much as shutting up what does not agree with the proposed status being disseminated, often in the form of anomalies, exceptions. Up to now we are not speaking of right or wrong unless they are seen as just another arsenal used in action or in practice to subdue doubters. Right or wrong is again, in all practical purposes for the collective, a factor of the success in instigating consensual belief, undeterminable beforehand or by itself.

No previous split is also called for when it comes to an asymmetry between those who doubt and what doubts, in terms of gaining, or losing, success. Microbes appearing in petri dishes, and petri dishes, contribute as much to the dissemination of a consensual belief in pasteurization as those who end up not doubting by becoming aware that they are indeed there under the microscope. Microscope, which also contributes and plays its part. Shutting up doubts can be done, again, through many processes where plain old theoretical and methodological discussion is no more than the tip of an iceberg. An iceberg whose global mass is relegated under the table. Such processes will entail conjunctions of institutions, people, things. Collectively working towards a winning consensual status while clashing with opposing factions and opposing things, often with opposing data. Truths and falsities enter Ontology agonistically. Authorities vouching for each battling on to stabilize an Ontology who is in the making.

Nothing being inherently wrong in authority, as in to accept it or not accept it, its foundations in practice or in action must be undug and brought to visibility. As much as, to make it acceptable, the same would have to be ideally done. Stripping the means bare, laying them out plain, exposing any controversy whatsoever on the nature of what is being analysed as it is making its path into collective acceptance as a truth or a falsity, until is no longer viable practically. Still, even then, it is to remain as a theoretical buzz, a subcritical reminder waiting to burst if called for. If and only if a more correct description and recording of Ontology is sought as a goal. Nothing being inherently wrong, at first, with the authorities standing for versions of it. In practice or in action ever seeks to make what is shut speak again, following it through, showing the cards.

We have then, at least, three questions that must be asked, after Science and Technology Studies and Actor-Network Theory. Which technologies? Which metrologies? Which controversies?

A second supplementary practical justification for an approach in action or in practice is that nothing is miraculously born, nothing appears fully grown, of a sudden, nothing comes from nowhere. And no better way is there to understand how something comes to be than enlightening alternative paths left out, whys and how of defeated stances, history of the losers on pair with history of the winners. To accurately judge the success or unsuccess of a discipline can´t be done by reducing it to successful endeavours. Both qualitatively and quantitatively, outright failures, failed technologies, badly inadequate measuring, must be summed forth, described as they were when winners lacked. Only after detailed recordings and describing, symmetrically including all these elements, can one achieve knowledge on how a discipline succeeds to subsequentially propose a why.

Applied to scientific practice this approach emphasizes that attempts are and were many, failures accumulate, and its success rate suffers accordingly. It emphasizes the vast resources, technical, human, financial, available for scientific practice. Contrary to investments in other practices, other fields of knowing. Its success rate is thus reframed accordingly. Among available resources it emphasizes collected information, treated and gathered in increasingly accurate strategies towards given metrological goals. It

emphasizes what it calls "cycles of accumulation"[203] back and forth from laboratories and industries, accumulating data over data, accumulating actors over actors, human and otherwise. Examining them again and again, back and forth, through instruments deployed. All translating into an exponential quantitative increase of individuals and/or technologies working them out. The results of which force, step by step, trial by trial, qualitatively superior attempts and experiments as a factor of the quantitative enhancement of means.

Prior to any hint of discussion on the scientific method, rationality versus irrationality, strict or less strict causality from domain to domain, qualitative notions, pure quantity of resources in collective action have to be fully described and taken into account, side by side with those available to other fields. Scientific-technological practice, above all when related with health or war[204], collects more resources than all. Still, to

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203 Cf. Latour, 1987: 93: «Laboratories grow because of the number of elements fed back' into them, and this growth is irreversible since no dissenter/author is able to enter into the fray later with fewer resources at his or her disposal – everything else being equal. Beginning with a few cheap elements borrowed from common practice, laboratories end up after several cycles of contest with costly and enormously complex set-ups very remote from common practice. The difficulty of grasping what goes on inside their walls thus comes from the sediment of what has been going on in other laboratories earlier in time and elsewhere in space. The trials currently being undergone by the new object they give shape to are probably easy to explain to the layperson – and we are all laypeople so far as disciplines other than our own are concerned – but the older objects capitalised in the many instruments are not. The layman is awed by the laboratory set-up, and rightly so. There are not many places under the sun where so many and such hard resources are gathered in so great numbers, sedimented in so many layers, capitalised on such a large scale. When confronted earlier by the technical literature we could brush it aside; confronted by laboratories we are simply and literally impressed. We are left without power, that is, without resource to contest, to reopen the black boxes, to generate new objects, to dispute the spokesmen's authority. Laboratories are now powerful enough to define reality.»

204 Cf. Latour, 1987: 172-173: «The similarity between the proof race and the arms race is not a metaphor, it is literally the mutual problem of winning. Today no army is able to win without scientists, and only very few scientists and engineers are able to win their arguments without the army. It is only now that the reader can understand why I have been using so many expressions that have military connotations (trials of strength, controversy, struggle, winning and losing, strategy and tactics, balance of power, force, number, ally), expressions which, although constantly used by scientists, are rarely employed by philosophers to describe the peaceful world of pure science. I have used these terms because, by and large, technoscience is part of a war machine and should be studied as such. This link between war and technoscience should not be limited to the development of weapon systems. To fully grasp it, it is necessary to consider more generally the mobilisation of resources, whereby I mean the ability to make a configuration of a maximal number of allies act as a single whole in one place. Research into new weapons is one obvious focus, but so is research into new aircrafts and transport, space, electronics, energy and, of course, communications. Most technoscience is concerned with facilitating this mobilisation of resources (see Chapter 6). The only other big chunk of civilian research visible on Table 4.6 is that of health. Why is it that scientists have been

every success many failures precede, no success having been achieved for long without considerable means recruited in the process. Explaining success needs not be far-fetched, thus.

Science and Technology Studies seek such explanation in gathering and collecting of information and resources in accord with technologies and metrologies used, from a cycle of accumulation to another[205]. Apparent qualitative superiority, apparent constitutive difference, is made out as result of such accumulations in practice, or in action. Actor-Network Theory easily extends the argument to domains other than

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successful in tying their work to this topic? Although it does not fit the bill as well as the army, the health system has done similar groundwork. Like the survival of the body politic, the survival of the body is a subject in which everyone is directly and vitally interested. Since in both cases money is no object, the health budget, like that of defence, is a gigantic treasure chest where spending is made without limit. In both cases interest and spending have been made compulsory by taxes or the social security system, the latter being as big as the state budget in most industrialised countries. The role' played by the military in recruiting, drilling, and forcing everyone to be simultaneously interested and obedient has been played for centuries by physicians, surgeons and health workers. Amateurs have been excluded, quacks and charlatans have been forbidden to practise, everyone has been made to take an interest in health problems, legislation has been passed. Most of the work had already been done when life scientists linked their fate to that of health. So it is not surprising that so much research is conducted on the health system. When scientists and engineers are unable to link their work to either of these two budgets, they fare less well. The remainder of all publicly financed R&D is a puny percentage of the total. The problem of finding resources to pursue the proof race has been historically solved when budding scientists have linked their fate to that of people whose general goal was seen as being approximately the same: mobilising others, keeping them in line, disciplining them, interesting them. If these conditions are not met, groups of scientists may exist, but they will never be able to increase considerably the cost of proof or to multiply the number of their peers.»

205 Cf. Latour, 1987: 232-233: «After having followed expeditions, collections and enquiries, and observed the setting up of new observatories, of new inscription devices and of new probes, we are now led back to the centres where these cycles started from; inside these centres, specimens, maps, diagrams, logs, questionnaires and paper forms of all sons are accumulated and are used by scientists and engineers to escalate the proof race; every domain enters the 'sure path of a science' when its spokespersons have so many allies on their side. The tiny number of scientists is more than balanced by the large number of resources they are able to muster. Geologists can now mobilise on their behalf not a few rocks and a few nice water colours of exotic landscapes, but hundreds of square metres of geological maps of different parts of the earth. A molecular biologist, when she talks of mutations in maize, may now have at her side not a few wild cobs, but protocol books full of thousands of cross-breeding results. The directors of the Census Bureau now have on their desks not only newspaper clippings with opinions on how big and rich their country is, but stocks of statistics extracted from every village that array their country people by age, sex, race and wealth. As for astronomers, a chain of radio-telescopes working together transforms the whole earth into one single antenna that delivers thousands of radio sources through computerized catalogues to their offices. Every time an instrument is hooked up to something, masses of inscriptions pour in, tipping the scale once again by forcing the world to come to the centres- at least on paper. This mobilisation of everything that can possibly be inscribed and moved back and forth is the staple of technoscience and should be kept in mind if we want to understand what is going on inside the centres.»

scientific practice. Mostly, quantities of resources and information accumulation, treated back and forth in detailed movements, will determine resilience, strength-reality, the overall success in any given field. In practice, or in action, gaining knowledge is a feature of investments associating resources and information. Of performing them together, constructing Ontology.

Actor-Network Theory, first, lists out the sets of heterogeneous elements present in whatever is being analysed, without reducing or hierarchizing them beforehand. Whatever the object, subject, fact, entity, it has to be opened out, laid down, dismembered from a merely apparent unity. Then, it's construction is reconstituted, performed again. Fictional[206] strategies, keen to Semiotics, are used in splitting it into the many actants coming together, step by step. Characters are assigned, a plot is sought as to how entities birth out. To do this the most precisely as possible two factors which will further merge from plain methodology into Ontology in practice stand as vital.

First, what is being dealt with is always composed by, and through, a large number, in fact a potentially infinite number, of associated elements. How many are there is a fundamental issue. Whatever the answer, even if impossible, guide lining the process is the certainty that those are many more than the ones at first usually considered. Second, such elements will be heterogeneous, never of a single strand, their proveniences quite different one from the other. How much different is a fundamental issue. Whatever the answer, even if undeterminable, guide lining the process is the certainty that they cannot be reduced to a unity, or just to the restricted spectrum of overarching previous domains.

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206 Cf. Latour, 2005: 54-55: «Because they deal with fiction, literary theorists have been much freer in their enquiries about figuration than any social scientist, especially when they have used semiotics or the various narrative sciences. This is because, for instance in a fable, the same actant can be made to act through the agency of a magic wand, a dwarf, a thought plays, and films from classical tragedy to comics provide a vast playground to rehearse accounts of what makes us act. For this reason, once the difference between actant and agency is understood, various sentences such as 'moved by your own interest', 'taken over by social imitation', 'victims of social structure', 'carried over by routine', 'called by God', 'overcome by destiny', 'made by your own will', 'held up my norms', and 'explained by capitalism' become fully comparable. They are simply different ways to make actors do things, the diversity of which is fully deployed without having to sort in advance the 'true' agencies from the 'false' ones and without having to assume that they are all translatable in the repetitive idiom of the social. This is why ANT has borrowed from narrative theories, not all of their arguments and jargon to be sure, but their freedom of movement. It is for the same reason we refuse to be cut off from Philosophy.»

Even more if those domains are singly taken, with single lines of causes, single directions of effects, be them aesthetics, ethics, etc. Be them nature, society, symbol, etc.

Actors must be followed regardless of categories and hierarchizations, if wanting not to lack detail for an in-depth description. Efforts towards unveiling the coming together of actants will fail accuracy if a reconstitution, strongly grounded in the making, in action and in practice, is not worked out free of theoretical bundling. As in made-again. When heterogenous elements are listed no limitation is there, then, of which and how many. Likewise, no theoretical limitation is there as to where they ought to fit. Limitations are practical, of investments and resources. After, what needs to be understood is how the immensity of heterogeneous elements does associate as if one, if it does. How, through their construction and constitution in coming and sticking together, actions work out sometimes as if they were just one. How, effect wise, always under certain conditions, the multiplicity can be forgotten and the many are put aside.

In the rare occasions when it is, strikingly so, we face a black box pushing on, an exceptionality taken for granted or at best hidden in plain sight. In Actor-Network's terminology an intermediary, as opposed to a mediator[207]. Correctly presented, the process borders common sense, hardly far-fetched. Computers, airplanes, hammers, institutions, books, atoms, stones, words, people, such examples might accumulate, do illustrate the point easily.

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207 Cf. Latour, 2005: 39: «An intermediary, in my vocabulary, is what transports meaning or force without transformation: defining its inputs is enough to define its outputs. For all practical purposes, an intermediary can be taken not only as a black box, but also as a black box counting for one, even if it is internally made of many parts. Mediators, on the other hand, cannot be counted as just one; they might count for one, for nothing, for several, or for infinity. Their input is never a good predictor of their output; their specificity has to be taken into account every time. Mediators transform, translate, distort, and modify the meaning or the elements they are supposed to carry. No matter how complicated an intermediary is, it may, for all practical purposes, count for just one – or even for nothing at all because it can be easily forgotten. No matter how apparently simple a mediator may look, it may become complex; it may lead in multiple directions which will modify all the contradictory accounts attributed to its role. A properly functioning computer could be taken as a good case of a complicated intermediary while a banal conversation may become a terribly complex chain of mediators where passions, opinions, and attitudes bifurcate at every turn. But if it breaks down, a computer may turn into a horrendously complex mediator while a highly sophisticated panel during an academic conference may become a perfectly predictable and uneventful intermediary in rubber stamping a decision made elsewhere. As we will slowly discover, it is this constant uncertainty over the intimate nature of entities – are they behaving as intermediaries or as mediators? – that is the source of all the other uncertainties we have decided to follow.»

Not as common sensibly, bordering ungraspable complexification, is the extent of how many elements, and which, Actor-Network Theory is willing to include in the associations composing Ontology. As not so common sense is the strict refusal of hierarchy prior to reconstitution, of understanding some through the frame of subsuming them to others or to another. The strict refusal of reducing some to others or to another. Regardless, actions often work as if such was the case. To this whole process of reconstitution, reconstruction, and mainly to the strong focus on unwinding apparent unity, irreduction is the name chosen for. We have, so, one way more of grasping what it stands for. To lay multiplicity bare. To awake the mediators from under the carpet. Others will follow.

When focusing directly on the workings of in action and in practice a conclusion, away from the mere methodological standpoint, was made clear. Well thought, it is again near to common sense, at least as much as the underlying multiplicity of what appears as apparent unity. Besides number and heterogeneity of elements to be included, movement in their assembly cannot be put aside. Movement is unavoidably linked to any characteristics composing together the object, subject, fact, situation. Nothing is, that is not already in action, in practice, moving. Nothing stands still, in practice, including what theoretically we tend to see as such. Even what appears as perfectly stabilized, as much as what appears as perfectly consensual, keeps still, as if not moving, only through a great number of encompassing resources, forces mobilized, moving in order to make it so, or to but make it appear as if so.

Encompassing resources trail networks and networks of movements, exchanges, connections, actions in practice and in action, behind what is apparently as if still. If such forces do not keep working, an Ontology will collapse. Failing such forces and resources, what is apparently still soon shakes in movements after movements, often ceasing to exist altogether, dispersed in particulars with no contact with each other. Exposing such forces, resources, and movements, is also to irreduce the composition of Ontology. Mandatory in an approach, in action or in practice, to any element whatsoever from those Ontology is made out. Understanding what there is, how it is and comes to be, how it keeps on being, what it is becoming into, demands irreduction of stillness. As, the argument goes, it corresponds to how, in practice, Ontology composes itself. An alternative way of

expressing it, not so near to common sense, is to state that nothing is there that is not being performed onwards. Or else it is not.

Such notion applies to any element of, and in, Ontology. Be it said to be human, said to be non-human, be it said to be a word, a thing, an object, a subject, a fact, a situation. Strange as it may seem no idealism is asked for or, at least, no denial of realism is asked for. What there is does work often, in practice, as if one and as if still, in whole domains. On the other hand, no defence of realism, in more commonplace philosophical terms, is also asked for. Again, an Actor-Network Philosophy, in the terms of the discipline, is yet to be done. Taken as certain, through and by the above, is that no such thing as theoretical entities exist, or subsist, unless by practices which are, not at all, theoretical. Even more, that there is no such thing as a theoretical theory. Even more, as already mentioned, if choosing a side is in place, there is no such thing as a theory, unless it is a practice in action. Thus, there are no theories, not even an Actor-Network Theory. A controversial statement, causing difficulties. Still, in practice is the key touchstone to be fondled, what may not be forgotten. For as many difficulties it may induce, methodological or otherwise.

Even if it forces us to go painstakingly slow, a slogan Latour twins with Actor-Network Theory. Painstakingly in complexity, additions instead of subtractions[208]. Painstakingly slow without the theoretical satisfaction of final well-rounded answers. The argument states no understanding of the world, as it is practiced, in practice, is possible without unflinchingly minding that nothing is still, while unity is also not. Literally all, and the whole, is in action or is not. Not following this through, stops Ontology short as just a fable. Which is not the intent, heart-warming as it may be. More, risking an imperfect comparison with state-of-the-art philosophical terminology, any subject or object is, in the end, already an event. An effect being made effective. Dated, unrepeatable, in construction, coming into being, happening through now. More, and we will return to this afterwards, nothing is that does not happen, is not happening, only once.

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208 Cf. Latour, 2005: 137: «If connections are established between sites, it should be done through more descriptions, not by suddenly taking a free ride through all-terrain entities like Society, Capitalism, Empire, Norms, Individualism, Fields, and so on. A good text should trigger in a good reader this reaction: 'Please, more details, I want more details.' God is in the details, and so is everything else – including the Devil. It's the very character of the social to be specific. The name of the game is not reduction, but irreduction. As Gabriel Tarde never tired of saying: 'To exist is to differ.'»

In practice, then, what is it found when facing whatever is faced when navigating Ontology? A chair, a person, the natural, etc.? First, none of these terms, if taken as such, or any word at all, is able to refer to anything in isolation from sets of potentially infinite conditions and relations, from the most complex to the most prosaic. Second, if not speaking of terms, but of what they would refer to, taking into account such sets of potentially infinite conditions and relations, what is it we find and face towards, in practice? We face and find many things, never a single one, many things associated together, none of them inherently stable or still, which we further keep translating-betraying as "that person", "chair", "the natural", "artificial", "science", "reference". The list could pile up and doesn´t exclude "Philosophy", "being", etc. Again, anything composing Ontology while navigating Ontology.

Constructing by translating-betrayals, what if we irreduce a given person, "Peter", what do we find? Many things, in action. Some immediate and easily trackable, some not so easily trackable, some even hiding. All of them needing to be followed with greater or lesser difficulty up to where it is deemed possible if Ontology is to be more faithful. In Latour's expression, we find a vast array, actors, many and the most diverse, associating in action with other actors, many and most diverse, through increasingly wide networks[209]. If well followed. Actors which, if well followed, lead to even other actors and other networks combined, many and the most diverse, successively on, and onwards. Occasionally, the vastly displayed arrays behave as if one, even as if orderly, associations strengthened and more stabilized for given time-space frames[210].

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209 Cf. Latour, 2005: 46: «An 'actor' in the hyphenated expression actor-network is not the source of an action but the moving target of a vast array of entities swarming toward it. To retrieve its multiplicity, the simplest solution is to reactivate the metaphors implied in the word actor that I have used so far as an unproblematic placeholder. It is not by accident that this expression, like that of 'person', comes from the stage. Far from indicating a pure and unproblematic source of action, they both lead to puzzles as old as the institution of theater itself – as Jean-Paul Sartre famously showed in his portrait of the *garçon de café* who no longer knows the difference between his 'authentic self' and his 'social role'. To use the word 'actor' means that it's never clear who and what is acting when we act since an actor on stage is never alone in acting.»

210 Cf. Latour, 2005: 44: «Here again you wonder, and you wonder even more when you realize, watching the stock exchange one morning, that ten million of your fellow shareholders have sold the same stocks that day, as if your collective mind had been solidly swayed by the invisible hand of some invisible giant. At the school's open-house party, you wonder why all the parents look eerily familiar: same clothes, same jewels, same ways of articulating words, same ambitions for their kids. What makes all of us do the same thing at the same time? In the long and variegated history of their disciplines, the social scientists,

Chairs are sat on. Peter is called forth and answers back. A keyboard is pressed, letters fill a screen. Seeds are planted, vegetables grow. An equation is applied, calculations precisely fit. A concept is devised, and intelligibility appears brighter. Stairs are walked without falling. Stones are kicked and fall down a slope instead of up. Books are read. Speeches are uttered, listened to. To Actor-Network Theory, such is exceptional, albeit seemingly trivial. A function of the network wise aggregation of many things, most diverse, working through, being worked through, the composition of Ontology. The number of actors at stake is, always, innumerable, and heterogeneous, made relevant to Ontology when the simplifying units of metrology are irreduced. Are they natural, social, symbolic? The classification is too gross to describe it. Is it ethics, aesthetics, science? The classification is too little. It cannot apply in description for a more faithful construction.

Which, then? How many, then? Mainly, as exceptionality is at stake and occasionality needs not be randomly, how then? Description of all and each, many and most diverse each, up to the possible, is to be sought unflinchingly or Ontology as more faithful forgotten. According to how Actor-Network Theory takes it. Such leap into Ontology does not compromise with detached observer status, assuming, as it does, there can be none. Thus, description of Ontology is construction and composition of Ontology, something also to be unflinchingly kept. Often expressed with side glances to general relativity, translated-betrayed as usual[211]. Objectivity, when sought, cannot be achieved by increasing detachment. Detachment is impossible, a carefully kept illusion. If

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sociologists, historians, geographers, linguists, psychologists, and economists had to multiply – like their colleagues in the natural sciences – agencies to account for the complexity, diversity, and heterogeneity of action. Each had to find a way to tame those many aliens who barged in as uninvited guests in everything we seem to be doing.»

211 Cf. Latour, 2005: 12: «A more extreme way of relating the two schools is to borrow a somewhat tricky parallel from the history of physics and to say that the Sociology of the social remains 'pre-relativist', while our Sociology has to be fully 'relativist'. In most ordinary cases, for instance situations that change slowly, the pre-relativist framework is perfectly fine and any fixed frame of reference can register action without too much deformation. But as soon as things accelerate, innovations proliferate, and entities are multiplied, one then has an absolutist framework generating data that becomes hopelessly messed up. This is when a relativistic solution has to be devised in order to remain able to move between frames of reference and to regain some sort of commensurability between traces coming from frames traveling at very different speeds and acceleration. Since relativity theory is a well-known example of a major shift in our mental apparatus triggered by very basic questions, it can be used as a nice parallel for the ways in which the Sociology of associations reverses and generalizes the Sociology of the social.»

anywhere, it is to be sought by increasing description, refining it as a construction, a composition with dirty hands. Thus, many is more, accumulation of descriptions is an antidote against illusions of detachment. The more and most diverse elements included, attached, the better more faithfulness can ensue.

We are still far, according to Actor-Network Theory, from developing a worthy Ontology. Through reducing available elements in reduced over-arching categories. Two ideas, then, stand as vital in order to aid at how descriptions are to be framed.

One is that instead of thinking on objects, or subjects for what matters, it would do better to keep what is being described, looked at, as a "quasi-object". Latour describes what this means (1990), not very clearly, as:

> *As a rule, a quasi-object should be thought of as a moving actant that transforms those which do the moving because they transform the moving object. When it remains stable or the movers are kept intact these are exceptional circumstances that need to be accounted for.* (Latour, 1996 [1990]: 379)

The second idea, also not very clear, is that names are in fact verbs, or ought to be transformed in verbs if description is to be more correct. Given that an Actor-Network Philosophy is not yet done, expressions as the above "quasi-object" or the turning of names into verbs oscillate among others when it comes to tentatively capture what they intend.

Turning names into verbs would imply replacing what we think as "Peter" for something in the lines of "To Peter". Where "Peter" is, in practice, seen as a verb. Is a verb. Likewise, with "Stone", "Atom", Chair". Descriptions would reveal that "To Stone", "To Atom", "To Chair", actually translate better what is going on. These are but examples. It seems evident that some nouns are not so conflicting as others, as some nouns are already easily transformable into verbs. For Actor-Network Theory we can say that all nouns, not just those, are, in fact, artificially reduced verbs, reduced into stillness, into a somehow conformed unity. When names are everywhere populating descriptions, such descriptions are poor, falling prey to an illusionary detachment on how things go along, in practice. In practice, every name is in fact a verb held together by many hands. When it does hold together, description must similarly hold the hands holding it. As so-called names are being performed or aren't.

With "quasi-object" the goals follow concurrent lines. Those finalized objects, singled out and still, do not exist at all, in practice, for any domain and for any field. Not only that they are subject to revision, a triviality not so trivial in practice, but that all is already in revision, as it is, including the whole, collectively. Not only that by diminishing and increasing of scale, widening or restraining temporal spectrum, objects change significantly even beyond recognition, or plainly disappear, disaggregate. Not only through the impossibility of a fixed perspective above or below, privileged to access objects composing Ontology, the god´s perspective or god´s viewpoint, done for in practice. Not only due to the observer status who is not detachable from what is observed, turning objectivity away from railing itself on detachment.

Pertinent as it may be, the above lacks the core of what is intended, besides being dismissible by critics as merely trivial, albeit crucial. Mainly, such is the ontological standpoint, due to things as themselves, what there is, what is manifest, being always in fact a quasi, in action, quite borderless under the lenses of in practice. *Irreductions* opens ground to exposing this further, thereby allowing a more refined Philosophy to grow, eventually. To it, different translations-betrayals need to be assigned for things as themselves, in themselves, by themselves. Still, by now we can keep that regardless of field, domain, subject, object, word, thing, the above is to be applied, expanding from Science and Technology Studies correlations.

1.4. Construction, translation, mediation

From such correlations we can move on to examine Actor-Network Theory's Constructivism, the focus that the designation of construction gains in it. Hereby we see that construction is chosen, not creation, for example, or emergence, or discovery. Ontology is constructed, neither is it created, or is it there to be discovered, or does it appear gradually, unveiling. It does not dawn from the depths. The use of construction is heavily related with the disciplines of engineering and architecture, which highly influenced Latour[212]. It is not at all related, as might be evident by what was previously

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212 Cf. Latour, 2005: 88: «In plain English, to say something is constructed means that it's not a mystery that has popped out of nowhere, or that it has a more humble but also more visible and more interesting origin. Usually, the great advantage of visiting construction sites is that they offer an ideal vantage point to witness the connections between humans and non-humans. Once visitors have their feet deep in the mud,

written on Sociology, with "social constructivism"[213]. Unless social and Sociology are already redefined and/or the terms are already taken through by how Actor-Network's Theory translates them. In time and according to various stances, social constructivism cannot apply easily to it.

Such interpretation would be more misleading than simply uncharitable. If by social one understands a particular matter, a material of sorts who composes Ontology, a discrete domain in it, subject to its specific causality, it does not apply at all. Sociology of Science had shown, by its failure, that the belief in the explaining power of such social contexts, interactions, causes, was null to the understanding of how the hardest facts are constructed, resist and are successful. Only the opposite could be, if having to choose, true. What is said to be science could explain, if anything, that which is said to be social, but not the inverse.

they are easily struck by the spectacle of all the participants working hard at the time of their most radical metamorphosis. This is not only true of science but of all the other construction sites, the most obvious being those that are at the source of the metaphor, namely houses and buildings fabricated by architects, masons, city planners, real estate agents, and homeowners. The same is true of artistic practice. The 'making of' any enterprise – films, skyscrapers, facts, political meetings, initiation rituals, haute couture, cooking – offers a view that is sufficiently different from the official one. Not only does it lead you backstage and introduce you to the skills and knacks of practitioners, it also provides a rare glimpse of what it is for a thing to emerge out of inexistence by adding to any existing entity its time dimension. Even more important, when you are guided to any construction site you are experiencing the troubling and exhilarating feeling that things could be different, or at least that they could still fail – a feeling never so deep when faced with the final product, no matter how beautiful or impressive it may be. So, using the word 'construction' seemed at first ideal to describe a more realistic version of what it is for anything to stand. And indeed, in all domains, to say that something is constructed has always been associated with an appreciation of its robustness, quality, style, durability, worth, etc. So much so that no one would bother to say that a skyscraper, a nuclear plant, a sculpture, or an automobile is 'constructed'. This is too obvious to be pointed out. The great questions are rather: How well designed is it? How solidly constructed is it? How durable or reliable is it? How costly is the material? Everywhere, in technology, engineering, architecture, and art, construction is so much a synonym for the real that the question shifts immediately to the next and really interesting one: Is it well or badly constructed?»

213 Cf. Latour, 2005: 91-92: «In other words, 'constructivism' should not be confused with 'social constructivism'. When we say that a fact is constructed, we simply mean that we account for the solid objective reality by mobilizing various entities whose assemblage could fail; 'social constructivism' means, on the other hand, that we replace what this reality is made of with some other stuff, the social in which it is 'really' built. An account about the heterogeneous genesis of a building is substituted by another one dealing with the homogeneous social matter in which it is built. To bring constructivism back to its feet, it's enough to see that once social means again association, the whole idea of a building made of social stuff vanishes. For any construction to take place, non-human entities have to play the major role and this is just what we wanted to say from the beginning with this rather innocuous word.»

The culprits of failing to explain science, therefore in failing to explain Ontology, are to be found exactly in what was commonly seen as "social constructivism"[214]. Knowing that social contexts, interactions, causes, do fail strength-reality trials when approaching science, it comes as no surprise that failings accumulate also if wanting to explain why and how a well-constructed building or bridge do not fall. Construction is taken not as unreal or fake, it is what makes things stand or not, as in architecture or engineering. Construction can too be said as fabrication. Construction and fabrication of facts does not imply they are unreal, affabulatory, do not resist. Quite the opposite, construction and fabrication are what may make them be more resilient, longer resisting to strength-reality trials placed upon them.

Simply, and for starts, construction and fabrication must be expanded from connections with single authorship, namely only human. It designates the putting into practice of "how" through actions of collectives aggregated network wise, as they face and overcome, or not, stresses and trials placed on them[215]. The construction of bridges and buildings needs cooperation of concrete materials, as of said to be ideas, plans, humans, machines, of that which is said to be gravity. The list could go on endlessly. It does not designate naïf relativism as bridges and buildings do fall and collapse. As facts and theories may. Relativism exists only by constructions and fabrications, in practice, being relative to all those factors: actors, networks, actor-networks, gathering in them, resisting on. Constructions and fabrications are not absolute, meaning neither are they

214 Cf. Latour, 2005: 39: «As a matter of fact, when seeing what most sociologists call 'construction', one is not sure they have ever built anything as simple as a shack, not to mention a 'society' (more on this later, see p. 88). The real difference between the two schools of thought becomes visible when the 'means' or 'tools' used in 'construction' are treated as mediators and not as mere intermediaries.»

215 Cf. Latour, 1987: 31: «It is now understandable why, since the beginning of this book, no distinction has been made between what is called a 'scientific' fact and what is called a 'technical' object or artefact. This division, although traditional and convenient, artificially cuts through the question of how to ally oneself to resist controversies. The problem of the builder of 'fact' is the same as that of the builder of objects – how to convince others, how to control their behaviour, how to gather sufficient resources in one place, how to have the claim or the object spread out in time and space. In both cases, it is others who have the power to transform the claim or the object into a durable whole. Indeed, as we saw previously (Chapter 2) each time a fact starts to be undisputed it is fed back to the other laboratories as fast as possible. But the only way for new undisputed facts to be fed back, the only way for a whole stable field of science to be mobilised in other fields, is for it to be turned into an automaton, a machine, one more piece of equipment in a lab, another black box. Technics and sciences are so much the same phenomenon that I was right to use the same term black box, even loosely, to designate their outcome.»

final, nor are they theoretically apart from relatives. A theoretical construction is simply the construction of a theoretical entity which resists as such, by practical means. Construction and artificiality, artifice, thus, do not indicate lack of a strong grade of reality, if as previously defined[216].

Authorship banned, construction moves through to areas not associated with it, as the said to be merely theoretical or the said to be merely natural. One can speak of the construction how-to of rivers or mountains[217]. A process, in practice, including from the words associated with rivers or mountains to all the actants available to such a construction, as they persist. This does not imply idealism, as it does not imply realism. The option of things being in our minds or existing out there is simply to plain to be considered. Likewise, that there are things said to be actions, others said to be behaviours, others said to be natural occurrences, swept apart by intentionality., intents, absence or presence of reasons, absence or presence of will, is too confusing to apply to descriptions of constructions, in this view. Construction and fabrications are at play when things, words, etc., are there making ground in one's Ontology.

It is the split between construction and artificiality, artifices, from a fabricated link with lack of reality, from strength-reality, that builds the foundations of construction's

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216 Cf. Latour, 2005: 90: «To say that something was 'constructed' in their minds meant that something was not true. They seemed to operate with the strange idea that you had to submit to this rather unlikely choice: either something was real and not constructed, or it was constructed and artificial, contrived and invented, made up and false. Not only could this idea not be reconciled with the sturdy meaning one had in mind when talking about a 'well constructed' house, a 'well designed' software, or a 'well sculpted' statue, but it flew in the face of everything we were witnessing in laboratories: to be contrived and to be objective went together. If you began breaking the seamless narratives of fact making into two branches, it made the emergence of any science simply incomprehensible. Facts were facts – meaning exact – because they were fabricated – meaning that they emerged out of artificial situations.»

217 Cf. Latour, 2005: 91: «And yet, it became painfully clear that if we wanted to go on using the word construction we would have to fight on two fronts: against the epistemologists who went on claiming that facts were 'of course' not constructed – which had about as much sense as saying that babies are not born out of their mother's wombs – and against our 'dear colleagues' who seemed to imply that if facts were constructed then they were as weak as fetishes – or at least what they believed fetishists 'believed' in. At which point, it could have been safer to abandon the word 'construction' entirely – especially since the word 'social' had the same built-in defect of maddening our readers as surely as a torero's cape in front of a bull. On the other hand, it remained an excellent term for all the reasons just mentioned. Especially useful was the clear fashion in which 'construction' focused on the scene in which humans and non-humans were fused together. Since the whole idea of the new social theory we were inventing was to renew in both directions what was a social actor and what was a fact, it remained crucial not to lose sight of those most extraordinary building sites where this double metamorphosis was occurring.»

relevance in Actor-Network Theory. Similarly, the relevance is paved by an appeal to construction and fabrication in the language of engineers and architects. Something quite mundane which makes buildings stick and spaces signify. Construction also joins the further trend of reframing causality[218] or, at least, the rebuttal of a strong version of causality bearing any relevance for instrumentally describing what there is, together with the rebuttal of the ontological adequacy of the notion, applied in scientific fields or in any field.

What causes a building? Many things. What are the necessary conditions for a building not to fall? Almost all of them. Instrumental relevance in using causal terms in order to modify Ontology in becoming buildings is hard to refute, granted, but it is to be known if many other things are not being used together with it, things which cannot be reduced to a small set of causal sentences, things hiding behind them, which must be described and brought out[219]. Even if instrumental utility comes handy, a mnemonic handle or a summing up categorization, it remains to be known if such reducing corresponds to what there is, after all.

We are already aware that Actor-Network Theory moves, first, from causes to effects. Construction, immediately a technology loaded term, material, leads us on to

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218 Cf. Latour, 2005: 92: «Even though constructivism was for us a synonym for an increase in realism, we were feted by our colleagues in social critique as having shown at last that 'even science is bunk'! It took me a long time to realize the danger of an expression that, in the hands of our 'best friends', apparently meant some type of revenge against the solidity of scientific facts and an exposé of their claim to truth. They seemed to imply that we were doing for science what they were so proud of having done for religion, art, law, culture, and everything the rest of us believe in, namely reducing it to dust by showing it was made up. For someone who had never been trained in critical Sociology, it was hard to imagine that people could use the causal explanation in their own discipline as proof that the phenomena they were accounting for didn't really exist, not to mention that they were associating the artificiality of the construction with a deficit in reality. Unwittingly, constructivism had become a synonym of its opposite number: deconstruction.»
219 Cf. Latour, 1993 [1991]: 109: «Modern knowledge and power are different not in that they would escape at last the tyranny of the social, but in that they add many more hybrids in order to recompose the social link and extend its scale. Not only the air pump but also microbes, electricity, atoms, stars, second-degree equations, automatons and robots, mills and pistons, the unconscious and neurotransmitters. At each turn in the spiral, a new translation of quasi-objects gives new impetus to the redefinition of the social body, of subjects and objects alike. Sciences and technologies, for 'Us', do not reflect society any more than Nature reflects social structures for 'Them'. No one is fiddling with mirrors. It is a matter of constructing collectives themselves on scales that grow larger and larger. There are indeed differences, but they are differences in size. There are no differences in nature – still less in culture.»

developing beyond just effects. Bridging with the domain of words[220]. Detailed description of effects, complex and multiple, more empirically graspable than causes, comes handy, but shows the flaws associated with leaving the counterpart of causes behind. In fact, it is senseless, pushing for a description whose recording tools divert it from what there is, as it is, while it is described. Translation-betrayal[221] becomes assigned as what happens, relation wise, between those "x" falling before as causes of another "x" or effects of another "x". Translations-betrayals occur between things, subjects, words, objects, in all possible domains[222].

An "x" is not caused by another, or the effect of another, instead they mutually translate-betray each other(s). Some characteristics, or properties, are kept on, others lost. Those that are kept, are kept on differently, moved away. Translation, in the English language, associates with moving, and the double play is intended. Translations-betrayals are not singled out from a single "x" to a single other "x", although this may be presented as such for the sake of simplicity. Where one translation-betrayal is working its toll, many others are at the same time working its toll, concurrently influencing and shaping any single one we may wish to pinpoint. Singled out translations-betrayals are keen to

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220 Cf. Latour, 1993 [1991]: 129: «We start from the vinculum itself, from passages and relations, not accepting as a starting point any being that does not emerge from this relation that is at once collective, real and discursive. We do not start from human beings, those latecomers, nor from language, a more recent arrival still. The world of meaning and the world of being are one and the same world, that of translation, substitution, delegation, passing. We shall say that any other definition of essence is 'devoid of meaning'; in fact, it is devoid of the means to remain in presence, to last. All durability, all solidity, all permanence will have to be paid for by its mediators.»

221 Cf. Latour, 1988: part 1, note 16, 253: «First, translation means drift, betrayal, ambiguity (1.2.1). It thus means that we are starting from inequivalence between interests or language games and that the aim of the translation is to render two propositions equivalent. Second, translation has a strategic meaning. It defines a stronghold established in such a way that, whatever people do and wherever they go, they have to pass through the contender's position and to help him further his own interests. Third, it has a linguistic sense, so that one version of the language game translates all the others, replacing them all with "whatever you wish, this is what you really mean".»

222 Cf. Latour, 2005: 214: «But we have no longer any reason to be intimidated by this odd way of conceiving the import of an outside force because we have detected two successive mistakes in the notion of the Sociology of the social: one in the definition of the cause and the other in the vehicle that was supposed to transport the effect. The relationship between puppeteers and their puppets is much more interesting than that. Besides, we have also learned how to redress two misconceptions: we know that mediators are not causes and that without transformations or translations no vehicles can transport any effect. Something happens along the strings that allow the marionettes to move.»

footnotes, at most, outpouring away from the course of Ontology in the making, useless if away from the main text, if following this line of thought.

Translation-betrayal seems to imply, but an actor-network Philosophy is not yet done, that relation is mutation. Things mutate and move into others more than relating with each other while remaining their own, still. Translation-betrayal seems to imply, as well, that ordering and hierarchy, prevision, seem virtually impossible. Translations may be more or less faithful, still being a different thing altogether from the original. Betrayals, no, betraying a thing, a person, an idea, a word, is to void it from the tracks supposed to come from it, planned to ensue from. Betrayals outright step into lying. Translations wish to remain more truthful to what they translate, an exigence of adequacy lingers on. For things, let us say that a constraint to adequacy lingers on, may linger on and resist, enforced by multitudes of actor-networks via multitudes of translations-betrayals from and with many origins.

Translations-betrayals may accumulate. Many on top of many, translating-betraying forth. Many of those occurring long away in time and space accumulate into current pursuits and successes. We have but to think on languages, Mathematics, or construction expertise on bridges. The myth of lonely researchers is lacking. Collectivistic translation-betrayals enter through research always. Nevertheless, considering that we have translation-betrayal as one expression, adequacy and purposeful non adequacy hyphenized, composing a trend of Actor-Network Theory, we seem to have a self-clashing foundation for how things relate and occur. For how previously named effects would follow, for good, and causes would make suit predictably and repeatedly. If causes and effects say Ontology wrongly but, still, we cannot avoid at least one of the polarities of the set, Ontology is more doomed than what mere fallibility would grant. And how does it go those regularities do survive translating-betrayal?

A crucial distinction is made, in Actor-Network Theory, between mediating and intermediating, between actions who make us end with mediators or with intermediators. Intermediations transport translations-betrayals in such a way as to lessen the betraying part of the composite expression. Meaning, work of the actants follows a line by which the constraint for adequacy is sought. Not necessarily adequacy to truth or faithfulness per se, but a constraint for adequacy of a given translation, that one and not another. In this sense, intermediating works out to banish the translation-betrayal itself, even more

than just simply enforcing the translation aspect of the polarity. Intermediating, if successful, allies many actants and networks in order to work as if what we will call effects are carried away with no distortion.

Speech interactions, as an example, are hardly passive of this happening, while written texts may apparently produce less distortion when passed along. To which printing greatly helped. Likewise, maps, translating and betraying territories, can produce the same result of diminishing inadequate turns. A rail building manual, if disseminated and workable, will allow engineers to uniformize construction of rails at a distance. Automated production, likewise[223]. A set of working concepts, defined with a clarity aiming lack of future distortions, philosophical or mathematical, will induce, hopefully but often hardly, less distortive communications by shaping the translations previously to future uses. Even an accepted vocabulary, accumulated in dictionaries, will do so. Language certainly does it, grammar by grammar, semantics categorizing into semantics. Likewise, other factors do work for intermediating, constraining the actual routes of translation-betrayal.

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223 Cf. Latour, 1987: 130-131: «The engineer's ability lies in multiplying the tricks that make each element interested in the working of the others. These elements may be freely chosen among human or non-human actors. For instance, in the early British cotton spinning industry, a worker was attached to the machine in such a way that any failure of attention resulted not in a small deficiency in the product that could be hidden, but in a gross and obvious disruption which led to a loss of piecework earnings. In this case, it is part of the machine that is used to supervise the worker. A system of pay, detection of error, a worker, a cotton-spinning machine, were all tied together in order to transform the whole lash-up into a smoothly running automaton. The assembly of disorderly and unreliable allies is thus slowly turned into something that closely resembles an organized whole. When such a cohesion is obtained, we at last have a black box. Up to now I have used this term both too much and too loosely to mean either a well-established fact or an unproblematic object. I could not define it properly before we had seen the final machinations that turn a gathering of forces into a whole that then may be used to control the behavior, of the enrolled groups. Until it can be made into an automaton, the elements that the fact-builder want to spread in time and space is not a black box. It does not act as one. It can be disassociated, dismantled, renegotiated, reappropriated. The Kodak camera is made of bits and 'pieces, of wood, of steel, of coating, of celluloid. The semiprofessionals of the time open up their camera and do their own coating and developing, they manufacture their own paper. The object is dismembered each time a new photograph is taken, so that it is not one but rather a bunch of disconnected resources (hat others may plunder. Now the new Kodak automatic cannot be opened without going wrong. It is made up of many more parts and it is handled by a much more complex commercial network, but it acts as one piece. For the newly convinced user it is one object, no matter how many pieces there are in it and no matter how complex the commercial system of the Eastman Company is. So, it is not simply a question of the number of allies. Numbers unified whole. However, with automatism, a large number of elements is made to act as one, and Eastman benefits from the whole assembly. When many elements are made to act as one, this is what I will now call a black box.»

Factors like, as examples, genetics, education, geography. Mostly, intermediating is not of humans alone or of what is named as culture alone. More, it is never alone. Intermediating factors are again many, coming from many heterogeneous origins, backed on multiple translations-betrayals accumulated. Conceding to simplicity we can say that strong and constant actions of intermediating, a verb, make way for intermediations and intermediators, nouns. In the presence of those it is expected that for a given A, a given B follows. More than being expected, Ontology is constrained as such. Causal relations, in practice, are intermediations pushing for success, achieving it for some time, under certain associations of actor-networks. Faced with a research subject a first task is to dismantle what we are facing with by asking if it is working as an intermediator, intermediating, or as a mediator, mediating.

Mediators, contrary to intermediators, at least apparently, not only are never alone but also cannot never be left alone, if adequacy is to be pursued and their integration in intermediations maintained. Mediators translate-betray modifying and transforming what they enter in contact with, effectively betraying more than translating. Intermediators can be summed up as one when many actants are aligned, as in a perfectly working machine, at some instances. Mediators keep turning into many. Given some inputs, certain outputs can be expected to follow through if strong intermediating factors are kept at play, while they are. With the association with logic under track one can arrive, by intermediating, at producing causal statements or, not so ambitiously, statements on the line of if this, then that. We would say A causes B, or B is caused by A, effectively reducing the long line of translation-betrayals under way, the long line of mediators aligning, now to now controlled, now to now constrained, to causes and effects[224]. B is said to become but the effect of A. Which it is not, in practice. In practice, one cannot deduce a B from an A[225].

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224 Cf. Latour, 1988: part 2, 2.1.6, 178: «We say "whoever controls the cause, controls the effect," as if the effect were potentially contained within the cause. However, no word can cause another. Words follow one another in a story. It is only later in the story that one character is made the "cause" and another the "consequence".»

225 Cf. Latour, 1988: part 2, 2.1.3.2, 177: «Only teachers claim to be able to extract one sentence from another by means of "pure, formal deduction." They know in advance the conclusion of the argument that they claim to be unfolding. Organized arguments learned slowly and in disorder are unfolded by them at high speed, one after another, concealing what went on backstage behind the blackboard, the tumultuous history that led this proposition to be linked to that one. They offer that which contains in potentia all the consequences for the worship of their pupils, who fervently believe that they have deduced one thing from another. • Without schooling, no one would have faith in this religion of deduction. We might as well say

B is not an effect. B is B. In practice, the translations-betrayals cannot be ignored, as any maker of plans will soon become aware.

The final answer to the question of what we are facing, then, is that no matter what we face we are always facing mediators, first of all. Ontology is a play of mediating and of mediations. Thus, my proposal that "mediatism" could be an alternative designation to Actor-Network Theory. That, under certain conditions, such mediations and such mediators may be so strongly associated as to act as if one, both their complexity as their multiplicity temporarily forgotten, cannot outshine that mediating and translations-betrayals are still on course. Maintained, built, mutually controlled. Anthropomorphising what this control means is to be avoided. Gravity, as an example, is a control through which, on earth, humans hardly fly from jumping. Constructing Ontology, the construction of Ontology, is a toil of mediations exceptionally acting as intermediations through the association of a great number of them. In an unstable balance that either is maintained or is lost, followed through by the dissolution of the intermediations.

Crisis and controversies show it well[226]. As, in practice, unexpected turns, things going awfully wrong in the split of an eye, show it at satiation[227]. Faced with case studies, research subjects, a goal is thus to increase in accounts, descriptions, explanations, the comparative number of mediators. Upbrought from their actual assembly as unchecked

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that the propositions of Spinoza's *Ethics* are "all in" the first proposition, or that the dessert is contained in the entree. But schoolboys have always been fascinated by the absolute cribs offered by Laplace's principle: to hold all knowledge in the palm of our hand, having extracted it from the heel of our shoe.»

226 Cf. Latour, 2005: 80: «The first solution is to study innovations in the artisan's workshop, the engineer's design department, the scientist's laboratory, the marketer's trial panels, the user's home, and the many socio-technical controversies. In these sites objects live a clearly multiple and complex life through meetings, plans, sketches, regulations, and trials. Here, they appear fully mixed with other more traditional social agencies. It is only once in place that they disappear from view. This is why the study of innovations and controversies has been one of the first privileged places where objects can be maintained longer as visible, distributed, accounted mediators before becoming invisible, asocial intermediaries.»

227 Cf. Latour, 2005: 81: «The third type of occasion is that offered by accidents, breakdowns, and strikes: all of a sudden, completely silent intermediaries become full blown mediators; even objects, which a minute before appeared fully automatic, autonomous, and devoid of human agents, are now made of crowds of frantically moving humans with heavy equipment. Those who watched the Columbia shuttle instantly transformed from the most complicated human instrument ever assembled to a rain of debris falling over Texas will realize how quickly objects flip-flop their mode of existence. Fortunately for ANT, the recent proliferation of 'risky' objects has multiplied the occasions to hear, see, and feel what objects may be doing when they break other actors down. Official enquiries are happening everywhere to map out for us the fabulous extension of what social ties have become in the hands of technical setups. Here again, it will never be the lack of material that will stop the studies.»

intermediators. The function of a machine[228], to use an example dear to Science and Technology Studies, its workings as an intermediator, is not enough, in this view, to explain it, describe it, to penetrate its Ontology. It's the how of the in-between and the far-between, actor-network wise, that needs to stir into visibility. Anything, if taken as an intermediator, in its intermediating role, reduces the ontological scope available for descriptions, eluding the in-practice guidelines. This ought to be transposed to an eventual Philosophy birthing from Actor-Network Theory. If an irreductionist one.

Using philosophical tradition or terminology, to be plain, this is not done at all. According to usual standards. Though causality, as we were mentioning it, is shown as an intermediation, a handle at best, no state-of-the-art reflections on it travel back to Aristotle's theory of causes, for example. Or to its medieval evolutions and cross commentaries. Or the to-follow elimination of final causes. Or to the Humean analysis and critique. Or to how Kant would have picked the subject up. And so on. Given the predominance of the theme and Philosophy's time span, much is not mentioned, necessarily. Perhaps willingly. More contemporary reflections on the specific issues of causality are similarly absent, although some might be worthily included, some actually being dealt, at large with no worries of depth, in later works.

At least by 1988, at the time of *Irreductions*, where Philosophy is nevertheless much present and participating, they are not. One must keep then in mind that the terrain here crossed is not to be scholarly. We find mentions to what would be forcefully included in philosophical states of the art in Latour, but just that, mentions, in translation and in

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228 Cf. Latour, 1987: 29: «Buying a machine without question or believing a fact without question has the same consequence: it strengthens the case of whatever is bought or believed, it makes it more of a black box. To disbelieve or, so to speak, 'dis-buy' either a machine or a fact is to weaken its case, interrupt its spread, transform it into a dead end, reopen the black box, break it apart and reallocate its components elsewhere. By themselves, a statement, a piece of machinery, a process are lost. By looking only at them and at their internal properties, you cannot decide if they are true or false, efficient or wasteful, costly or cheap, strong or frail. These characteristics are only gained through incorporation into other statements, processes and pieces of machinery. These incorporations are decided by each of us, constantly. Confronted with a black box, we take a series of decisions. Do we take it up? Do we reject it? Do we reopen it? Do we let it drop through lack of interest? Do we make it more solid by grasping it without any further discussion? Do we transform it beyond recognition? This is what happens to others' statements, in our hands, and what happens to our statements in others' hands. To sum up, the construction of facts and machines is a collective process. (This is the statement I expect you to believe; its fate is in your hands like that of any other statements.) This is so essential for the continuation of our travel through technoscience that I will call it our first principle: the remainder of this book will more than justify this rather portentous name.»

betraying. Philosophy, though relevant, is seen almost as an unwanted cousin with the tendency to enter into irrelevancies. To be dealt with at times and spaces where work is not pressing more acute needs. Mediation and intermediation, if coming from a discipline, are much more in tune with semiotic and Rhetoric than otherwise philosophical dismissals or defences of causality. When it comes to construction and fabrication, of facts, of bridges, of humans, what most influences the theory, on pair with Science and Technology Studies, is engineering and is architecture.

Noteworthy to it is that nothing is, literally, built without engineering and architecture. Without those technologies associated with them and without the metrologies they carry on along. It seems wise to start there, not in Philosophy. No place where we may think the said to be social, in practice, is absent from a form of engineering, of architecture, of construction, of fabrication. But equally in those where we watch the said to be natural appearing, even in those where we see the said to be symbolic, written or drawn, for what counts. The branding of engineering and architecture sticks in every space able to be thought if it can be thought. Metrologies, objects, planned constriction of mediators, architectures, constructions, and fabrications, populate it already. Thought then, in practice, is one metrology plus in ontological engineering and architecture, whose intermediating role is to be dissolved by irreducing the mediators in it[229]. Consequently, philosophical systems do suffer equally on these grounds.

Curiously enough, another domain joins the concatenation of architecture and engineering with Science and Technology Studies, when it comes to laying bare the correlations Actor-Network Theory did establish with construction and fabrication.

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229 Cf. Latour, 1988: part 2, 2.5.4, 186-187: «We neither think nor reason. Rather, we work on fragile materials – texts, inscriptions, traces, or paints – with other people. These materials are associated or dissociated by courage and effort; they have no meaning, value, or coherence outside the narrow network that holds them together for a time. Certainly, we can extend this network by recruiting other actors, and we can also strengthen it by enrolling more durable materials. However, we cannot abandon it even in our sleep. • The butcher's trade extends as far as the practice of butchers, their stalls, their cold storage, their pastures, and their slaughterhouses. Next door to the butcher – at the grocer's, for example – there is no butchery. It is the same with psychoanalysis, theoretical physics, Philosophy, accountancy, social security, in short all trades. However, certain trades claim that they are able to extend themselves potentially or "in theory" beyond the networks within which they practice. The butcher would never entertain the idea of reducing theoretical physics to the art of butchery, but the psychoanalyst claims to be able to reduce butchery to the murder of the father, and epistemologists happily talk of the "foundations of physics." Though all networks are the same size, arrogance is not equally distributed.»

Correlations which ought to be carried on, if approaching Ontology, or an eventual irreductionist Philosophy. Its introduction, that we already spoke of briefly, helps even more in understanding the praxis bias of the theory, how it downsizes theoretical expectations. The domain is, quite plainly, public administration. Translated and betrayed again through scope widening. Where, more usually, doctrines could flee to areas such as Mathematics or physics in order to approach Ontology, Actor Network Theory demands instead that, if wanting to understand, in practice, how Ontology is built and achieved, we look at how public administration works and has worked. It needs not be contemporary forms of public administration specified, but just the ways by which, more or less officially, the administration of what belongs, or not, to the public thing, is disseminated and enforced, made to stabilize or to clash out.

Argument is that nothing becomes stabilized as a public thing, of all for the whole, of the collective, of a shared Ontology, without public administration. And its offshoots, its bureaucratic armies[230] who pile and order things up, effectively ordaining them, including what exactly falls, or doesn't fall, under the scope of public or private. Be it nature, what and how it is, be it society, what and how it is, be it symbolic aspects, what and how they are[231]. Theories may abound as to where the sphere of what is public, shared

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230 Cf. Latour, 1987: 255: «It would be a mistake, second, because it is through bureaucracy and inside the files that the results of science travel the furthest. For instance, the loggings produced by Schlumberger engineers on oil platforms (Part A, section 2) become part of a file inside a bank at Wall Street that combines geology, economics, strategy and law. All these unrelated domains are woven together once they become sheets of this most despised of all objects, the record, the dusty record. Without it, though, the loggings would stay where they were, inside the Schlumberger cabin or truck, without any relevance to other issues. The microbiological tests of water made by bacteriologists would have no relevance either if they stayed inside the lab. Now that they are integrated, for instance, in another complex record at City Hall that juxtaposes architects' drawings, city regulations, poll results, vote tallies and budget proposals, they profit from each of these other skills and crafts. Understanding the bearing of bacteriology on 'society' might be a difficult task; but following in how many legal, administrative· and financial operations bacteriology has been enrolled is feasible: just follow the trail. As we saw in Chapter 4, the esoteric character of a science is inversely proportional to its exoteric character. What we realise now is that administration, bureaucracy, and management in general are the only big resources available to expand really far: the government supports the bacteriology laboratory which has become an obligatory passage point for every decision to be made. What appeared at the beginning of this book as vast and insulated pockets of science are probably best understood if they are seen to be scattered through centres of calculation, dispersed over files and records seeded through all the networks and visible only because they accelerate the local mobilisation of some resources among many others that are necessary to administer many people on a large scale and at a distance.»
231 Cf. Latour, 1987: 255-256: «The third and final reason why we should not despise bureaucrats, managers, paper-shufflers or, in brief, this tertiary sector that completely dwarfs the size of technoscience

Ontology, clashes or not with the private. Where it ends, where it begins, where should it end, where should it begin. From Actor-Network Theory guidelines some substantial positions could be put forth, if having to choose.

Accordingly, what is private is not miraculously born from privacy, it is in practice unverifiable as private if not by public means as words, languages, educations, to name a few. But again, point becomes that the distinction is in itself faulty, while dependent, in practice, of how public administration, still in practice, keeps juggling it along, extending or diminishing borders alongside science and technology, engineering, architecture, construction, fabrication, layering the grounds. Thus, to think on what it means to compose Ontology strongly, an Ontology that resists and persists, whose strength-reality is more pervasive at given times and spaces to more actors, public administration, construction, engineering and architecture, are what we would do good in looking at, together with Science and Technology Studies reflections. Additionally, if entering into political quests, those are the domains where battles ought to be fought if effective change or improvement of a status quo is sought, in practice.

To unroot the Ontology underlying Actor-Network Theory, as an eventual Philosophy, it seems best to nail in from the above correlations and beginnings, instead of artificially fitting parts of the theory to prior metaphysical and ontological doctrines. Composing a coherent fantasy, as if they had influenced it, while having in fact little to do with it. Even if just using them for a theoretical framing of concepts used, inevitable twisting towards the wrong and untrue would occur. It is more adequate, historically and conceptually, to focus the analysis by accepting the standpoints being proposed, as described, webbing through and from them.

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is that it constitutes a mixture of other disciplines which have to be studied with the same method I have presented in this book even though they are not considered as pertaining to 'science and technology'. When people claim they want to explain 'socially' the development of 'science and technology' they use entities like national policy, multinational firms' strategies, classes, world economic trends, national cultures, professional status, stratification, political decisions, and so on and so forth. At no point in this book have I used any of these entities; on the contrary, I have explained several times that we should be as agnostic about society as about nature, and that providing a social explanation does not mean anything 'social' but only something about the relative solidity of associations. I also promised, however, at the end of Chapter 3, that we will meet at some point a stable state of society. Well, here we are: a stable state of society is produced by the multifarious administrative sciences exactly like a stable interpretation of black holes is provided by astronomy, of microbes by bacteriology, or of proven oil reserves by geology. No more, no less.»

At this stage, so, we find no intermediaries exist which, by themselves, arrive at transporting effects without distortion from what is seen as a "would be cause" anywhere and to any particular domain. Thus, focusing on intermediations would be poor, if not just plain wrong, including, and perhaps precisely, when causes seem to work as if they were causes. Likewise, from no "would be cause", or considered as such, by itself, can it be said that effects follow simply and faithfully from it. Causes and effects are not found in the ontological scenario to be described. Intermediations, if found, are highly organized concatenations of mediators, exceptional in kind and in force. That they are organized, ordered, does not imply one organizer is ruling them all, but that a balance or equilibrium is being maintained, interconnectedly, tensegrity like.

Mediations are found in the ontological scenario, constantly, as mediators, in action. Mediators which, in Actor-Network's terminology, circulate and concatenate. Along such circulation they transform, translate, and betray other mediators which similarly circulate and concatenate and are transformed, on and on. None of such mediations is reducible, if descriptions aim at greater faithfulness, to simply an effect of something else, or placeable as a cause for something else. If speaking of inputs and outputs, it is always the case that for given inputs there is no final guarantee that given outputs will follow. When they do follow, mediations are making their toil. Not the causal status assigned to one object, situation, or event. Mediations converging into intermediations may explain why this is so at a given time and place, nothing else will. Being mediators, it may be the case that they count as many in a given time and space, and as just one in another, specifically if and when intermediations become successful. It will depend on the how of their circulation and transformation, as much as on the what of that which they are circulating and transforming. It will depend on what and how they are translating-betraying.

Being mediations and mediators, no shortcut is there from dully considering their science of particularities and specificities. If mediations are what is indeed found in the ontological scenario to be described, science or knowledge, if not science and knowledge of the particular and of the specific, neither is science neither is knowledge. Particularities and specificities are to be the keystones of an Ontology in practice[232]. Bought to the

232 Cf. Latour, 1988: part 2, 4.4.4, 220-221: «"Universality" is as local as the rest. Universality exists only "in potentia". In other words it does not exist unless we are prepared to pay the high price of building and maintaining costly and dangerous liaisons. • If everything happens locally and only once (1.2.1) and if one

forefront instead of becoming spots to be filled under general categories which would precede them. Including one under the name of particulars and specificities. They are what is found in the ontological scenario to be described, the deciding elements in the ontological scenario to be met with. To not take them in consideration would amount to stepping away from an Ontology in practice, as proposed[233].

For such reframing of Ontology, specificity and particularity of mediators and mediations must always be sought. Instruments to this goal developed, physical, conceptual, or otherwise. When particularities and specificities are hardly found in ontological treatises, or theories, overall descriptions, or even sometimes in what is called as reality, when they do appear to be systematically ignored or ignorable, something is being constructed, or was, to make it as such, now, with engineering, architecture, administration, technology, metrology. By such constructions, such and such mediators are associating, made to associate allying, made to ally, deploying, made to deploy, in such a way that what circulates and transforms is restricted to lesser and lesser paths, changes occurring in more and more determined ways. Stabilizing possibilities, enforcing one Ontology as predominantly stronger for given times and given spaces. Therefore, the how is to be applied to such constructions, testing their resilience.

It would not suffice to say that there are particulars, as a category opposed to universals. Ontology as proposed demands first and foremost to question with which materials is the stabilization and universalization done with. With which technologies. With which metrologies. With which engineering. With which administrations. To explain a construction, one with relative strength-reality, is to describe and track the path of such mediations into progressive stabilization in a currently winning Ontology. To pursue an Ontology in practice, more faithful to what there is, beyond the acceptance of

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place cannot be reduced to another, then how can one place contain another? Do not accuse me of nominalism. All the parts of an army may be linked to a headquarters. The officers of the Strategic Air Command may work on a map of the world that measures three meters by four. All the clocks in the world may be synchronized if a universal time is built. I simply want the cost of creating these universals and the narrow circuits along which they run to be added to the bill.»

233 Cf. Latour, 1988: part 2, 4.4.5.1, 221): «The "universal" can no more swallow the particular than historical paintings can replace still lifes. Theories cannot be abstract, or if they are, the name refers to a style, like abstract painting. • When someone talks to me about a universal, I always ask what size it is, and who is projecting it onto what screen. I also ask how many people maintain it and how much it costs to pay them. I know that this is in bad taste, but the king is naked and seems to be clothed only because we believe in the universal.»

a current winning or losing status, is to make such mediators, now turned into intermediators, again speak of their particularity and specificity through their own voices. As much as this is possible. And as much as this is impossible.

One hardly contests that, in practice, it is easier to travel by car in a highway than to travel by car in a poorly built mud road. Or that it is easier to enter a house through the front door instead of climbing through the window. Similar examples could be multiplied, as much as the counterexamples could also accumulate. Nevertheless, neither highways nor doors are a given. As even brains are not. As even words are not. As neither is what it means to be a counterexample, for what counts. The scope of what is not a given, thus, grows larger and larger when not accepting that an A causes a B becomes the approach strategy towards Ontology. When not accepting that intermediations are the fulcrum for an Ontology of what there is and how it comes to be. At this stage, at least this much can be said. Expressing that A causes B, then, is seen as a handle, an abbreviation at most, this much can also be said.

From such handles and abbreviations, simplicity may be gained. Or, as Latour stresses, speed can be gained. Speed in arriving at a satisfying conclusion. An apparently clear one, reproductible. But, besides asking what the conditions of possibility are, the tracks built for such conclusions to be arrived at, which are the metaphorical highways or doors, the question becomes now focused on what is lost under the speed so gained. Following the proposals on hand, what is lost is Ontology as more faithful to what there is, together with increasingly poor descriptions where the particular and the specific tend to flee unnoticed until they no longer speak. Thus, "Slowciology" is one of the alternative designations for Actor-Network Theory. The injunction to go painstakingly slow, trail by trail. One may, sure, instrumentally gain by subsuming particulars under concepts. Or by making it measured that those two objects are, both, cars, and, both, trees. Regardless of particularities, present and past. "Past" here meaning how the supporting features of resemblance come to be. One certainly gains.

However, the point being made, as far as it is discernible from the guidelines of Actor-Network Theory, is that what is lost via such reductions is in the end the chance of meeting through with Ontology in practice unclutched, set free. Thing happening only once, at one time only, in one place only. Eventually, of meeting through with Ontology irreduced. As such, this ties together with considering that a causal statement, as A causes

B, replaces a very rich problem, philosophically speaking it could be claimed, with a sterile affirmation, philosophically likewise, classified as, according to Latour, bordering the mystical and the magic in a prejudicial understanding of these two words.

Besides taking such affirmations as sterile, philosophically, Latour sees its use as a refusal to pay the cost of transportation. Similar to travelling in a highway, for sure, but without paying the fares of building and rental, the organization of traffic signs, the mapping of directions, etc. One is not doing the work, fully needed in Actor-Network Theory, of stalking the whole mediations and concatenations of mediations translating-betraying multitudes into an A, into a B, into a somehow constructed relation occurring between such an A and such a B. However, the prospect left for inquiry if this is taken seriously, albeit rich, is nevertheless daunting. Perhaps, properly, and philosophically so.

The task surely demands slowness, stalking, description through description. As much as it demands ever going reconstruction, hand in hand with demolishing, the opening up, of what is or was consensually constructed, consensually assembled. With no visible end in sight. Consequently, neither would Philosophy have a visible end in sight. The initial question, as opposed to banking on causal statements, could be: how come, in practice, certain alliances, associations, come to transport more easily such said to be effects, information, meanings, actions, than others? Constructing stronger constructions? This is seen, if taken in practice, as the beginning of much richer philosophical questioning, a first hint of what an irreductionist Philosophy could stand for.

Many difficulties forcefully arise if wishing to lead this question on. Even if just as a horizon of practice for Ontology and Philosophy, disciplines seen as more or less escaping away from concreteness. Usually wanting to. One difficulty is that while thinking on construction, one often distinguishes between active elements, of an active nature or active role, shaping and transforming, acting over passive elements, of a passive nature or passive role, who are to be shaped or transformed, passive materials which to be made into constructions by active agents. Then, it furthers that some elements have tended more to the activity aspect of the dichotomy in the course of philosophical inquiry. Reason or spirit for example, up to God. While others have tended more to the passivity aspect of the dichotomy, matter or senses for example. Up to tabula rasas and passions. The amount of which are which and how much of which is in each being differently

distributed through philosophical theories, nevertheless. In fact, an history of Philosophy could be done by tracking what is or not active from author to author, current to current. By how activity and passivity are defined.

When using construction to apply on Ontology, this general stance seems to immediately imply a set of a priori active builders, agents, working a set of passive materials. To Actor-Network Theory, such distinction or dichotomy has again no grounds to be pursued theoretically. And offers no advantages for unbiased description. Instead, it clutters understanding on one more gordian knot[234] by cutting difficulties away. One more instance of poor metrology obscuring, via apparent simplicity, the complexity and richness of what is met. Either a loose net subsides, which lets most of the prey fly away from it, or a tight net subsides which catches all the prey without distinguishing in finesse what is it's intended aim, effectively wasting most of the catch captured. However, if forced to choose, on the lines of activity versus passivity, Actor-Network Theory would prefer overall distribution of activity to cutting out elements or roles into active or passive. If forced to choose. Forced to deal not with the dichotomy but with the terms that sustain it.

As such, in the building of a dam, for example, the cement is active. The inclination of the river is active. The workers are active. The geometric calculations are active. The financial resources available are active. The political negotiations are active. Any other element lacking in the list above would still be active. Changes in one, albeit minor, result in changes to some or to all of the others, albeit minor, acting on to others, in practice. Who is to say which takes the activity precedence? Who is to say that some are passive? Thus, one can begin to grasp the so controversial positions on the agency of objects, anathema to the identification of agency with humans or with living organisms at best if agency is seen as minimal. In any construction, of dams as of concepts, all elements mediate and intermediate each other in such construction, translating-betraying each other up until it is built and after it is built.

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234 Cf. Latour, 1993 [1991]: 3: «By all means, they seem to say, let us not mix up knowledge, interest, justice and power. Let us not mix up heaven and earth, the global stage and the local scene, the human and the nonhuman. 'But these imbroglios do the mixing', you'll say, 'they weave our world together!' 'Act as if they didn't exist', the analysts reply. They have cut the Gordian knot with a well-honed sword. The shaft is broken: on the left, they have put knowledge of things; on the right, power and human politics.»

The constructivism here, then, is not one defined by the presence or not of human intervention, or human relativism, in the existence or construction of a given object. Due to the above, interventions are forcefully of many diverse elements of which human agency is but one. But also, because stating that human agency is ever relevant is stating a platitude, albeit one often ignored. Any construction of a dam, of a concept, of a fact, in practice, always recruits and recruits more if better constructed, the intervention of that particular subset of actors or actants to whom are attributed, with greater or lesser difficulty, the figurations of humanity. Precisely so or not. However, this is worthless to let us know anything on the how of such constructions. Neither from where do those figurations of humanity are coming through into the picture, stressing given characteristics instead of others. Neither it allows us to say almost anything worthwhile on the object or fact being constructed. Specifically, on why it is resilient, when it is. Or why it is not resilient, when it is not.

Thinking construction on such terms is seen as sterile. Another way of replacing a richer problem, corresponding to a richer reality, by a poor handle, corresponding to a poorer reality constricted in a poorer metrology. Likewise, any fact, situation, state of affairs, any construction after all, forcefully recruits actors and agencies whose figuration and attributions are assigned to the non-human and to objects, similarly recruiting more if better constructed. To approach the constructing here dealt with, if from a standpoint of object predominance, would correspond as well to a sterile position. As it would be, if supported on such platitudes or changing definitions and figurations of what is or is not human, what is or is not an object, to array relations where one is neatly split from the other. Predominance of one element as active, or as passive, if using the terms, is explained only by a description grounded on the translations-betrayals that end up making it as if so. While extending such a description to the how of the use of the figurations that name it so.

Figuration[235], hereby mentioned, corresponds to what has already been said on the construction of attributions themselves. It enters the process of attributing and stabilizing

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235 Cf. Latour, 2005: 53-54: «Second, if agency is one thing, its figuration is another. What is doing the action is always provided in the account with some flesh and features that make them have some form or shape, no matter how vague. 'Figuration' is one of those technical terms I need to introduce to break the knee-jerk reactions of 'social explanation' because it is essential to grasp that there exist many more figures

given properties of an "x" yet to be defined. Figuration is both the way as the end result of how given agencies, starting as unnamed, end up named and qualified for a given group in a given time and a given space. Which form, or figure, or shape they end up claiming while being more or less consensually named. Ascribed into overarching domains, categories, sets, modes of being and existence. This process takes the ample scope for agency Actor-Network Theory defends as the most useful for descriptions, the most in tune to what is met of what there is when pursuing Ontology in practice[236]. Figuration, the process of and its current results or instances, applies to the whole scope of mediators and mediations, concatenations of mediators and of mediations. Up to fully fledged intermediations whose mediating elements are overlooked or ignored.

When agencies are met through Ontology in practice, figurations simultaneously enter the arena, clawing to them in a struggle of assimilation, deploying armies of attributions ready for engagement. At this stage of approaching what this Ontology in practice is all about, then, one goal is to treat construction without locking to the figurations and attributions of its working elements, mediators, as they are or have been traditionally associated in theoretical domains or classifications. Most certainly, not under those Philosophy has taken pains to establish.

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than anthropomorphic ones. This is one of the many cases where Sociology has to accept to become more abstract. To endow an agency with anonymity gives it exactly as much a figure as when it is endowed with a name, a nose, a voice, or a face. It's just making it ideo- instead of anthropomorphic. Statistical aggregates obtained from a questionnaire and given a label – like A and B types in the search for the causes of heart disease – are as concrete as 'my red-faced sanguine neighbor who died last Saturday from a stroke while planting his turnips because he ate too much fat'. To say 'culture forbids having kids out of wedlock' requires, in terms of figuration, exactly as much work as saying 'my future mother-in-law wants me to marry her daughter'. To be sure the first figuration (anonymous) is different from the second one (my mother-in-law), but they both give a figure, a form, a cloth, a flesh to an agency forbidding me or forcing me to do things. As far as the question of figuration is concerned, there is no reason to say that the first is a 'statistical abstraction' while the other would be a 'concrete actor'. Individual agencies, too, need abstract figurations. When people complain about 'hypostasizing' society, they should not forget that my mother-in-law is also a hypostasis – and so are of course individuals and calculative agents as much as the infamous Invisible Hand. This is exactly what the words 'actor' and 'person' mean: no one knows how many people are simultaneously at work in any given individual; conversely, no one knows how much individuality there can be in a cloud of statistical data points. Figuration endows them with a shape but not necessarily in the manner of a smooth portrait by a figurative painter. To do their job, sociologists need as much variety in 'drawing' actors as there are debates about figuration in modern and contemporary art.»
236 Cf. Latour, 2005: 54: «The great difficulty in ANT is not to be intimidated by the type of figuration: ideo-, or techno-, or bio-morphisms are 'morphism' just as much as the incarnation of some actant into a single individual.»

Figurations, themselves subject to construction, are not innocuous. The injunction to proceed in painstakingly slow steps is particularly relevant when meeting with overarching domains of figuration and attribution. Such as human, non-human, symbolic, natural, social, divine, ethical, aesthetical, scientific. In fact, it slows as much as to halt altogether. Regressing to tracing elements as nothing more than actants, actors, mediations, intermediations. As if no figuration could fit them immediately. As if no overtrodden system of relations between overtly established domains of figuring could apply. As if they were new, for the first time, never having been[237]. This is a methodological step, for sure. But not merely a preliminary one, and not one to be limited to methodology. It appears that, trying to trace an Ontology from Actor-Network Theory, methodology overflows into something substantial on what there is and how it comes to be. As if what there is were always new, never having been.

Still, consensus on what is to fall exactly under such established figurations and accompanying attributions is not definitive. Discussions of what does or doesn´t fit are often revised and never fully solved, unless superficially or just for a while in a given time, a given space, a given current of thought. Then, to face what is met through Ontology in practice, they do seem few, very few and very general, aiming to catch multitudes of dissimilar preys under a single net. Being general, possibilities of description for what there is, in practice, become forcefully tainted by lack of specificity, false descriptions arising. Being few, few paths are left open. Constricting the experience and description of an Ontology in practice into limited slots. On generality, the historical

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237 Cf. Latour, 1987: 91: «New objects become things: 'somatostatin', 'polonium', 'anaerobic microbes', 'transfinite numbers', 'double helix' or 'Eagle computers', things Isolated from the laboratory conditions that shaped them, things with a name that now seem independent from the trials in which they proved their mettle. This process of transformation is a very common one and occurs constantly both for laypeople and for the scientist. All biologists now take 'protein' as an object; they do not remember the time, in the 1920's, when protein was a whitish stuff that was separated by a new ultracentrifuge in Svedberg's laboratory. At the time protein was nothing but the action of differentiating cell contents by a centrifuge. Routine use however transforms the naming of an actant after what it does into a common name. This process is not mysterious or special to science. It is the same with the can opener we routinely use in our kitchen. We consider the opener and the skill to handle it as one black box which means that it is unproblematic and does not require planning and attention. We forget the many trials we had to go through (blood, scars, spilled beans and ravioli, shouting parent) before we handled it properly, anticipating the weight of the can, the reactions of the opener, the resistance of the tin. It is only when watching our own kids still learning it the hard way that we might remember how it was when the can opener was a 'new object' for us, defined by a list of trials so long that it could delay dinner for ever.»

approaches to the concept of being could be called upon. By calling upon them, one of the strongest arguments for halting such wide arching figurations is better understood. Such concepts tell us nothing on the strength-reality of a construction. Not even on their own strength-reality making out for their continued prevailing. In Philosophy, at least.

Characterizing such figurations and associated concepts, first and foremost, would be their mutability. The possibility and the practice of their changing. A possibility and practice contributing to eventual changes in how an Ontology is raised and appropriated by a collective. For Actor-Network Theory such changing potential is a non-sterile way to approach general figurations. Available to being traced, described, studied as how they are stabilized or collapsed, their attributions defined or destroyed. But, still in practice, if a dam falls or persists this will have little to do with the articulation of classifications on human aspects, non-human aspects, natural aspects, symbolic aspects, social aspects. As if an equation imposes itself as a mathematical breakthrough or doesn't. If a marriage is dissolved or persists. If a musical play entices us or doesn't. A percentual distribution of so-called human aspects, non-human aspects, natural aspects, social aspects, symbolic aspects, will not let us know how things work or don't work.

Thus, the designation of constructivism and the use of construction as applied by Actor-Network Theory correlates the proposed methodology towards an Ontology with architecture and engineering. Apt and literal examples of constructing serving as starting points. Plus, public administration due to its role of regulating, stabilizing, and collectively guiding constructions. The three activities mentioned proceed step by step, laying things on, associating with others, having to forcefully adapt with or adapt against agonistic factors resisting them. They must take conflicting and specific factors into account. They must, even if also strong on theoretical aspects, be realized in practice or they will not be realized at all.This methodology will force Ontology into respecting, in its own translation-betrayal, any results derived from the methodological approach, in order to be realized with more strength-reality.

The scope of the use of construction will extend and apply to any domain whatsoever. Including those said to be natural, where the use of construction clashes with how they are defined and seen. In these, as in all, construction does not imply single authorship, which could confuse it with intelligent design arguments. It is not the case. As it is not the case that splits between domains are respected as substantive. Whatever

Ontology sets its eyes upon can be interrogated on those who or what which have taken part in the construction, step by step, constructing who or what, where, when, how, for and against what. In the end why. Again, the more detailed answers to the why, though, explanations properly, will tend to be a result of answering to all the questions preceding it. Accordingly impossible if such answers are not already given or are themselves impossible to answer. In Actor-Network Theory's flight to Ontology a thorough answer to the first questions is most of the time, if not always, the best translation-betrayal. The best construction for what we wish to know when asking why.

Even if asking such a vague question as «Why is there something rather than nothing»[238]. Its answer would have to follow the preceding steps. Not that one would have to first define what is something, what is nothing, what is existing. But that one would have to answer to the preceding questions, in practice, to all that could count as something, as existing, as nothing. Tracing the strength-reality of each. Without speeding up the daunting task by constricting the possibilities into few, hoping for universal applications beforehand. Such construction of the answers to the whys is, at least, methodologically necessary. Without it, Ontology in practice is said to be, plainly, impossible. We would be doing nothing but engaging in Metaphysics, at best. Engaging in badly constructed metrologies, at worst. Ontology in practice is, then, seen as the fighting pit of metaphysical doctrines. As much as the place where badly constructed ontologies fail the tests that could push their strength-reality through.

Establishing parallels with accepted philosophical positions cannot be done without great care. Actor-Network Theory is not intended or realized thus. But it is also mildly necessary, to keep moving understanding onwards. Coherent, even, with Latour's own views on his work and objectives, those of launching grounds for what could be a Philosophy. Strikingly enough one where systematicity is still pursued in spite of the rebuttal of systems. Keeping such reservations in mind, the above views on Ontology, in practice, do indicate that no "x"[239] can be approached, methodologically, as if it were a

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238 Cf. Heidegger, 2000 [1935]: 1.
239 Cf. Law, 2000: 1: «What is an object? In its original form ANT has a specific and distinctive answer to this question. It proposes that an object is an effect of an array of relations, the effect, in short, of a network. And that it holds together, it is an object, while those relations hold together and don't change their shape.»

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given[240]. Thus, locking such views in a long-established tradition of systematic doubt, albeit not a predominant one when it comes to Philosophy overall. Doubt is most usually a steppingstone to be put away after used. Going further, they do indicate that what appears as the most given is as a matter of fact the most constructed already. Thus, unknotting the threads of such constructions becomes a major philosophical task. A task beginning by no other means than the full deployment of their construction in a how, in practice. At the same time, one must start by looking exactly at the given. Or what mostly appears as such. Nowhere else. Such givens make, as well, no distinction as to the domains they may serve as foundations of.

We could be dealing as much with sense data as with symbolic equations, as with strongly felt emotions or intuitions, as with established theories or customs. Without entering into very particularized definitions of what these words mean in different doctrines or according to different experiences. Even words themselves, meanings literal or otherwise, are not to be taken as a given. It becomes clear that what is hinted at by the given does not equate with immediacy or with any sort of instantaneous evidence. Rather, it seems to result very much from consensus. From how consensus shapes a shared Ontology as it disseminates. Though methodological, the doubt is not to stop at its instrumental use. It is to extend into something substantial where nothing at all is a given. Nothing is just there for the taking, nothing just is. A conclusion binding ontological

240 Cf. Law, 2000: 3: «What is the ANT analysis of this technology? I presented the answer above. Unsurprisingly, it pictures it as a network. Note that this is an analysis that can be applied to different levels of scale. For instance, a vessel can be imagined as a network: a network of hull, spars, sails, ropes, guns, food stores, sleeping quarters – not to mention its human crew. On the other hand, if one turns up the magnification, then the navigational system – its Ephemerides, its astrolabe or quadrant, its slate for calculations, its charts, its trained navigator, not to mention its stars, recruited to the system and playing their role – can also be treated as a network. Then again, one can turn down the magnification and think about (say) the Portuguese imperial system as a whole, with its ports and entrepots, its vessels, its military dispositions, its markets, its merchants and its principles as a network in which things more or less stayed in place. // Objects. There are many objects here. But this is the ANT argument: an object (let's think of a vessel) is an object so long as everything stays in place. So long as the relations between it and its neighbouring entities hold steady. The navigators, the Arab competitors, the winds and the currents, the crew, the stores to feed the crew, the guns: if this network holds steady then so does the vessel. It doesn't founder, turning into matchwood on some tropical reef. It doesn't get seized by pirates and taken to the Arabian Sea. It doesn't sail on, lost, until the crew are broken down by disease and hunger. The vessel is an effect of its relations with other entities, and the ANT analysis explores the strategies which generate – and are generated by – its object-ness. Which secure it. The syntaxes or the discourses which hold it in place rather than revealing its essential fragility and its dissolution.»

research together. It is not meant, though, that thought is turning out to be transcending the given.

No transcending is accepted or, more radically, seen as possible. Givens can be unfolded. But not transcended. Unless one indebtedly begins to accelerate away from practice, therefore falling into metaphysical fictions, albeit satisfying and effective for precise goals. Or falling into poor metrologies. There is no transcending as there are no leaps or discontinuities from one thing to another. Descriptions jumping things away as if they were intervals are descriptions no longer, but fables. Neither is immanence postulated, that one thing would be contained in another, explained by another, or potentially could become another. The given is not the realization of an ungiven. We would only find actor-networks trailing together. Tracks and routes and agents which don't accept discontinuities, transcendences, immanence, potencies. Which don't accept actions at a distance, even when it seems as if that is the case. Actor-networks translating-betraying each other, associating and disassociating, lay bare for Ontology the frontline of what is called the given. Which is not.

To be clear is that more construction, quantitatively and qualitatively, tends to result in comparatively greater strength-reality, splitting construction from lack of reality or of effectiveness. Well supporting engineering and architecture as baselines for the use of the term. Likewise, that construction is dissociated from its application just to the agency of those qualified as humans. Or just to objects resulting from such agency. Applying as much to what is qualified as natural. As in a particular way to what is qualified as symbolic[241]. As to what is thought as immanent or as transcendent, or as transcendental. A mountain is equally analysed as construction. As an atom can be. As a word can be. As a definition can be. As a concept can be. The same questions are to work

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241 Cf. Latour, 1988: part 2, 4.4.5, 221: «So you believe that the application of Mathematics to the physical world is a miracle? If so, then I invite you to admire another miracle; I can travel around the world with my American Express card. You say of the second, "That's just a network. If you step out of it by so much as an inch, your card will be valueless." Quite so. This is what I am saying about Mathematics and science, nothing more and nothing less. • The second-degree equation has an area of diffusion that can be mapped like everything else. Its invention, translation, and incorporation into other practices may be followed in the same way that we document the spread of the harness, the stern-mounted rudder, the bow tie, the clock escapement, or intelligence tests. But we cannot resist separating trades into two heaps. Some are firmly embedded in their contexts, while others float like spirits out of context. I want to bury those spirits at the bottom of their networks to stop them from returning after dark to haunt us.»

through the Ontology in practice of all the above. With the same described methodology. Looking for mediations and associations as translations-betraying's ending up in those givens that are not. A not so clear point is how construction applies, perhaps more strikingly than in any other pre-ordained domain, to relationships of identity and equivalence. To relations of being contained in, of belonging to.

The latter use of construction, notwithstanding that it is one of the richest, is not explicitly dealt with at large apart from *Irreductions* and some chapters of *Science in Action*. Nevertheless, it is a use which opens up central accesses towards an Actor-Network Ontology in the making. Nothing is, by itself, identical (or not identical) to anything else. Nothing is, by itself, equivalent (or not equivalent) to anything else. Nothing is, by itself, contained (or not contained) in anything else. Nothing belongs (or doesn't belong), by itself, to any other thing. More, nothing is inherent, intrinsic to anything else. Nothing is potentially anything else. Nothing is transcendent or transcendental to anything else. These sentences, heavily drawing from *Irreductions*, can be translated-betrayed by affirming that «nothing is, by itself, either reducible or irreducible to anything else»[242], the thesis with which the book itself begins its course.

To understand what is being proposed, without making do of formal languages which the book does not appeal to throughout the exposition, again we must focus in the replacement of cause-effect frames for translating-betrayal. In the replacement of given intermediations by mediations. In the already approached intent of irreducing. To perform an irreduction is also to deny that the above relations can, by themselves, carry truth. Better yet, all of the above relations between any given "x" and any given "y" are, by themselves, neither true nor false, if such is the dichotomy. However, being said that they are neither true nor false, if such is the dichotomy, it is accurate to say that they are mostly, by themselves, false. Any add up on their strength-reality turning falsity into something that, albeit contradicting at a first glance, turns out to be not that false after all, even if not true, is gained through the same how of construction as applied to all other domains.

Such relations may look as if real, in practice, for many practical purposes, behaving as such. If very well constructed with great access to multiple resources and extensive information. The abstract form of the relations themselves as any concrete instantiation.

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242 Latour, 1988: part 2, 1.1.1, 158.

They can become, through constructing, the bearers of increasingly consensual strength-reality. such consensus involving much more, as always, than just human or social agents. But, if having to absolutely choose by accepting the dichotomy fully, which the theory demands not and even rejects, such relations are, all of them, abstract or concrete, false. Not forcing choice, the theory only asks by which tests and by which metrology are they being constructed. For constructed they indeed are. As it is easily concluded from the above, associations between better and more construction and increasing reality or truth do begin to complexify exponentially given that all such relations end up as false. Well-constructed as they may be. If an absolutist stance seeks absolute choice.

Again, care must be exerted when drawing parallels with Philosophy. But, among them, it seems clear that no such thing as analytic truths are acceptable. While doubts may flow when taking for granted that all are to be synthetic. In consonance with the disregard for the usefulness and ontological reality of traditional dichotomic oppositions. Surely though, that something being aprioristically true does not obtain and does not hold. Rather, the formal, the analytic, the a priori, are the more empirically constructed factors in knowledge gaining practices. Even if it feels like otherwise. That it seems not to be naturally given, not true to that elusive entity of how the world would be, does not equate with flying away from construction, empirical and concrete. Meaning, too, if that is the case for, is not something out of this world. Out of construction, out of Ontology in practice. It is being said, or at least hinted at, that what goes as the most rationally evident is, as much as what looks like as being the most given in the natural world, but even more, the most constructed already[243]. In this sense, rational evidence can carry a similar or

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243 Cf. Latour, 1987: 240: «This example shows not only how foreign domains can be combined and brought to bear on one another once they have the common form of calculation. It also reveals the final and main advantage of equations. From the beginning of this book I have constantly presented scientists and engineers as mobilising large numbers of allies, evaluating their relative strength, reversing the balance of forces, trying out weak and strong associations, tying together facts and mechanisms. In effect, I had to replace each traditional divide by a relative distinction between stronger and weaker associations. We have now come close to the end of our long journey because the equations produced at the final edge of the capitalisation constitute, literally, the sum of all these mobilisations, evaluations, tests and ties. They tell us what is associated with what; they define the nature of the relation; finally, they often express a measure of the resistance of each association to disruption. Of course, they are utterly impossible to understand without the mobilisation process (and this is why I did not talk of them earlier), they are nevertheless the true heart of the scientific networks, more important to observe, study and interpret than facts or mechanisms, because they draw all of them together inside the centres of calculation.»

greater strength-reality than anything qualifying as a given by virtue of being qualified as natural or immediate.

Latour stresses this point by taking that which is said to be formal as the most material. And quantitatively so. What we call as formal, or more formal than, or form of, is constructed with more matters, more associations, more acting mediators aligning, than those entangled in what we end up considering as not formal. Such constructions of the formal, of the abstract foundations of knowledge gaining and Ontology making practices, are possible only after large numbers of resources and information accumulation cycles are achieved and trialled. During generations piling on each other. Whatever comes, the strangely uniform use of construction grappling together domains qualified as social and human with those qualified as natural similarly applies, with fundamental conclusions for the theory, to those qualified as symbolic and formal. Up to the more technical aspects of what counts as formal or symbolic[244].

Construction, as constructing, uniformly applies to the three domains. Doing so in a fashion which doesn´t allow strict ontological distinctions between them. Methodologically and substantially converging the three together in one ontological sweep. As such, needs of plural ontologies are dismissed. Just Ontology is enough. Ontologies, plural, are, to Actor-Network Theory, but Metaphysics yet unclasped and yet untrialled. The distinction to-be between Ontology and Metaphysics gaining yet more ground. Regardless, a tricky point left a bit unchecked, differences exist between the how of applying construction to conjoin the natural and the social and its application to symbolic and formal aspects. Such differences becoming essential for the unfolding of

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244 Cf. Latour, 1987: 241: «If by 'abstraction' is meant the process by which each stage extracts elements out of the stage below so as to gather in one place as many resources as possible, very well, we have studied (and continue to study) the process of abstraction, exactly as we would examine a refinery in which raw oil is cracked into purer and purer oils. Alas, the meaning of the word 'abstraction' has shifted from the product (nth order inscriptions) to not only the process but also to the producer's mind. It is thus implied that scientists in the centres of calculations would think 'abstractly', or at least more abstractly than others. Laperouse will be said to operate more abstractly than the Chinese when he handles latitudes and longitudes, and Mendeleev to think more abstractly than an empirical chemist when he shuffles his cards around. Although this expression has as much meaning as saying that a oil refinery refines petrol 'refiningly', it is enough to fog the issue. The concrete work of making abstractions is fully studiable; however, if it becomes some mysterious feature going on in the mind then forget it, no one will ever have access to it. This confusion between the refined product and the concrete refining work is easy to clarify by using the substantive 'abstraction' and never the adjective or the adverb.»

the theory. The question remains, though, that such differences are mainly quantitative. Not of any internal quality demanding asymmetric treatment[245]. Quantitative differences shown by exactly engaging the same symmetrical methodology regardless.

Constructions stacked as formal or symbolic are the strongest of all, usually the most resilient and hardly abandoned. Those seemingly more evident and apparently given when we do not carefully track the greater costs of their achieving in a situated how[246]. Such constructions culminate as forms-of. Depending at large on what they are forms-of being already more or less stabilized and constructed. Thus, on many resources having already been collectively spent and exhausted. They are always forms-of. Translations-of, betrayals-of. Mediations-of. For Ontology in practice, though seemingly coming first,

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245 Cf. Latour, 1987: 242: «A few common-sense precepts will be enough to put the pyramid back on its base. First, we will abstain from ever using the words 'abstraction' and 'theory' in adjectival or adverbial forms. Second, we will never cut off the abstractions or the theories from what they are abstractions or theories of, which means that we will always travel through the networks along their- greatest length. Third, we will never study a calculation without studying the centres of calculation. (And, of course, as we learned earlier, we will not confuse the results of the attribution process with the list of those who actually did the job.)»

246 Cf. Latour, 1987: 245: «When people wonder how 'abstract' geometry or Mathematics may have some bearing on 'reality', they are really admiring the strategic position taken by those who work inside the centres on forms of forms. They should be the weakest since they are the most remote (as it is often said) from any 'application'. On the contrary, they may become the strongest by the same token as the centres end up controlling space and time: they design networks that are tied together in a few obligatory passage points. Once every trace has been not only written on paper, but rewritten in geometrical form, and re-written in equation form, then it is no wonder that those who control geometry and Mathematics will be able to intervene almost anywhere. The more 'abstract' their theory is, the better it will be able to occupy centres inside the centres. When Einstein is preoccupied by clocks and how to reconcile their readings when they are so far apart that it takes time for the observer of one clock to send the information to another observer, he is not in an abstract world, he is deep down at the centre of all exchanges of information, attentive to the most material aspect of inscription devices: How do I know what time it is? How do I see that there is superimposition of the hands of the clock? What should I give up if! wish to maintain above all the equivalence of all the observers' signals in case of great speed, great masses and great distance? If the centres of calculation wish to handle all the information all travellers on ships bring them, they need Mercator and his 'abstract' projection; but if they wish to handle systems that travel at the speed of light and still maintain the stability of their information, they need Einstein and his 'abstract' relativity. Giving up a classic representation of the space-time is not too high a price if the pay-off is a fantastic acceleration of the traces and an enhancement of their stability, faithfulness and combinability. At the limit, if mathematicians stop talking of equations and geometry altogether, and start considering 'number' per se, 'set' in general, 'proximity', 'association', the more central their work will become since it will concentrate still further what is going on in the centres of calculation. The sheer accumulation of nth order paper forms makes any nth form that can at the same time maintain the features and get rid of the thing (of the 'matter') relevant. The more heterogeneous and dominating the centres, the more formalism they will require simply to stay together and maintain their imperium. Formalism and Mathematics are attracted by the centres, if I dare make this metaphor, like rats and insects by granaries.»

or aprioristically if a different terminology is used, fact is they keep coming last. Fostering metrologies, nevertheless. Within the non-philosophical terminology of the theory such constructions of the formal and of the symbolic do serve to transport and translate things without carrying on the physical presence of what is transported and translated thus. Some aspect of physical presence is always required but, through such forms-of, most of it can be eliminated. A resemblance of acting at a distance, on the thing transported, in its implementation or navigation somewhere else, can grow in those who deal with such forms[247].

Think on a map, a diagram, an equation, information, a drawing 2D or 3D. Even a concept, for what counts. Examples abound. Such constructions work as vehicles able to transport by selecting and reducing, in itself an ontological choice, information on any given "x". Effectively working out as forms-of an "x". Or, later, forms-of-forms of an "x". Up to a nth degree. Such an "x" being singular or plural. We build, quite materially according to the argument, forms of facts, situations, events. That can then be transported and dealt with simultaneously at the sleight of a hand or of a screen. With the added characteristic of their physical manifestation usually being containable in two-dimensional supports[248]. As such forms progress and materially simplify their physical

247 Cf. Latour, 1987: 247: «Translating the world towards the centres is one thing (Part A); gaining an unexpected supplement of strength by working inside these centres on nth degree inscriptions is another (Part B). There is still one remaining snag, because the final Inscriptions are not the world: they are only representing it in its absence. New infinite spaces and times, gigantic black holes, minuscule electrons, enormous economies, mind-boggling billions of years, intricate scale models, complex equations, all occupy no more than a few square metres that a few per cent of the population (see Chapter 4) dominate. To be sure, many clever traps and tricks have been discovered to reverse the balance of forces and make the centres bigger and wiser than the things that dominated them until. then. However, nothing is irreversibly gained at this point if there is no way to translate back the relation of strength that has been made favourable to the scientists' camp. More additional work has yet to be done. This movement from the centre to the periphery is to be studied as well, if we want to follow scientists up to the end. Although this last leg of the journey is as important as the other two, it is usually forgotten by the observers of science because of this queer notion that 'science and technology' are 'universal'; according to this notion, once theories and forms have been discovered, they spread 'everywhere' without added cost. This application of abstract theories everywhere and at every time appears to be another miracle. As usual, following scientists and engineers at work gives a more mundane but more interesting answer.»
248 Cf. Latour, 1990 [1986]: 20: «But the last advantage is the greatest. The two-dimensional character of inscriptions allow them to merge with geometry. As we saw for perspective, space on paper can be made continuous with three-dimensional space. The result is that we can work on paper with rulers and numbers, but still manipulate three-dimensional objects "out there" (Ivins, 1973). Better still, because of this optical consistency, everything, no matter where it comes from, can be converted into diagrams and numbers, and combination of numbers and tables can be used which are still easier to handle than words or silhouettes

cumbersomeness, they can both be much more easily compared and much more easily related via supplementary forms-of-forms. Concurrently, what in fact happens only once at only one space seems to happen always or almost always in many different spaces and many different times. Scientific successes, as a matter of fact many of the successes western civilization reclaims, would be linked with the refining and increasing force of such constructions. Which, despite their apparent abstraction, cannot ever be methodologically and ontologically disengaged from the cycles of resources and information accumulations that lead to them. From mediation to mediation, intermediation to intermediation. Successful intermediation being the exact goal for the building of such forms[249].

For Latour, the physical places where the most complex and higher orders of such forms, forms-of-forms-of-forms up to nth degrees, are built, work as "centres of calculation". A step further and ahead of what even laboratories, themselves mostly dealing with forms-of or with the construction of such forms, can aspire to. For something to properly be called a "Centre of Calculation" what is there built must be so, literally, in mathematical or logical languages. Regardless of the subject matter thus treated. Mathematical and logical forms then, if the cycles of information and resources accumulating in them are traced and tracked, are seen as the most material, drawing the most things together. And as the most social, associating the most heterogeneous things

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(Dagognet, 1973). You cannot measure the sun, but you can measure a photograph of the sun with a ruler. Then the number of centimeters read can easily migrate through different scales, and provide solar masses for completely different objects. This is what I call, for want of a better term, the second-degree advantage of inscriptions, or the surplus-value that is gained through their capitalization.»

249 Cf. Latour, 1987: 242: «The worst is yet to come. Since sometimes it happens that these abstract theories, independent of any object, nevertheless have some bearing on what happens down below in empirical science – it has to be a miracle! Miracle indeed to see a clover-leaf intersection fitting precisely with the freeways whose flow it redistributes! It is amusing to see rationalists admire a miracle of that quality while they deride pilgrims, dervishes or creationists. They are so enthralled by this mystery that they are fond of saying, 'The least understandable thing in the world is that the world is understandable.' Speaking about theories and then gaping at their 'application' has no more sense than talking of damps without every saying what they fasten together, or separating the knots from the meshes of a net. Doing a history of scientific 'theories' would be as meaningless as doing a history of hammers without considering the nails, the planks, the houses, the carpenter and the people who are housed, or a history of cheques without the bank system.»

together. Making commensurable what suffers from sheer incommensurability. We will get back to this issue further on, when dealing with networks[250].

Construction so, applied to Ontology in practice at this stage, necessarily requires always adding to a fact or object, situation, state of affairs, to anything, the detailed timeline and temporal dimension of is making of in constructing. As the decisions, crossroad turns and attributions leading what might be under analysis not to fail or have failed. To succeed or have succeeded. Persisting with greater strength-reality or disassembling into oblivion. Refusing any hint of a certain spontaneous generation of facts or objects which might lead to beliefs that what works does so miraculously, or due to it being said as currently true. Or, still, to beliefs that a new fact or new object overcomes trials of strength and lingers on because, prior to its stressful testing and construction due to the association and translating-betrayal of multiple heterogeneous resources and mediators forged in such tests of strength, it was already there waiting full-fledged to be discovered.

It necessarily requires the description of the how of specific statements, specific facts, specific entities, specific events, specific symbols. This is to be done without looking first at so called internal properties of whatever is under analysis as if they were justifications. Including when such properties are deemed as timeless or essential, logical or formal. Given that what stands as the most formal is from the start seen as the most material. It is also to be done without looking first at so called cognitive capacities of the knowing subjects, as if such capacities could by themselves justify the conclusions arrived at as to what is or not bearing strength-reality in an Ontology. It almost necessarily requires, for a more faithful description and analysis, the strange transformation of nouns and adjectives into verbs in the ways previously dealt with it in this text. Finally, it does require full attention to the associations and relations, translations-betrayals in Actor-

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250 Cf. Latour, 1987: 249: «So how is it that in some cases science's predictions are fulfilled and in some other cases pitifully fail? The rule of method to apply here is rather straightforward: every time you hear about a successful application of a science, look for the progressive extension of a network. Every time you hear about a failure of science, look for what part of which network has been punctured. I bet you will always find it.»

Network terminology, between heterogeneous elements, which keep establishing themselves in the process of a fact or object being constructed.

From such associations and relations, translations-betrayals, it requires to treat whatever is under analysis as simultaneously being a circulation and a transformation, in circulation and in transformation. That which circulates and transforms is, again in Actor-Network terminology, a *quasi-object*, an actor-network. In given moments, those who most need describing, such quasi-objects, or actor-networks, are temporarily stabilized. A construction almost solidifies for a certain time and space, through nothing but the way in which it conjugates forces who resist, under trials and by trials, to dispersion. As they resist, a specific configuration is kept longer, better defining, becoming an asymmetry which lingers through. Persisting by nothing but the type of heterogeneous associations and heterogeneous relations between heterogeneous elements it composes itself of, under trials.

All this fits well with the redefinition of natural, social, symbolic, as previously thought of. No more than types of associations, forms-of, as a matter of fact. And fits well with the designation of the theory as "Associology". It fits on the construction of associations and relations via translation-betrayal. Trivial as it may again seem at a first glance. To turn untrivialized what is qualified as trivial, those being the building foundations of Ontology, is, again, ever an outright explicit goal. Methodologically then, construction and association, as pertaining to Ontology, wish to give account of how incommensurability becomes commensurable, how irreducible elements reduce to each other, how heterogeneities become homogenous, if Ontology is not to collapse.

From what is written it becomes clearer that Actor-Network's ontological perspective and main goals to achieve are not easily classifiable as just deconstructing or disassembling. The use of construction and constructivism as designations points us to the exact opposite when it comes to discriminating what is to be done. Efforts at deconstructing are, coherently in the scope of Actor-Network Theory, seen as nothing but alternate constructions. Construction is pervasive to the assembly of everything. Constructions are replaced by constructions. Deconstructing is but constructing something different. To be tackled with the same tools engaged in analysing constructing. Constructing tools. The main goal is to grasp how, collectively, is a collective built, how is the whole of an Ontology temporarily stabilized. How, collectively, is an Ontology step

by step replaced, a collective step by step changed? The "how" of constructing, the "how" of constructing better, with greater strength-reality.

Thus, throughout *Irreductions* and Latour's works in general we find negative views towards deconstruction, if elated to the status of prime goal. As much as a sharp distinction, to be firmly taken in, between Actor-Network Theory and those theories or philosophical projects whose aim is but to deconstruct. If by following Latour's take, *We have never been modern*, never are we likewise able to actually deconstruct. Constructions simply pile up on constructions when Ontology is the issue. On the same grounds, that something could have been different than what it is, in theory, does not negate that, in practice, it is as it came out to be. In practice being the keystone of the Ontology sought. Counterfactual relevance is justified only as a gateway to better grasping what actually is.

Similar critiques are deployed to Feyerabend's *anything goes*[251]. The theoretical possibility of anything going is secondary towards specifically discriminating what and how actually went. And towards specifically discriminating what and how actually goes. Expressing that *anything goes* would equate to ignoring the specific construction works, of specific actor-networks. To ignoring the specific negotiations between mediators of the most diverse kinds and origins. To ignoring the specific translations-betrayals, the specific making of, in the making, conducting a given "x" to greater strength-reality and greater dissemination. If answers do not derive from a distinct theoretical scientific method, of the sciences alone, or of objects pre-existing their fabrication and construction, this does not allow one to satisfy inquiry simply with *anything goes*.

That, given the choice between relativism and absolutism, relativism is the saner and more concurrent answer, does not allow us methodologically to remain in relativism for its own sake. On the contrary, towards Ontology in practice, nothing ever-just-goes. Trivial as it again may seem, no path is there than describing constructions, constructing descriptions, gathering within such descriptions all elements, matters, actors, networks, technologies, metrologies, trials. Originality lays, if anywhere, in exponentially increasing the number and kind of elements, increasing what counts as matters and

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251 Cf. Feyerabend, 1988: chap. 1, 14-19: «The only principle that does not inhibit progress is: anything goes.»

materials, as technologies, as metrologies, and of symmetrically taking what is said as human and as not human, granting agency to both and to all.

1.5. Rhetoric, Semiotics, Networks and Uncertainties

Besides Science and Technology Studies, Engineering and Architecture, Rhetoric and Semiotics, entangled, are a third strong correlation merging with Actor-Network Theory and the Ontology coming from it. Intersecting all the correlations we have been already tracking. Greimas is mentioned as an inspiration. Whitehead is mentioned[252]. Never being clear, regardless, of which Semiotics, disciplinary wise, is the reclaiming actually being done from. The central term "actant" is, though, greatly imported, in its use and translation-betrayal, from Semiotics. An "actant" who acts on something or is acted on by something, who is shown but for the role it plays in making a plot follow through. To understand its relevance and why, as it pertains to Rhetoric and Semiotics, one must again focus on the consequences, for Actor-Network Theory, of the already mentioned failure of Sociology of Science in dealing with its subject. Subsequently, of Sociology in dealing with the whole of its so-called social subjects.

An immediate consequence was the impossibility of describing and explaining what is meant by the social without taking into the account the specific agency of specific non-human objects, forcing into the theory the somehow quaint notion that non-human objects have agency[253]. And that they have it regardless of having been classified as artificial or

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252 Cf. Latour, 2005: 61: «This belief in the 'lived world' is a nice case of 'misplaced concreteness' to use Whitehead's term: an account full of individuals might be more abstract than another consisting only of collective actors. A billiard ball hitting another one on the green felt of a billiard table might have exactly as much agency as a 'person' directing her 'gaze' to the 'rich human world' of another 'meaningful face' in the smoke-filled room of the pub where the tables have been set up. This is not what phenomenologists and sociologists of the social might say, but then listen to what the players themselves are saying about their own 'behaviors' and the unpredictable 'action' of their billiard balls. They seem to produce quite a lot of the very imbroglios which are strictly forbidden by the theory that states that a radical difference should be maintained between 'action' and 'behaviour'. Here again, social scientists have too often confused their role of analyst with some sort of political call for discipline and emancipation.»
253 Cf. Latour, 2005: 237-238: «In the pre-relativist definition of the social, what had been brought to the foreground was the human participant and then, through a sharp discontinuity, the social world of beyond. Nothing was allowed to encounter humans unless it was made of social ties. Such was the etiquette of this odd diplomacy. In the new definition it's just the opposite: human members and social context have been put into the background; what gets highlighted now are all the mediators whose proliferation generates, among many other entities, what could be called quasi-objects and quasi-subjects. To take up and reverse

natural. From such presupposition of non-human agency comes the need to track how it goes by being manifested. The modes by which it acts together or against the more usually accepted agency of those classified as humans[254]. To further, given the heterogeneous conglomeration of distinct agencies, in their specificity and in their more or less exact belonging to human or non-human sets, in composing and assembling the collective, any term who would but stronghold agency in either of these sets would be a misleading framing both for Ontology in practice and for Sociology in practice.

Objects, or the said to be non-human, are first given a force of agency, a force of doing and of acting, whose complexity cannot, coherently with the rebuttal of a stronger causality for the natural domain and a weaker for the human or social domains, be contained in the simplicity of a cause-effect relation. Objects are no longer seen as but intermediaries by definition, extensions of a human will or goals, faithfully transporting effects without distortion, the effects implied in the will of the makers. But as full mediators from the start, as much as everything else, humans included, according to the replacing of causality by mediation and translation. This privilege of mediating, translating-betraying, is, consensually, extended to those agents usually classified as belonging to the set of humans[255]. Originally seen as the only agency bearing set.

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the rather unfortunate astronomical simile rendered even shakier by Kant's use of it, instead of objects turning around social aggregates as in the pre-Copernican Sociology, various social aggregates are emanating out of the many attachments which now occupy the center of the social universe. No matter how hesitant the metaphor, it is such a shift in perspective that ANT is looking for. Things, quasi-objects, and attachments are the real center of the social world, not the agent, person, member, or participant – nor is it society or its avatars. Is this not a better way, to use another of Kant's expressions, of rendering Sociology able at last to 'walk onto the sure path of science'? »

254 Cf. Latour, 2005: 76-77: «This interest for the object has nothing to do with a privilege given to 'objective' matter in opposition to 'subjective' language, symbols, values, or feelings. As we will see when absorbing the next source of uncertainty, the 'matter' of most self-proclaimed materialists does not have a great deal to do with the type of force, causality, efficacy, and obstinacy non-human actants possess in the world. 'Matter', we will soon realize, is a highly politicized interpretation of causality. In order to absorb the third source of uncertainty, we should be ready to inquire about the agency of all sorts of objects. But since objects have such poor and constricted roles in most of the social sciences, it's very difficult to extend their original activity to other types of material like documents, writings, charts, files, paper clips, maps, organizational devices, in brief intellectual technologies. As soon as some freedom of movement is granted back to non-humans, the range of agents able to participate in the course of action extends prodigiously and is no longer restricted to the 'middle size dry goods' of analytical philosophers. What makes ANT difficult to grasp is that it fills in precisely the space that is emptied by critical sociologists with the damning words of 'objectification' and 'reification'.»

255 Cf. Latour, 2005: 255: «To grasp this point, we have to remember that being a matter of fact is not a 'natural' mode of existence but, strangely enough, an anthropomorphism. Things, chairs, cats, mats, and

The key point is that all acting elements, those carrying a force of agency, are to be symmetrically treated, methodologically, when it comes to describing Ontology in practice. This constitutes the principle of generalized symmetry as it is seen in Actor-Network Theory. The uniting element in composing the collective, for an Ontology in practice, is doing, acting, mediating, translating-betraying. Shared or shareable by all according to the theory. This does not imply that differences are not found in the specificity of the mode by which each particular mediator acts itself onwards and acts through others[256]. Distributed mediation makes that denying a force of agency to objects falls, in practice. Together with it, specificity of each particular mediation makes those general classifications under pre-existing domains (natural, social, symbolic) also fall accordingly.

The principle of generalized symmetry, methodologically, makes that those costs of turning "x" into an intermediary, processes by which it is defined or given a figuration, performances and competences found under trials, are to be described and analysed regardless of any figuration or demarcation it is currently associated with. Be it human, non-human, natural, social, symbolic, the main collections crossing the composition of the collective. As said, this doesn´t entail that, for example, objects and humans are identical or equivalent. At first it but means that the how of their making into either

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black holes never behave like matters of fact; humans sometimes do, for political reasons, to resist enquiries. So, it's absurd to resist "treating humans like objects". At worst, it would simply put humans on par with other matters of concern in physics, biology, computer science, etc. Complexity will simply be added to complexity. Far from being 'lowered down', 'objectified humans' will instead be elevated to the level of ants, chimps, chips, and particles! To be 'treated like things', as we understand it now, is not to be 'reduced' to mere matters of fact, but allowed to live a life as multifarious as that of matters of concern. Reductionism is not a sin one should abstain from or a virtue one should firmly stick to: it is a practical impossibility since the elements to which one 'higher level' is being reduced will be as complex as the 'lower level'. If only humans in the hands of critical sociologists could be treated as well as whales in zoology, genes in biochemistry, baboons in primatology, soils in pedology, tumors in cancerology, or gas in thermodynamics! Their complex metaphysics would at least be respected, their recalcitrance recognized, their objections deployed, their multiplicity accepted. Please, treat humans as things, offer them at least the degree of realism you are ready to grant humble matters of concern, materialize them and, yes, reify them as much as possible!»

256 Cf. Latour, 2005: 76: «ANT is not, I repeat is not, the establishment of some absurd 'symmetry between humans and non-humans'. To be symmetric, for us, simply means not to impose *a priori* some spurious asymmetry among human intentional action and a material world of causal relations. There are divisions one should never try to bypass, to go beyond, to try to overcome dialectically. They should rather be ignored and left to their own devices, like a once formidable castle now in ruins.»

identity or difference can be achieved and understood by the same theoretical and practical tools. Including those vocabulary wise. In fact, it is the heterogeneity of the different elements strengthening themselves in a weave, together with the heterogeneity of the relations established between them, that will justify, or not, the strength, resilience and durability of the associations they end up assembling and of the practical asymmetries tracked.

Point is exactly that to let such differences show themselves fully, through the description of "hows" the above classifications are a nuisance incapable of capturing the nuances and complexities of the elements and relations. The contemporary proliferation of new humans, new objects, new and unexpected technological and social changes, particularly evident in scientific domains but not only, further stresses the need to put such prior classifications away for good as faulty hermeneutical grids for Ontology in practice. The solution not being increase of a priori classifications or the search for meta-languages, a Tantalus or Sisyphean effort. This is coupled with the injunction to let things speak for themselves while following them through. A lesser classification, infralanguage wise, was found by translating-betraying the term "actant" from Semiotics.

The term "actant", to be followed up by "actor", is brought out from Semiotics to make do of an agency, in a general deflationary sense. An agency cleaned out from all attribution or figuration among those previously mentioned under the main collections. As long as it said or can be said of such agency that it suffers of, accomplishes, participates in or is a part of, an action. Without at first great complexity being placed on discriminating, philosophically wise, what is that we are calling as an action. Any agent or agency is, in this sense, taken as an actant, not adjectivized differently or dealt with differently despite the figuration or attributions currently being, more or less consensually, associated with it.

Instead of objects and humans, natural, social, or symbolic entities, said to be fictional or said to be real, to exemplify, we are simply left with actants. Under certain constraints, nevertheless. That they integrate a report accounting as agents, or as if agents. That it is verified they produce (or are said to produce, placed as if producing) some difference in a given state of affairs under or after trials, where from such difference or differences traces are left which may be, as far as possible, dully and empirically trackable. Such association with the term "actant", as above, justifies the alternate

designation of "Actant-Network Theory". As much as the intended short sight of not accelerating explanations from descriptions by appealing to general categories, keeping lenses focused always on the particular and singular, tracking its trails, traces and reports as slowly, empirically, and obsessively as possible, explains the ironic self-designation as "ANT", animal.

From the first consequence of Sociology's failure, a second is to follow in two stages, gradually introducing the term "actor" in the designation of "Actor-Network Theory". Pushing on further reflections on acting, action, and agency. It was found, as essential to a new foundation of Sociology, that in any so-called action, anywhere where the presence of actants is detected, there can be observed, always, much more factors at play, determinant or relevant, in spite of never causing such so-called action in any sufficient way, than those traditionally attributed to so-called individuals and their so-called faculties or liberties. Be they rational, figured as rational, or volitional, figured as volitional. In any so-called action there is, at least and for starters, a double displacement. Of other times who precede it and act in it, and of other spaces who frame it and act in it. Such double displacement is appliable both to the so-called non-individual as to the so-called individual, and/or rational, and/or volitional. Thus, justifying a symmetrical analysis of both. Simultaneously, it is denied that such other factors at play, together with all those who may be found afterwards, can be subsumed, if not ignored, as contextual or even social. As if while still acting in any given action they could be nevertheless placed under the rug as alien to its pretence core. A position who is assigned to the traditional Sociology which had failed, as per Science and technology Studies.

It is but retained that, for any so-called action, there is an almost infinite set of conditions, entities, events, without which neither the so-called action could occur or have occurred[257]. Nor could it be, in more or less complex ways, understandable or describable.

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257 Cf. Latour, 2005: 52: «There is, of course, a more respectable and practical reason to limit in advance the list of agencies that make actors do things. Apart from the social theorists' infatuation with emancipation politics, it is the sheer difficulty of following their proliferation. And it is true that to ask enquirers to indulge in empirical metaphysics, to send them trotting behind the actors themselves, is no easy task. However, if agencies are innumerable, controversies about agency have a nice way of ordering themselves. The solution is the same as with the former source of uncertainty: although there exists an indefinite list of groups, we could devise a small list of handles allowing the sociologist to move from one group formation to the next. In the same way, I think it is possible to propose a limited set of grips to follow the ways in which actors credit or discredit an agency in the accounts they provide about what makes them act.»

It may seem again as theoretically trivial to only retain such. But, as a practical guideline, the consequences of such are far from it. They force that any theory on so-called action which does not include such almost infinite sets, making the unending effort to describe them the most accurately, symmetrically regardless of so-called individualities of non-individualities being at play, and as extensively as possible, while analysing such and such so called singular action, is all ends met a theory who is at best highly partial. At worse utterly false[258]. At most a theory of nothing at all. It would be a theory which, under Actor-Network, fails in paying the full costs that any hint at a more faithful explanation demands.

It is also refused, accordingly, that actions may be split and isolated, at least previously as an approaching frame, according to the homogeneous focus of particular disciplines or domains. As if from its splinted parts could somehow a whole be composed when combined. Actions, in practice, are not that discrete. As such, little sense is left for neatly appealing to a Philosophy of Action, added to a Sociology of Action, a Physics of Action, a Linguistics of Action, for example. Action is but what happens when actants are registered at play[259].

A given so-called action is seen first and foremost as a circulation, ever being transformed and transforming, of many heterogeneous actants, more or less able to be figured, which converge in it, through it and with it. Mediating and being mediated by a second group of one or more actants who seem to stand for it as it is being done. The

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258 Cf. Latour, 2005: 45: «But there is a huge, an insurmountable, an abysmal gap in going from this intuition – action is overtaken – to the usual conclusion that a social force has taken over. While ANT wishes to inherit from the first, it wants to inhibit the second step; it wants to show that between the premise and the consequence there exists a huge gap, a complete non sequitur. For the social sciences to regain their initial energy, it's crucial not to conflate all the agencies overtaking the action into some kind of agency – 'society', 'culture', 'structure', 'fields', 'individuals', or whatever name they are given – that would itself be social. Action should remain a surprise, a mediation, an event. It is for this reason that we should begin, here again, not from the 'determination of action by society', the 'calculative abilities of individuals', or the 'power of the unconscious' as we would ordinarily do, but rather from the under-determination of action, from the uncertainties and controversies about who and what is acting when 'we' act – and there is of course no way to decide whether this source of uncertainty resides in the analyst or in the actor.»

259 Cf. Latour, 2005: 52: «An invisible agency that makes no difference, produces no transformation, leaves no trace, and enters no account is not an agency. Period. Either it does something or it does not. If you mention an agency, you have to provide the account of its action, and to do so you need to make more or less explicit which trials have produced which observable traces – which does not mean, of course, that you have to speak about it, speech being only one of the many behaviors able to generate an account and far from the most frequent.»

raising to visibility of these apparently two[260] groups of actants (see ahead), those who mediate and those who are being mediated or intermediated, plus the subsequent process of figuring them while attempting to describe the networks of associations being established leads us to a second stage. Where the term "actor" steps in.

Given the entanglement of multiple actants and multiple displacements, in any given action, it is impossible to theoretically determine and very difficult to practically determine what or who is thus really acting out or through, circulating by or in, a given so-called action[261]. The question itself, due to its primal difficulty towards being determined in full, is additionally seen as one of the least interesting ones to pose when it comes to tackle actions in the frame on an Ontology in practice. The same entanglement makes, too, that finding one, or several, discrete causes or stand-alone reasons for a given action becomes an artificial pursuit with little to no possibilities of success. Again, enforcing the poor instrumental utility, in this perspective, of causality overall. What is instead put forward as a theoretical guideline is that any so-called action and/or the circulation through transformation of a given so called agency is or tends to be, in practice always, in many ways, when it is described or explained, underdetermined.

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260 Cf. Latour, 2005: 169: «This abrupt alternation has been called the actor/system quandary or the micro/macro debate. The question is to decide whether the actor is 'in' a system or if the system is made up 'of' interacting actors. If only the vertiginous swing could come to a gentle stop. Usually, the strategy is to politely recognize the problem, to declare that it is an artificial question, and then to proceed by carving up some cosy place in what is supposedly an academic debate by imagining some reasonable compromise between the two positions. But if you discover some happy medium between two non-existing positions, what makes you so sure that this third position has not even less claim to existence? Should we try to strike a compromise between actors and system, or should we go somewhere else?»

261 Cf. Latour, 2005: 121: «But I confess the difficulty: Is it not counterproductive in the end to abandon the convenient shorthand of social explanations, to split hairs indefinitely about what is or is not a group, to trick intermediaries into behaving as mediators, to register the queerest idiosyncrasies of the humblest actors, to set up long lists of objects participating in action, and to drop the background made of solid matters of fact for the foreground of shifty matters of concern? How ridiculous is it to claim that inquirers should 'follow the actors themselves', when the actors to be followed swarm in all directions like a bee's nest disturbed by a wayward child? Which actor should be chosen? Which one should be followed and for how long? And if each actor is made of another bee's nest swarming in all directions and it goes on indefinitely, then when the hell are we supposed to stop? If there is something especially stupid, it is a method that prides itself in being so meticulous, so radical, so all encompassing, and so object-oriented as to be totally impractical. This is not a Sociology any more but a slowciology! Zen masters can puzzle over the many conundrums of their austere discipline, but not the writer of a Sociology treatise. Either she proposes a project that is affordable and manageable or we sue her for disinformation.»

The term "actant", even if more fitting than the meaning associated to using agent, comes as too wide when the practical task at bay is not the generical analysis of all so-called agencies in a given action. All those that act or could be acting in it or through it. But the painstaking description of actants one by one, their singularities brought out and their specific relations the more faithfully charted as means allow. It is likewise too wide when the figurations, attributions, performances, and strength-reality under trials of a given actant, are already very well established up to the point where the means needing deployment in order to push through them are too costly. Thus, the converging point of the multiple and potentially infinite actants in the unfolding of a given action, the who or what that is said to be acting at a given time and space, is designated as an (only apparently but one) "actor". Or, rather, "actor-network"[262].

If the terminology here at use is not grasped, its relation with the semiotic actant as with the theatrical actor well established, those looking at Actor-Network Theory may indeed get lost for not being able to include it in the usual discussion frames of Philosophy of Action. Actors, in the theatrical sense of the term, do not play themselves. Or, more precisely, do not play only themselves. Actants, semiotically speaking, do not need to be humans, or agents, to whom such concepts as rationality, or will, or desire, traditionally apply. By using "actor", what is being conjoined are the two realities above in order to give account of the baseline uncertainty as to, exactly, who or what is acting in a given so-called action, under description. Such uncertainty is not merely methodological but, if it can be thus expressed, ontological. The Ontology of action, in practice, makes do that one can never be sure who or what, discretely and singled out, is actually acting, tracing

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262 Cf. Latour, 2005: 179: «An actor-network is traced whenever, in the course of a study, the decision is made to replace actors of whatever size by local and connected sites instead of ranking them into micro and macro. The two parts are essential, hence the hyphen. The first part (the actor) reveals the narrow space in which all of the grandiose ingredients of the world begin to be hatched; the second part (the network) may explain through which vehicles, which traces, which trails, which types of information, the world is being brought inside those places and then, after having been transformed there, are being pumped back out of its narrow walls. This is why the hyphenated 'network' is not there as a surreptitious presence of the Context, but remains what connects the actors together. Instead of being, like Context, another dimension giving volume to a too narrow and flat description, it allows the relations to remain flat and to pay in full the bill for the 'transaction costs'. It's not that there are a macro-Sociology and a micro-Sociology, but that there are two different ways of envisaging the macro-micro relationship: the first one builds a series of Russian Matryoshka dolls— the small is being enclosed, the big is enclosing; and the second deploys connections— the small is being unconnected, the big one is to be attached.»

a network and being traced through it. Who or what, discretely and singled out, is the discrete and singled out origin of an action?

Action, in practice, is an underdetermined uncertainty with multiple actants, potentially infinite, converging through. Alongside with multiple times and multiple spaces converging through. More or less stabilized through the forefront of what is being called an actor, a converging point. Mediating at most times, intermediating at some. By using "actor" such uncertainty and underdetermination is confronted in the terminology. One does not face a plethora of agents but a play of actors. Actors, in the composite expression "Actor- Network" are given, if splitting is needed which the conjoining of the expression in fact denies, the dynamic aspect of the expression: that of doing the ontological work of acting out actants. While the term "network" is given an apparently static and topological, spatial, aspect[263]. A gross simplification would place actors on the line of temporality and time and networks would fall under spatialization and space. As the expression is conjoined and composite, the language split between time and space, actors and networks, is faulty to pinning how Ontology in practice is forced to deal with both in osmosis[264].

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263 Cf. Latour, 1996 [1990]: 378: «We cannot say that what moves *inside* networks are pieces of information, genes, cars, bytes, salutations, words, forces, opinions, claims, bodies, energy, etc., since ANT also wants to reconstruct nets before there is any distinction between what circulates inside and what keeps them on track, so to speak, from the outside. Again, as I said at the beginning, the technical metaphor of networks is a latecomer for ANT and does not capture the tracing activity. No, what circulates has to be defined like the circulating object in semiotics of texts – especially scientific texts (Bastide, 1990). It is defined by the competence it is endowed with, the trials it undergoes, the performances it is allowed to display, the associations it is made to bear upon, the sanctions it receives, the background in which it is circulating, etc. Its isotopy – that is its persistence in time and space – is not a property of its essence but the result of the decisions taken through the narrative programs and the narrative paths.»
264 Cf. Latour, 1996 [1990]: 376: «Actors are cleaning up their own mess, so to speak. Once you grant them everything, they also give you back the explanatory powers you abandoned. The very divide between description and explanation, how's and whys, blind empiricism and high theorizing is as meaningless for ANT as the difference between gravitation and space in relativity theory. Each network by growing "binds" so to speak the explanatory resources around it and there is no way they can be detached from its growth. One does not jump outside a network to add an explanation – a cause, a factor, a set of factors, a series of co-occurrences; one simply extends the network further. Every network surround itself with its own frame of reference, its own definition of growth, of referring, of framing, of explaining. In this process the frame of reference of the analyst does not disappear more than the physicists in Einstein's world; on the contrary, at last it is able to extend itself, but there at a price: the frame becomes, as in general relativity, "a mollusc of reference" instead of a detached Galilean frame and each account has to be recalculated by the ANT equivalent of a Lorenz of Minkowski's transformation. There is no way to provide an explanation if the network does not extend itself. This is not in contradiction with the scientific task of providing explanation

Likewise, the use of the term "actor", apart from forcing the uncertainty on the who or the what, guide lining it on the uncertainties between actor and character and acting and doing, calls on another aspect of those difficult entities so-called as actions. It states that the accomplishment, conflicting with, following through, considering, of roles, scripts, orders, instructions, conventions, codes, is an ever-present factor in all that who is, or is said to be, a so-called action. A factor which is mostly invisible. Often overlooked when taking agents as the sources of an action and of how it goes. The uncertainties in action keep piling up, from who or what acts to who or what leads a given actant or an actor to go about acting in a certain way and not another. Still using the metaphor of the theatrical actor, one may ask if it is the text, the author of the text, the stage director, the set and lighting, the architecture of the building where the actor works, his own personal memories, its genetics, its unconscious desires. And so on, *ad infinitum*.

Strictly seen, ironic aspects of actancy could even fit in an extended list. Gravity, tidal movements, body type, phases of the moon, the weather, political convictions. Stopping the delirium of finding the true culprit for the how and why of a given action is a Tantalus nightmare with no natural end game. It is certain, then, that a virtually infinite set of mediations on who and what is said to be acting, but also a virtually infinite set of mediations alien to who or what is said to be acting, are present in every how and why of a given so called action. But it is never fully certain which, how many, how do they make themselves of relevance to it, in which degrees. An "actor" is thus, in the end, defined, figured as, an "x" who is led to, driven to. Led and driven to act/do by others: what is made to act by others.

From the above, one would therefore be highly mistaken to take the association with Semiotics as a reduction of Ontology to language or text. As much as one would be with associating it with any prior effort of artificially purging language from so called imprecisions. Of making it objective, transparent, clear. Language is as much an actor as

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and causality, since we learned from the very studies of hard sciences that no explanation of any scientific phenomenon and no causality could be provided without extending the network itself – see below the argument on metrology. By tying the explanation to the network, itself, ANT does not abandon the goal of science since it shows that this goal has never been achieved, at least through the epistemological myth of explanation. ANT can't deprive itself of a good it shows no one had ever had in the first place. Explanation is ex-plicated, that is unfolded, like gravity in Einstein's curved space, it is still there as an effect but it is now indistinguishable from the description, the deployment of the net.»

anything else. Thus, both transparency of language and language which acts on nothing, by becoming self-limited to itself, are sidestepped. Thus, Material Semiotics did turn up, in Law's view, as the truest naming for the theory, stressing that whatever it may be translated-betrayed as, it is to be material and materialized always. Semiotic methods are heavily used true, but they are those of a materialized Semiotics of the things themselves where words are also things. Not a Semiotics tainted by an application limited to mere textual analysis. Not a post-modernist reduction of things to texts, a so-called semiotic turn where what is not of the textual may be ignored and overlooked[265].

Semiotics grows in the network of the theory as a privileged set of tools to deal with the broad scope of what there is, as it is constructing itself through the play of actants and actors' network wise. Regardless of what is analysed being said to be just a text or more than a text or not only a text or not a text at all[266]. Texts are actors as well. The deliberate intent is not to block from view things out there by reducing the vast scope of mediations to strategies of textual analysis. Neither is it to split, when it comes to meaning production, plain texts from things. As they both symmetrically pertain to construction,

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265 Cf. Latour, 1996 [1990]: 378-379: «What happens when a circulating object leaves the boundary of a text? The traditional answer is that there is a yawning gap in between the text and the context. At the interface a dramatic trial is supposed to abruptly intervene through which the circulating object is assessed either by checking its referential fit or its social interest. Not for ANT which does not believe in this distinction since it has extended meaning productions to all productions. For ANT the gap is no more than a slight bump along the net; the yawn is an artefact caused by a previous divide between nature, society and discourse. For ANT there is on the contrary a continuity, a multiplicity of plugs, between the circulating objects in the text, the claims outside the text in the "social", and what the actants themselves really do in "nature". The circulating object goes on circulating and goes on getting its isotopy from what other actors do to it. "Society" has the same net-like properties as the texts, and so has "nature". But it would be more accurate for ANT to say that these three categories are arbitrary cutting points on a continuous tracing of action, and still more accurate to show how these categories are themselves part of the many trials, and events, and resources that are used along the paths to attribute "textuality" or "sociality" or "naturality" to this or that actor. They are part of what is distributed not part of what makes the distribution.»
266 Cf. Latour, 1996 [1990]: 375: «But a semiotics of things is easy, one simply has to drop the meaning bit from semiotics... If one now translates semiotics by path-bulding, or ordermaking, or creation of directions, one does not have to specify if it is language or objects one is analysing. Such a move gives a new continuity to practices that were deemed different when one dealt with language and "symbols" or with skills, work and matter. This move can be said either to elevate things to the dignity of texts or to elevate texts to the ontological status of things. What really matters is that it is an elevation instead of a reduction and that the new hybrid status gives to all entities both the action, variety and circulating existence recognized in the study of textual characters and also the reality, solidity, externality that was recognized in things "out of" our representations. What is lost is the absolute distinction between representation and things – but such is exactly what ANT wishes to redistribute through what I call a counter-copernican revolution.»

to technologies, to metrologies, to trials. The tools of textual semiotic analysis are instead associated with the analysis of how things, in general, come to effectively be, or come to be said and taken as such, made to act, made to act in a certain way, by others. Entailing a process of attributing and questioning, of adding complexity up, whose stabilization is mostly compulsory. By being, practically as ever, forced to stop doubting through lack of means and the excessive cost of doing so.

On the issue, Latour's *Science in Action* begins by dealing extensively with the scientific paper as the end arrival of a fact writing[267] and fact building process aiming at a stabilization. To do so, it examines what supports and gives it the needed persuasive force to gain ground and disseminate, how does it go stacking doubt diminishing allies within its borders as to the thesis it fosters. Such allies encompass the full extent of the means by which a conclusion is arrived at and, subsequently, made plain in the paper. Means including inscriptions, instruments, laboratories, centres of calculation, trials, technologies, metrologies, recruitment of allies. All these means imply, again, the full extent of the collective work engaged and being deployed to further a claim[268]. Coherently

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267 Cf. Latour, 1987: 60: «What I will call fact-writing in opposition to fiction-writing limits the number of possible readings to three: giving up, going along, working through. Giving up is the most usual one. People give up and do not read the text, whether they believe the author or not, either because they are pushed out of the controversy altogether or because they are not interested in reading the article (let us estimate this to be 90 per cent of the time). Going along is the rare reaction, but it is the normal outcome of scientific rhetoric: the reader believes the author's claim and helps him to turn it into a fact by using it further with no dispute (maybe 9 per cent of the time?). There is still one more possible outcome, but such a rare and costly one that it is almost negligible as far as numbers are concerned: re-enacting everything that the authors went through. This last issue remains open because there is always at least one flaw even in the best written scientific text: many resources mobilized in it are said to come from instruments, animals, pictures, from things out of the text. The adamant objector could then try to put the text in jeopardy by untying these supply lines. He or she will then be led from the text to where the text claims to come from: Nature or the laboratory. This is possible on one condition: that the dissenter is equipped with a laboratory or with ways to get straight at Nature more or less similar to that of the author. No wonder this way of reading a scientific paper is rare! You have to have a whole machinery of your own. Resuming the controversy, reopening the black box is achieved at this price, and only at this price.»

268 Cf. Latour, 1987: 206-207: «At the beginning of Chapter 3, I presented the quandary of fact-builders. They have to enrol many others so that they participate in the continuing construction of the fact (by turning the claims into black boxes), but they also have to control each of these people so that they pass the claim along without transforming it either into some other claim or into someone else's claim. I said it was a difficult task, because each of the potential helping hands, instead of being 'conductor' may act in multifarious ways behaving as a 'multiconductor': they may have no interest whatsoever in the claim, shunt it towards some unrelated topic, turn it into an artefact; transform it into something else, drop it altogether, attribute it to some other author, pass it along as it is, confirm it, and so on. As the reader may recall, the centrality of this process is the first principle of this book, on which everything else is built. The paradox

with Science and Technology Studies tenets, the ultimate destiny of such a claim, what will be made of the existence of any "x" included in it, depends on the degree of strength-reality of the persuasive forces carrying it and used to build it, condensing in the scientific paper and/or argument.

Therefore, the truth or credibility of a given statement, the determination or denial of an "x" as part of one's Ontology, cannot be granted without tracking, describing, and analysing the full plenitude of engagements and alliances leading to it. Among this engagement tracking process, it stands as evident that, in practice, truth and credibility of claims will only become effective, granted as a matter of fact, after the persuasive forces, hereby named under Rhetorical strategies, a Rhetoric[269] of things altogether, arrive at step by step effectively persuading the relevant actors able to stamp it as such. Shutting of dissidence[270].

The strategy *Science in Action* follows is, then, to postulate a fictional dissident wishing to fully deny, on these grounds, doubting them, the claims of a scientific paper, or of a fact consensually accepted, or the existence of a given "x". Thoroughly

of the fact-builders is that they have simultaneously to increase the number of people taking part in the action-so that the claim spreads, and to decrease the number of people taking part in the action – so that the claim spreads as it is. In Chapters 3 and 4 I followed in some detail cases where this paradox was solved by translating interests and tying them with non-human resources, thus producing machines and mechanisms. Having reached the last part of the present chapter we can now understand that these features of technoscience which are the rule inside the networks are the exception in between their meshes.»

269 Cf. Latour, 1987: 30: «Rhetoric is the name of the discipline that has, for millennia, studied how people are made to believe and behave and taught people how to persuade others. Rhetoric is a fascinating albeit despised discipline, but it becomes still more important when debates are so exacerbated that they become scientific and technical. Although this statement is slightly counter-intuitive, it follows from what I said above. You noticed in the three examples that the more I let the controversies go on, the more we were led into what are called 'technicalities'. This is understandable since people in disagreement open more and more black boxes and are led further and further upstream, so to speak, into the conditions that produced the statements. There is always a point in a discussion when the local resources of those involved are not enough to open or close a black box. It is necessary to fetch further resources coming from other places and times. People start using texts, files, documents, articles to force others to transform what was at first an opinion into a fact. If the discussion continues then the contenders in an oral dispute become the readers of technical texts or reports. The more they dissent, the more the literature that is read will become scientific and technical.»

270 Cf. Latour, 1987: 50: «In my anatomy of scientific rhetoric, I keep shifting from the isolated reader confronted by a technical document to the isolated author launching his document amidst a swarm of dissenting or indifferent readers. This is because the situation is symmetrical: if isolated, the author should find new resources to convince readers; if he or she succeeds then each reader is totally isolated by a scientific article that links itself to masses of new resources. In practice, there is only one reversible situation, which is just the opposite of that described by Galileo: how to be 2000 against one.»

discriminating the necessary steps and costs of pursuing such doubt coherently to its end. From refuting the article, to refuting what supports it. Up to the creation of counter laboratories and the recruiting of new allies and new resources. Each step demanding greater effort than the one preceding it for doubt to be taken successfully through. Inversely, the work displays the defences, under the same understanding of Rhetoric, assembled in a scientific paper to deny the possibility of doubting its conclusions unless considerable resources are forced to enter play. Resources which few can successfully congregate. Thus doubt, who is to be made harder and harder in well-constructed claims, is mostly ended by abandoning it due to the strength of the Rhetoric of things deployed.

To these aims, the notion of negative and positive modalization of statements is introduced from the first initial stage of analysing papers. A statement is positively modalized when it is presented, under this new light in Rhetorically diverse ways, as more able to justify and put forward intended consequences or decisions, other statements or given actions. Which from it are seen as necessary, by it guaranteed or by it supported. The final stage of a positive modalization is that such statement is taken as a fact or fact bearing, and/or an object is taken as existing under given shapes and characteristics or properties. Such fact and/or object tends in the end to be presented with no accompanying mention to the conditions and how of its production. Authorships if there are any, time, space, place, conflicting statements, or views.

The fact or statement is ultimately turned, for all practical purposes, into an undisputed black box upon which other statements or other constructed facts can gain strength from stacking on it or associating with it or using it. It is no longer put into question, until a controversy or doubting proceeds to digging it up with the associated costs entailed. Costs which are proportional to those used in building it up as positively modalized. A negative modalization is any presentation of a statement who stresses its condition of production. Of building, time, space, place, authorships if there are any. Questioning it under those lines while not using it as a given, as it is, to further certain claims, other statements, or to justify certain decisions, certain given actions.

The Rhetorically relevant question asks how, in practice, a specific scientific fact gains the power to persuade multiple actors, individuals, institutions, groups, into accepting it and from it derive or justify consequences, decisions, actions. Most of all in those cases where acceptance clashes with established consensual views and leads to

remarkable changes in the composition of the collective. In the stabilization of a practical Ontology. Changes which entail great costs, to be supported by many. From the Rhetorical aspect, the semiotic, how is it built or written a statement, a fact, or an object, capable of being accepted and further disseminated without betrayals into becoming an intermediary or a black box. More faithfully producing given outputs from given inputs. How does such an entity gain its shape, its figuration, its defining properties, or characteristics under trials? What lies beneath a statement, fact, or object, capable of making it resist and circulate as truer, realer, existing?

Examining answers to such questions a conclusion is that, in successful scientific practice, we encounter an extremely strong Rhetoric clashing the borders of just speech. Extremely well built with the concourse of many allies, material and otherwise.[271] A Rhetoric which puts to shame a Rhetoric based but on words and speech. A new and stronger Rhetoric of things who forces the acceptance of Rhetoric as a positive and undeniable force in the construction of Ontology, in practice. Preceding logic, or encompassing logic as but one of the elements it makes use of in order to persuade. The ever-long association between Rhetoric and falsity is to accordingly fall when things and materials can enter consideration of what Rhetoric stands for.

"Truth" or "Real", in practice, are taken as the effect of a winning Rhetoric of things. Semiotic attributions of gradients of resistance after trials. Never as causes themselves of the Rhetoric strength leading to the acceptance and dissemination of facts.

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271 Cf. Latour, 1987: 61: «Galileo was quite mistaken when he purported to oppose rhetoric and science by putting big numbers on one side and one average man who happened to 'hit upon the truth' on the other. Everything we have seen since the beginning indicates exactly the opposite. Any average man starting off a dispute ends up being confronted with masses of resources, not just 2000, but tens of thousands. So, what is the difference between rhetoric, so much despised, and science, so much admired? Rhetoric used to be despised because it mobilized external allies in favor of an argument, such as passion, style, emotions, interests, lawyers' tricks and soon. It has been hated since Aristotle's time because the regular path of reason was unfairly distorted or reversed by any passing sophist who invoked passion and style. What should be said of the people who invoke so many more external allies besides passion and style in order to reverse the path of common reasoning? The difference between the old rhetoric and the new is not that the first makes use of external allies which the second refrains from using; the difference is that the first uses only a few of them and the second very many. This distinction allows me to avoid a wrong way of interpreting this chapter which would be to say that we studied the 'rhetorical aspects' of technical literature, as if the other aspects could be left to reason, logic and technical details. My contention is that on the contrary we must eventually come to call scientific the rhetoric able to mobilize on one spot more resources than older ones.»

Which seems perfectly fitting to how things start making part of a collective as being true or real[272]. The justification for the persuasive force steering to such a result is to be found, yet and again, in the number and kind of associations deployed between heterogeneous elements. In the number and kind of human and non-human allies recruited and whose behaviour is more controlled and more faithfully translated across different times and different spaces. In the number and kind of constructions, of technologies, of metrologies, of trials. And in all the needs that the agonistic process of forcing acceptance demands, from the complex up to the prosaic.

A winning Rhetoric persuading the acceptance and dissemination of facts, statements, objects, as true or false, real, or unreal, is stacked with well-constructed or better constructed translations organizing and performing multiple and diverse elements into a form where to doubt or deny them demands greater costs than those which can be supported. That the translations perform and are being performed means they are never final. What is translated, and thus similarly betrayed, remains irreducibly itself if disconnected from the associations organizing it in a certain way, with and through many others. Be that way logical, symbolical, abstract, or concrete. The Rhetoric of things' force must keep feeding itself with persuasions. As the semiotic process of attributions has to keep refining itself on older and newer grounds[273].

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272 Cf. Latour, 2005: 112: «The great chance of ANT is that objectivity's many folds become visible as soon as one moves a bit closer to where agencies are made to express themselves, namely scientific laboratories – or where laboratories are brought into more intimate contact with daily life, which is quite often nowadays. Positivists were not very inspired when they chose 'facts' as their elementary building blocks to build their cathedral of certainty. They acted as if it was the most primitive, solid, incontrovertible, undisputable material, as if all the rest could be reduced to it. But there was more than one straw in the solid matter they chose as their foundation. The etymology itself should have made them shudder: How could a fact be that solid if it is also fabricated?»

273 Cf. Latour, 1987: 103-104: «The picture of technoscience revealed by such a method is that of a weak rhetoric becoming stronger and stronger as time passes, as laboratories get equipped, articles published and new resources brought to bear on harder and harder controversies. Readers, writers and colleagues are forced either to give up, to accept propositions or to dispute them by working their way through the laboratory again. These three possible outcomes could be explored in much more detail by more studies of the scientific literature and laboratories! These studies however, no matter how necessary, would not overcome one of the main limitations of the first part of this book: dissenters are very rarely engaged in a confrontation such that, everything else being equal, the winner is the one with the bigger laboratory or the better article. For the sake of clarity, I started with the three outcomes above as if technoscience was similar to a boxing match. There is, in practice, a fourth set of outcomes, which is much more common: everything not being equal, it is possible to win with many other resources than articles and laboratories. It is possible, for instance, never to encounter any dissenter, never to interest anyone, never to accept the superior strength

As there is no inverse relation between artificiality in a construction and the strength-reality of what is constructed, there is as well no inverse relation between accumulation of Rhetorical tools and lack of strength-reality of what is being claimed. On the contrary, as it is under artificial situations, under artificial tests using artificial means, that the hardest facts which resist longer in the composition of a collective are constructed. It is as well under a strong Rhetoric of things accumulating many strategies in order to become persuasive that claims and/or facts engage more deeply the collective they intend to make a part of. Turning stronger and more real. Thus, to step by step distribute the how-to semiotic costs of any given entity and the how-to Rhetorical strategies such costs necessarily make use of, does not imply per se that such an entity is not real or less real. As it does not necessarily imply that it is real or more real. The question to be asked will always demand to that purpose on the strength and resisting ability of the associations and connections established, with what they connect or associate with. Stating what would be needed to dissolve or break such associations and connections.

The semiotic view, nevertheless, again demands that objects under analysis are seen as a quasi-object in circulation and in transformation. Where any more stabilized attribution or figuration (performances and competences stabilized under given trials) is taken as an exception to be justified in its costs and construction efforts. The focus for the correlation with Rhetoric and Semiotics is on the distribution and circulation of attributions with the association and connections that sustain them. Through entities which are themselves as much a distribution and circulation of attributions, in practice, as anything else. Actor-Networks.

Hard as it may be to understand the point at hand, it states that no part of Ontology, of what there is, is alien to circulation[274], distribution of attributions, establishing of associations, falling under a Rhetoric and semiotic of things[275]. A Rhetoric and Semiotics

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of the others. In other words, the possession of many strongholds has first to be secured for the stronger rhetoric of science to gain any strength at all.»

274 Cf. Latour, 2005: 196: «We now understand why we had to start, according to Horace's famous expression, in the middle of things, *in medias res*. Circulation is first, the landscape 'in which' templates and agents of all sorts and colors circulate is second.»

275 Cf. Latour, 2005: 111: «Empiricism no longer appears as the solid bedrock on which to build everything else, but as a very poor rendering of experience. This poverty, however, is not overcome by moving away from material experience, for instance to the 'rich human subjectivity', but closer to the much-variegated lives materials have to offer.»

whose scopes enlarge to both encompass all there is and all there is said to be, by making use of an infralanguage of associations. Or the minimal language tool needed to record and describe without prior constraints the constructions and attributions of entities. Up to the performance under trials in time and space of statements, facts, objects. Since they first come into appearance until that moment when they become temporarily stabilized in given networks. Growing as such in given networks. Disseminated as such in given networks. Within a collective more consensual view of what is deemed as more real.

This infralanguage of associations under a Rhetoric and Semiotics of things does not fall short of taking in elements which are translated-betrayed and correlated from a domain as Psychology, yet another to add to the pile of all those drawn in more or less faithfully. Elements which, if not tackled, would stop the general application in scope Actor-Network Theory aspires to. Much of it is already dealt by the reconfiguration of agency into actants and actors with the concurrent view on the indeterminacy of action extending its scope to include objects, the so-called non-human[276].

However, the primacy of distribution, circulation, and association, applies to those aspects which could be seen as intrinsically private, individual, internal[277]. When it comes to tackling actors figured as human. Prima facie, the apparently individual capacities, and abilities to calculate and to judge, as the apparently individual idiosyncrasies, physical, emotional, or volitional, are seen as being as empirically traceable and distributed in circulation as any of the elements we have already encountered in other domains. Notwithstanding that a dichotomy between external and internal would not hold, as usual

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276 Cf. Latour, 2005: 196: «Although there is no 'underlying hidden structure', this is not to say that there doesn't exist structuring templates circulating through channels most easily materialized by techniques – paper techniques and, more generally, intellectual technologies being as important as gears, levers, and chemical bonds.»

277 Cf. Latour, 2005: 206: «To fill in the 'gap of execution', the solution is usually to shift gears and to abruptly bring in 'subjectivity', 'intentionality', and 'interiority' or at least appeal to some sort of 'mental equipment'. If the social framing from 'outside' is not enough to complete the course of action, then the remainder of the resources has to come from the 'inside' or from the human group locally assembled. At which point, positivism gives way to hermeneutics and sociologists pass the baton to psychologists or to cognitive scientists while structural sociologists shift to interpretative Sociology. But if this jump in method is allowed to occur, the continuous trail I have tried to keep from the beginning would suddenly be interrupted; the flat map will be slashed yet again; the scene of an individual subjective actor having 'some leeway' 'inside' a larger system will be reactivated; the two mythical lands of global and local will be drawn anew; Merlin's castle will pop up again. So, in keeping with our myopic ANT obsession, we have to keep fumbling in the dark for another clamp.»

in what we are dealing with, the methodological answer, at first and if having to choose, slides into considering all such more or less intrinsically private properties of a given subject as external[278]. Not as an internal characteristic of subjects or groups that may be furthermore used to explain anything on them, as if it were a source.

If so, the approach ought to be distinguished from any vague caricature of behaviourism or determinism. It is not said that there is or could be any sort of sufficient causal relation, or unequivocal determination, of given outputs following given inputs. Unless locally and temporarily, thus neither sufficient nor determined. There are cases, taken as exceptional due to costs and processes at play, where mediators have been stabilized as intermediators, fulfilling intermediating roles. Even in those cases, descriptions would be forced to include the sets of anomalies together with the potentially infinite set of conditions, mediations, without which such cases would not verify. Without which the entity "x", seen or figured as bearing or not internal properties, would not have been constructed with an intermediating role. Meaning, accounting for all the nodes and paths, up to where is practically possible, travelled and established by all the actors more involved, together with all the other actors associated with. Revealing the far-reaching mediations who are locally and temporarily constructing intermediations. Thus, that all is better approached methodologically as a distribution and a circulation of associations, in practice.

The further ontological stance that all is indeed as such, in practice, does not equate with a crude behaviourism or standard determinism, in all aspects. Be those aspects

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278 Cf. Latour, 2005: 212-213: «What I am trying to do here is simply show how the boundaries between Sociology and Psychology may be reshuffled for good. For this, there is only one solution: make every single entity populating the former inside come from the outside not as a negative constraint 'limiting subjectivity', but as a positive offer of subjectivation. As soon as we do this, the former actor, member, agent, person, individual – whatever its name – takes the same star-shaped aspect we have observed earlier when flattening the global and re-dispatching the local. It is made to be an individual/subject or it is made to be a generic non-entity by a swarm of other agencies. Every competence, deep down in the silence of your interiority, has first to come from the outside, to be slowly sunk in and deposited into some well-constructed cellar whose doors have then to be carefully sealed. None of this is a given. Interiorities are built in the same complicated way as Horus's chamber in the center of the pyramid of Cheops. The old empiricist motto was not that off the mark: *nihil est in intellectu, quod non sit prius in sensu,* although its meaning (nothing is inside which has not come from the outside) is a bit different. Nothing pertains to a subject that has not been given to it. In a way, is this not the strongest intuition of social sciences: 'Have we been made up?' Of course, the meaning of this tricky phrase depends entirely on what is meant by this innocent little word 'outside'.»

related with domains where presuppositions of incorrigibility or of intrinsically internal psychological properties are usually called for. Or are not. It does equate, as an entry point which will grow into an ontological stance, to state that the introduction or acceptance of so-called internal factors, interior, constitutive, intrinsic, such as subjectivity, intentionality, mental equipment, is immensely premature in the pursuit of an Ontology in practice[279]. Again, resulting in faulty and poor descriptions from the start. They would force a hole in the processes of distribution, circulation, association. A mysterious gap of sorts making impossible the tracing and following of actor-networks, while explaining very little.

What is instead to be done, coherently, is to examine if everything, or almost everything, which is said to fall under such factors, can be temporally and locally described, tackled, in practice, as instantiations of circulations, distributions, associations, external rather than internal only if having to choose. Up to the "I"[280] or the individual

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279 Cf. Latour, 2005: 206: «Surely the question we need to ask then is where are the other vehicles that transport individuality, subjectivity, personhood, and interiority? If we have been able to show that glorified sites like global and local were made out of circulating entities, why not postulate that subjectivities, justifications, unconscious, and personalities would circulate as well? And sure enough, as soon as we raise this very odd but inescapable question, new types of clamps offer themselves to facilitate our enquiry. They could be called subjectifiers, personalizers, or individualisers, but I prefer the more neutral term of plug-ins, borrowing this marvellous metaphor from our new life on the Web. When you reach some site in cyberspace, it often happens that you see nothing on the screen. But then a friendly warning suggests that you 'might not have the right plug-ins' and that you should 'download' a bit of software which, once installed on your system, will allow you to activate what you were unable to see before. What is so telling in this metaphor of the plug-in is that competence doesn't come in bulk any longer but literally in bits and bytes. You don't have to imagine a 'wholesale' human having intentionality, making rational calculations, feeling responsible for his sins, or agonizing over his mortal soul. Rather, you realize that to obtain 'complete' human actors, you have to compose them out of many successive layers, each of which is empirically distinct from the next. Being a fully competent actor now comes in discreet pellets or, to borrow from cyberspace, patches and applets, whose precise origin can be 'Googled' before they are downloaded and saved one by one.»

280 Cf. Latour, 2005: 212: «But what about me, the ego? Am I not in the depth of my heart, in the circumvolutions of my brain, in the inner sanctum of my soul, in the vivacity of my spirit, an 'individual'? Of course I am, but only as long as I have been individualized, spiritualized, interiorized. It is true that the circulation of these 'subjectifiers' is often more difficult to track. But if you search for them, you will find them all over the place: floods, rains, swarms of what could be called psycho-morphs because they literally lend you the shape of a *psyche*. Take for instance, love talks. If you doubt the efficacy of this kind of transportation, do the experiment. Try living without them for a bit and see how fast 'you' – yes, the primeval 'you' – will simply wither away. Even love, love especially, can be construed as that which comes from the outside, as a somewhat miraculous gift to create an inside. And it is certainly the way it has been traced in poems, songs and paintings, not to mention the countless retinue of angels, cherubs, putties, and arrows whose objective existence, yes objective, should also be taken into account. Even love has to have

human agent. If this becomes practically verifiable, in a satisfying degree, at least the methodological split that forces an asymmetric treatment between what is said to be inner, interior, and external, exterior, should accordingly fall as other splits did. The infralanguage will apply equally to both aspects of the previously operating dichotomy. Little of terms or partialized frames restricted to each will have to be kept. All elements said as pertaining to one or the other may be symmetrically treated, one by one distinct, singular, irreducible even. But not framed and judged according to a presupposed internal or a presupposed external which would determinate them beforehand.

Then, what is to further fall, after the denying of a methodological split with distinct languages and processes for each of the terms, is the ontological split itself between interior and exterior, internal, and external. Becoming useless and false for an Ontology in practice. Accounting, evidently, for those cases demanding the dismembering of the multiple constructions done exactly to stabilize a strength-reality for the effectiveness of such a distinction. Constructions which have to be put on the stand, their semiotic and Rhetoric strategies tracked as to their how, their technologies and metrologies made visible. That the distinction is often applied, mapping how we think on what there is, and mapping what there is and what can be, there is little doubt.

Still, a far more counterintuitive result of stepping away from the internal vs external dichotomy is that the description of a so-called Psychology (usually limited to said human or animal agents), if one chooses to call it as such, of a "x", is doable regardless of "x" being said to be a person, an artificial object, a natural object, a theory or theoretical object, an organization or group[281]. Extending itself in fact to all actors who

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its vehicle, its specific techniques, its conduits, its equipment just as much as a trading room, a headquarters, or a factory. Of course, the medium will be different and so will be what is transported, but the general abstract shape will be the same – and it is this purely theoretical shape that I wish to capture for now.»

281 Cf. Latour, 2005: 208: «Just as the division of labor created by the industries and bureaucracies helped Durkheim and Weber to trace their own definitions of social links, information technologies help us realize the work going on in actor-making. It's now much easier to not consider the actor as a subject endowed with some primeval interiority, which turns its gaze toward an objective world made of brute things to which it should resist or out of which it should be able to cook up some symbolic brew. Rather, we should be able to observe empirically how an anonymous and generic body is made to be a person: the more intense the shower of offers of subjectivities, the more interiority you get. Subjects are no more autochthonous than face-to-face interactions. They, too, depend on a flood of entities allowing them to exist. To be an 'actor' is now at last a fully artificial and fully traceable gathering: what was before true only of the Leviathan is now also true for each of its 'components'. Later on, this result will be important for our definition of politics.»

can be met. As long as in "x" are found, traced and followed, a given number and a given kind of forces being displaced and translated. Which must be judged exactly on how they are able to produce what is later termed as pertaining, erroneously or poorly if Actor-Network Theory has its way, to so called individual, personal, interior, or subjective factors.

Concretely, we would have to find, case to case with greater or lesser difficulty, empirically trackable and describable forces which subjectify. Empirically trackable and describable forces which grant personhood. Empirically trackable and describable forces which individualize. If finding them and exhaustively committing to make them visible by description, it becomes wiser to conclude that for all practical purposes, at least, those subjectivities, personhoods, and individualities, circulate and are distributed network wise as much as anything else. And can be applied symmetrically to any actor met and made distinct by those same forces. With a certain poetic-linguistic creativity, translating-betraying from information technologies, Latour prefers to do away with the connotations of calling such forces, case to case, as subjectifiers, personalisers, or individualisers. For refusal of importing and accepting connotations and subsequent discussions, relevant to Philosophy and Psychology as they are but for his aims a *cul de sac*, of "subject", "person", "individual".

Instead, he prefers to call such forces clamps, thus not gaps. Something who is attached and associated to actants, quasi-subjects, quasi-persons, quasi-individuals. And/or plug-ins (patches, applets), translating-betraying not from Philosophy or Psychology but from information sciences. First, because naming them as such would be more clutter neutral in terms of an unconstricting infralanguage. Second, because by using "plug-ins" (patches, applets) it is stressed that such forces and circulations have to be subscribed, accessed, accepted, downloaded even. Being further defined by such possibility, from the start, with greater or lesser practical constraints[282].

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282 Cf. Latour, 2005: 209: «We are now familiar with what should no longer appear as a paradox: it's precisely once the overall society disappears that the full range of what circulates 'outside' can be brought to the foreground. On the condition that we add another flow, another circuitry, through which plug-ins lend actors the supplementary tools – the supplementary souls – that are necessary to render a situation interpretable. A supermarket, for instance, has preformatted you to be a consumer, but only a generic one. To transform yourself into an active and understanding consumer, you also need to be equipped with an ability to calculate and to choose. In the Sociology of the social there were only two sources for such a

From the step-by-step composition and assembling of diverse heterogeneous sets of such forces, not necessarily under any conscious process or at least under very wide degrees of what conscience and consciousness would mean, may provisionally result what we then figure concretely, not in abstract, as a given person, given subject, given individual. Or likewise terms. As it may result a putative personhood, subjectivity, or individuality, of any given actant now figured as a given concrete actor. Including those to whom such terms would never be granted. Far fetching as this may be, it may become clearer by enlisting examples of such forces, clamps, downloadable plug-ins with greater or lesser effort, to be described and made methodologically visible, if dealing with a given so called individual human agent.

They would necessarily include official documents and identification papers, diplomas, degrees, educations, in which a collective process of distribution and circulation is forcefully at play; gestures, physicality, movements, behaviours, practically disseminated through the interplay with others; landmarking of feelings, emotions, said to be internal but very soon constructed and accessed via dialogues, literatures, metrologies, biology, epigenetics, even programming; enduring technologies of calculus and choice[283] necessary to provisionally and locally analyse competences, performances

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competence: either you were born with it as a human – as if Darwinian evolution had, from the dawn of time, prepared men and women to be supermarket calculators and optimal maximizers – or you were moulded into becoming a clever consumer by the powerful grip of some economic infrastructure. But with this new topography that we are sketching, another source of competence might be located at your fingertips: there are plug-ins circulating to which you can subscribe, and that you can download on the spot to become locally and provisionally competent. If you look at supermarkets in this way, a bewildering array of devices is underlined, each having the capacity to provide you with the possibility of carrying out calculations somewhat more competently. Even when one has to make the mundane decision about which kind of sliced ham to choose, you benefit from dozens of measurement instruments that equip you to become a consumer – from labels, trademarks, barcodes, weight and measurement chains, indexes, prices, consumer journals, conversations with fellow shoppers, advertisements, and so on. The crucial point is that you are sustaining this mental and cognitive competence as long as you subscribe to this equipment. You don't carry it with you; it is not your own property. You might have internalized it somewhat, but even for that feat of internalization you need to download another plug-in!»

283 Cf. Latour, 2005: 211-212: «Cognitive abilities do not reside in 'you' but are distributed throughout the formatted setting, which is not only made of localizers but also of many competence-building propositions, of many small intellectual technologies. Although they come from the outside, they are not descended from some mysterious context: each of them has a history that can be traced empirically with more or less difficulty. Each patch comes with its own vehicle whose shape, cost, and circulation can be mapped out – as historians of accounting, cognitive anthropologists, and psychologists have so forcefully shown. If there is one thing that is not 'in' the agent, it is those many layers of competence builders that we have to ceaselessly download in order to gain some sort of ability for a while. This should be the advantage

under trials, making volition and cognition as distributable as anything else; *psycho-morphisms*, as exactly the meanings associated with notions such as the person, the subject, the soul, the individual.

The list is not exhaustive, but starts pushing the need to, instead of other options, seek and describe the variations, within the scale concrete actors require, in the quantity, quality, accesses, costs, and vehicles, of each of the circulating possibilities of individuation, at play, in the construction of any of such concrete actors. How they attach or not to it, are or aren't associated with it. We have not mentioned it yet as an example but, of course, language and languages are to be included. Thus, another knot in the need to push for an infralanguage in approaching actors, together the with inventive liberty capable of following how they make do, each, of the languages or languages used. Still, following actors, any actor, demands following the networks of associations they are practically inseparable from. Which compose them as put forward in the chosen designation of Actor-Network.

To best finish the deployment of some final notes on the Actor's sister notion of Network the final correlations at hand are complex to describe and justify. Associating with topology, Mathematics in general and of networks in particular, considerations on formalism and on what the forms-of stand for, and with information science for sure. And, with the specific way in which Latour introduced the relevant role of what he calls centres of calculation, for the dissemination and success of scientific networks and the hard facts coming from their work. Here, more than a correlation or plain association what is at stake is a full-fledged translation[284]. Which does not run one inch from the fears of

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of a flattened landscape: when I utter such an assertion, it no longer means that I have to fall back on the other symmetric solution and say that 'of course' they are held by some 'social context'. On the contrary, to say that they circulate through their own conduits means that they no longer come from either context or from the actor's subjectivity, or for that matter from any clever compromise between the two.»

284 Cf. Latour, 1987: 90: «Mathematics also defines its subjects by what they do. When Cantor, the German mathematician, gave a shape to his transfinite numbers, the shape of his new objects was obtained by having them undergo the simplest and most radical trial: is it possible to establish a one-to-one connection between, for instance, the set of points comprising a Unit square and the set of real numbers between 0 and I? It seems absurd at first since it would mean that there are as many numbers on one side of a square as in the whole square. The trial is devised so as to see if two different numbers in the square have different images on the side or not (thus forming a one-to-one correspondence) or if they have only one image (thus forming a two-to-one correspondence). The written answer on the white sheet of paper is incredible: 'I see it but I

betrayal through invention. Its conclusions for an infralanguage approaching Ontology are, even so, quite simple, and go back to Science and Technology Studies tenets.

It is visible from the second and third parts of *Science in Action* that a decisive winning advantage[285] of technoscience grounds on the building of *centres of calculus*. Which manipulate and create forms of things, forms-of, forms-of forms. Each stacking on top of the other, from nth order to nth order. Such forms-of, forms-of-forms, are progressively finely woven *immutable mobiles*[286] which allow for the stabilization, combination, and acceleration of inscriptions. Themselves gathered by instruments. A process of mobilization, a two-way multiple way path[287]. Which accumulates cycle after cycle of instrument's deploying, gathering of inscriptions, building of forms-of, up to the point where it deals only or predominantly with forms-of-forms in nth degrees. Where a centre of calculus is, then, effectively at work. Such work allows information to be treated in a way that facilitates or apparently allows acting at a distance and acting in the future. Though it still needs metrologies and instruments to keep calibrating and stabilizing that which is to be acted upon. The, for simplification, two-way path, which is in fact a multiple way path configuring networks, many networks maintained by many actors.

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don't believe it': wrote Cantor to Dedekind. There are as many numbers on the side as in the square. Cantor creates his transfinites from their performance in these extreme, scarcely conceivable conditions.»

285 Cf. Latour, 1987: 61: «It is because of this definition in terms of the number of allies that I abstained from defining this literature by its most obvious trait: the presence of numbers, geometrical figures, equations, Mathematics, etc. The presence of these objects will be explained only in Chapter 6 because their form is impossible to understand when separated from this mobilization process made necessary by the intensity of the rhetoric.»

286 Cf. Latour, 1990 [1986]: 3: «It seems to me that most scholars who have worked on the relations between inscription procedures and cognition, have, in fact, in their various ways, been writing about the history of these immutable mobiles.»

287 Latour, 1987: 243-244: «'Abstract' Mathematics never applies to the 'empirical world'. What happens is much more clever, much less mystical and much more interesting. At a certain point in the cascade, instruments start to inscribe forms on, for example, graph paper. A cloud of points obtained from the census through many transformations ends up, after a few more statistical rearrangements, as a line on a graph. Interestingly enough, amino acid analysers also display their results on a graph paper. More curiously, Galileo's study of a falling body also takes the form of a graph (when it is repeated today) and had the shape of a triangle in his own notebooks. Mathematics might be far from households, amino acids, and wooden spheres rolling over an inclined plane. Yes, but once households, amino acids and inclined planes have been, through the logistics above, brought onto a white piece of paper and asked to write themselves down in forms and figures, then their Mathematics is very, very close; it is literally as close as one piece of paper is from another in a book. The adequation of Mathematics with the empirical world is a deep mystery. The superimposition of one mathematical form on paper and of another mathematical form drawn on the printout of an instrument is not a deep mystery, but is quite an achievement all the same.»

The final stage of such forms-of-forms, which necessitates and depends on previous collections of data and on previous development of intermediary forms-of and intermediary forms-of-forms, which necessitates and depends on treating information and data in successive degrees, making them more local, reducing scale, employing simulations, is seen as the construction of mathematical equations. The translation-betrayal into mathematical languages. Constructing equations, and equations themselves, mathematical language, is then seen as the fulcra of scientific activity. The strongest node in the network. Gathering the strongest associations, the most resisting, and the most, quantitatively. Mathematical equations, then, inventive as this may be, illustrate well the redefined notion of the social by taking the role of paradigmatic examples of social forces. Associations condensed and strengthened as the most capable of resisting trials. Constructed by the accumulation and accumulation of cycles of gathering, information treating, establishment of metrologies, building of forms-of and forms-of-forms.

Thus, the maximal costs and the maximal recruiting of associations and resources is seen, as to scientific activity, in the construction of concrete mathematical equations. And in concrete mathematical equations. Concrete, as the abstracting of forms from things and from other forms up to nth degrees and to mathematical equations, into mathematical language, is taken as a material crafting. A process of materially distilling/constructing from, where one precisely abstracts such and such from such and such, to be described, under trials in a multiple way path. Abstraction, in practice, is only expressible as a verb, a doing, not as an adjective or even as a noun, when Ontology as Actor-Network sees it wants to be more faithful to what there is. A concrete crafting working on quantitatively collected data and materials. A concrete crafting[288] which simultaneously allows for accelerations, combinations, stabilizations, and translations.

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288 Cf. Latour, 1987: 246: «Fourth, there is no reason to fall back on conventions that scientists would agree with one another in order to account for the bizarre existence of these forms that seem unrelated to anything else. They are no less real, no more sterile, no more pliable than any other inscriptions devised to make the world mobile and to carry it to the centres. If anything, they resist more than anything else (by our definition of reality) since they multiply and enhance the relations of all the other elements of the networks. Fifth, to find our way, we have to take the grain of truth offered by each of these four traditional interpretations of forms (transcendentalism, empiricism, social determinism and conventionalism): nth order forms give an unexpected supplement – as if coming from another world; they are the result of a concrete work of purification – as if related to practical matters; they concentrate the associations still more – as if they were more social than society; they tie together more elements – as if they were more real than any other convention passed among men. Frankly, I have not found one single study which could fulfil this

It follows that, given any form or abstraction, any formal or any abstract, noun and adjective, it becomes mandatory for Ontology in practice to accurately describe what is it supposed to be a form of, what is it supposed to be an abstraction of. And, even more, how it arrived at formalizing or abstracting it, in the most down to earth terms. From which inscriptions. By the use of which instruments, technologies, metrologies. From which materials or examples. With which advantages, local and temporal gains. With which disadvantages and losses. It becomes mandatory to determine what such and such a form, taken as it is presented, is a translation-betrayal of. If translating, therefore betraying, it is neither contained in what it is a form-of, potentially or otherwise, neither is it identical, in any way, to what it is a form-of. Neither can it be said to be of a superior order, higher up to put in in plain terms. It simply comes next. Moving the circulation on, in a crafting activity engaging multiple paths of mediations in a multiple way path, aimed at stabilizing intermediations.

It is from the tracking of this multiple way path of mediations and translations-betrayals, as it unfolds from and to centres of calculation, a path where no vehicle is in practice identical or contained in another, higher or lower than another, one simply following after the other or changing into another, that the notion of network[289] enters

fifth requirement. From this absence, one could draw the conclusion that forms cannot be studied through any sort of enquiry like the one I have portrayed in this book because they escape for ever what happens in the centres of calculation. But I draw a different conclusion; almost no one has had the courage to do a careful anthropological study of formalism. The reason for this lack of nerve is quite simple: a priori, before the study has even started, it is towards the mind and its cognitive abilities that one looks for an explanation of forms. Any study of Mathematics, calculations, theories and forms in general should do quite the contrary: first look at how the observers move in space and time, how the mobility, stability and combinability of inscriptions are enhanced. how the networks are extended, how all the informations are tied together in a cascade of re-representation, and if. by some extraordinary chance, there is something still unaccounted for, then, and only then. look for special cognitive abilities.»

289 Cf. Latour, 1987: 181-182: «This is where the notion of network is useful: meteorology 'covers' the world's weather and still leaves out of its mesh almost every one of us. The problem for the meteorologists will then be to extend their networks, to make their predictions indisputable, to render the passage through their weather stations obligatory for everyone who wants to know the weather. If they are successful, they will become the only official mouthpiece of the earth's weather, the only faithful representatives of its vagaries and evolution. No matter how many people are left out, they will never be as credible as the weathermen. How to obtain such a result does not interest us at this point – see next chapter – because what we want to understand is what happens to everyone's opinion about the weather when meteorologists become the only mouthpiece of weather. All other predictions become, in the eyes of the scientists, illegitimate claims about the weather. Before meteorology became a science, they say, everyone was fumbling in the dark, spreading half-truths about the shape of clouds or the flight of the sparrows, believing

Science and Technology Studies. Besides fitting the description of successful scientific activity in action[290], it will then expand within Actor-Network Theory as more fitting to describe the associations and relations which compose and actually explain any entity whatsoever, any actor whatsoever. Independently of the figurations, shapes, forms, asymmetries, that do stabilize it for a given time and a given place. The notion of network will allow tracking and tackling of the circulations and transformations of any quasi-object, as mentioned before.

In *Science in Action* it appears after the description of the recruiting and control and forging of allies of which the conjunction in action of technology with science depends and is composed of. Concentration of resources and investments in a few strategic nodes, extending through frail lines of communication. Constantly kept or the facts and/or objects thus constructed will, in practice, fail their routes. Science, in action or in practice, shows the general characteristics networks are supposed to show, as actors go along moving through it. From such showing, by 1990, both Bruno Latour Actor-Network Theory had fully stretched the scope of the term "network", loosely based on its mathematical properties as dealing with spatializations, to the status of an indispensable instrument to describe and analyse the effects of another set of terms and dichotomies more faithfully. Mostly four dichotomies, traditionally used in analysing so called natural

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in all sorts of absurd myths mixed up, fortunately, with a few very sound practical recipes. A more charitable interpretation is that they could not get the whole picture and reacted only to local and provisional signs.»
290 Cf. Latour, 1987: 250: «Of all the features of technoscience, I find this ability to extend networks and to travel along inside them the most interesting to follow; it is the most ingenious and the most overlooked of all (because of the inertia model depicted at the end of Chapter 3). Facts and machines are like trains, electricity, packages of computer bytes or frozen vegetables: they can go everywhere as long as the track along which they travel is not interrupted in the slightest. This dependence and fragility is not felt by the observer of science because 'universality' offers them the possibility of applying laws of physics, of biology, or of Mathematics everywhere in principle. It is quite different in practice. You could say that it is possible in principle to land a Boeing 747 anywhere; but try in practice to land one on 5th Avenue in New York. You could say that telephone gives you a universal reach in principle. Try to call from San Diego someone in the middle of Kenya who does not, in practice, have a telephone. You can very well claim that Ohm's law (Resistance = Voltage/Current – see page 238) is universally applicable in principle; try in practice to demonstrate it without a voltmeter, a wattmeter and an ammeter. You may very well claim that in principle a navy helicopter can fly anywhere; but try to fix it in the Iranian desert when it is stalled by a sandstorm, hundreds of miles from the aircraft carrier. In all these mental experiments you will feel the vast difference between principle and practice, and that when everything works according to plan it means that you do not move an inch out of well-kept and carefully sealed networks. Every time a fact is verified and a machine runs, it means that the lab or shop conditions have been extended in some way.»

or social or symbolic phenomenon, specifically when they deal with space and spatializations. As much as to replace such afore mentioned dichotomies and associated effects by an infralanguage of associations, of their relative strength-reality and heterogeneity, and connections. Well or badly succeeded, translating and transporting circulations more or less effectively. Brought out by the replacing term, or concept, or but translation-betrayal, of "Network" and of the composite "Actor-Network".

Needless to say that for the goals intended these networks are always to be conjugated with actants and/or actors, previously dealt with. In a relation far more complex than simply adding up whatever is understood by each single term. What networks allow, first, is to think on space and spatializations, entities which circulate in space and through spaces, constructions which occupy what is said to be spatial, unencumbered by a strictly cartographic or geographical viewpoint. Unlimited by the languages of such domains. To aim at describing such constructions only through an infralanguage focusing on the description and analysis of the network movements which compose them as effecting the near or far, the small scale or large scale, the inner or outer, the local or global. Flattened as networks are, up and down scaling, hierarchical frames, similarly lose their grip. It falls on the shoulders of networks, of actor-networks, to be able to account solely via associations and connections on the effects, translations-betrayals, linked to the four dichotomies above, which are or seem clear.

For Ontology in practice, it means to account on what there actually is at stake when we meet such effects, such translations-betrayals, and speak of them. For a more faithful Ontology in practice, then, the four dichotomies above are but an effect, a result. But a translation-betrayal of reducing, which moves from mediating into intermediating, of the strength or weakness, concentration or dispersal, of kinds of associations and connections between actants or actors in the tracing of networks, actor-networks. As such, they are, as everything else we may in practice meet, a factor of associability and connection ability. Of the strength and kind of forces of connection and disconnection. Of strength and kind of forces of association and disassociation.

Physical distance and proximity, the near or far, loose relevance if the properties associated to networks are called in to describe it and explain it. In a network the elements are either connected or they aren't. What is said to be physically distant may be said as extremely close and the physically near may be said to be extremely far, depending on

the presence, strength and kind of associations and circulations at stake. Working an Ontology in practice demands that in descriptions and analysis the near and the far, proximity and distance, are replaced or eliminated by conceptual instruments able to first of all discriminate associations, connections, accessibilities, and possibilities of circulation, networks, actor-networks.

Large or small scale, micro or macro, big or small, up and down, loose relevance if the notion of networks tackles them. A network is simply more connected than another, with more circulations, more nodes, greater extension of its routes. It is either increasing, connecting more and with different forces, or decreasing, loosing connections. What is smaller, said of a smaller relative scale, becomes the lesser connected. What is bigger, said as of a bigger relative scale, the more connected. Thus, scaling, always relative, can be described and analysed without imposing asymmetries of method and nature according to if a given scale is said to be micro or macro, lower or higher. Neither is it necessary to impose hierarchized framings, an up or down, top or bottom, if focusing on the strength, kind, and concentration of connections. To understand and describe the scaling fluidity of changes and circulations, one of the ways in which actors define themselves by scaling each other, as much as their temporary stabilizations, in an Ontology in practice, demands replacing or eliminating prior frames of scale interpretations for conceptual instruments able to discriminate associations, connections, accessibilities, and possibilities of circulation, networks, actor-networks.

Inner or outer, interior or exterior, similarly loose relevance when the notion of network and its properties are used to describe it and explain it. The outside of a network is, in practice, simply what is not yet connected with nodes or elements which make part of it. Or what is no longer connected with any nodes or elements being a part of it. The inner of a network is what is already connected or being connected with it. The questioning is, again, on the kind, quantity and strength of the connections and associations involved. What is not connected with a network is not relevant to how it acts so, in practice, irrelevant to the description and analysis of such a network. If it becomes relevant it is simply because the network itself is extending or growing towards that which is now relevant, connecting with it. So, for an Ontology in practice the terminology and oppositions who split inner from outer are to be replaced or eliminated by conceptual

instruments who discriminate associations, connections, accessibilities, and possibilities of circulation, networks, actor-networks.

Local or global, narrower or wider scope, are also reframed, loosing relevance, if treated according to the properties of networks, translated-betrayed. The work becomes having to find and describe, in a given network, which are the paths and nodes by which said globalizations, scope widenings and extensions, are articulated in a given space and time, from it transportable to other spaces and other times. Similarly, of finding and describing the nodes and precise paths by whom contexts, interpretation frames, scopes and scaling, are constructed, implemented, disseminated. Finally, the work is to understand how, by the acting nodes and paths, and why, with which strength-reality and kind of associations, is effectiveness achieved in constructing, implementing, and disseminating a given said to be globalization or localization. Who and what are the localizers, who and what are the globalizers, under which metrologies and which technologies? To grasp then, in an Ontology in practice, what is usually presupposed as local or global, the effects associated with such attributes, demands replacing or eliminating terminologies and framing grids which distinguish local of global by field-oriented discrimination of associations, connections, accessibilities, circulations and circulation possibilities.

Now, before shifting in on *Irreductions* principles of irreduction and relativity in the next chapter, we must mention five uncertainties as more pertaining to the actor aspect of the conjoined expression or designation. Named as uncertain to stress that the starting points in Actor-Network Theory are to always be uncertainties and not certainties. Five uncertainties relevant to the agonistic interactions of actor-networks and to the miscegenation and indistinction in practice of what is framed as (said) natural, (said) symbolic, (said) social. They will not only conclude but additionally sum up much of what we have been shifting out into, as to the guidelines to approach the next chapter and *Irreductions* itself as to the principles it is based on.

The first uncertainty relates with the constructing, stabilizing, and growth of groups, taken as actor-networks or, to use a more usual terminology, collective agencies whose acting, describing and explaining, hardly doesn´t fall short if approached via traditional views on what agency is and isn´t. Such an uncertainty tells us that, for research aiming at Ontology in practice, it is best to replace certainties on which groups are there acting,

and are relevant, self-contained starting points, by the assumed uncertainty of not knowing which are the groups being formed and being relevant, which are their borders. Coherently with accepting only definitions who are performative, being acted or enacted out, verbs. Thus, what is to be done is not to frame groups, actor-networks themselves, aprioristically, but to describe, follow, and analyse the how of which groups are being constantly formed and spoken for, defined and redefined, implemented, disseminated, and fought. The how and, as empirically as possible, under the logic of circulations and associations, through whom and what, against whom and against what. One is ever uncertain on which groups are there. Knowing only that groups do keep forming.

The second uncertainty follows from the views on the nature of actants and on the nature of action and agency, as stated in *action is overtaken*. This uncertainty stresses that to better grasp Ontology, in practice, it is preferable to assume uncertainty on what there is and acts. An empirical and uncertain Metaphysics grounded on the agonistic ways of the agencies. Actor-networks, at play. Not assuming beforehand, theoretically, a fixed non empirically based Metaphysics or Ontology with certain fixed theoretical elements to include prior to the research itself. To be done is the strict following and strict describing of how agencies, actor-networks, construct, classify, associate, speak for, circulate, forms of spatialization and temporalization. Agonistically shaping themselves in this process while disseminating Metaphysics of what there is or is not. Under mediating or intermediating roles. One is ever uncertain as to what there is. Knowing only that Metaphysics and ontologies are ever being constructed.

The third uncertainty relates to the agency, acting effects, of what are considered as objects. Or, more widely, the non-human. For an Ontology in practice the number and kind of agents, actants, actors, has to be increased up into including much more than what would be included if research were guided by the certainty that agency is restricted only to humans, as it traditionally is. One is ever uncertain on what is acting, being active in a given Metaphysics stabilization and definition. Knowing only that many more things act than those we concede the privilege of having agency. This uncertainty is problematic due to objects, when stabilized in intermediating roles, being very difficult to track outside situations of crisis where they do not work as expected, mediating full-fledged, and outside explicit controversies. Exactly by this aspect of disappearing in the background, reduced to invisibility, objects of multiple kinds under the general designation of

nonhuman turn out as pivots to the stabilization and disseminating of Metaphysics and ontologies. None succeeding in growing without their agency.

The fourth uncertainty tells us that for an Ontology in practice it is best to see all matters as matters of concern. Instead of assuming with certainty a dichotomy and distinction between some matters who are of concern and some matters who are of fact. The theoretical distinction itself, as the practical case to case distinction, results from the work of concrete agencies. Concrete actor-networks. Even as to what, in such a distinction, splits apart natural, symbolic, social, textual, and suffers from controversies and metamorphosis, circulations, as Metaphysics and ontologies clash with each other. It is then vital to describe, without prior grids, how each agency, actor-network dealt with, marks the distinction for itself while making efforts to disseminate it. Those that succeed usually achieve that their matters of concern are turned into matters of fact for the collective. One can never be sure which are the matters of concern, and which are those of fact. Knowing though that case-to-case distinctions will be forwarded at given times and given places.

The fifth and final uncertainty tells us that, in spite of having to deal with all the uncertainties noted, it is mandatory to assume the risk of pursuing more faithful descriptions and constructions, more true or less false, of the actor-networks, agencies, spatializations, temporalizations, met when facing the challenge of tackling Ontology in practice. Such uncertainty as to final result due to all the other uncertainties opposes to the methodological and philosophical certainty that would come from merely deconstructing efforts under the critical vein, on one hand. Or of stacking up on prior grids of analysis which are themselves the offspring of already stabilized and still working actor-networks, specific agencies, on the other hand. Such an uncertainty demands the conscience as well that any research thus made is in itself, as it ought to be, an actor-network. A full-blown actor associating and connecting with what it tackles with. Circulating it and circulating with it. Uncapable by that reason of not intervening in, and not changing in several degrees, those actor-networks, spatializations, temporalizations, metrologies, it works on. It demands as well that reports include all the mediations that may thwarter neat and straightforward exposition, lack of ambiguity, even coherence from the start. Making the study fulfil a mediating role instead of an intermediating one.

Paramount to this uncertainty is the guideline that what is traditionally taken as certain, perhaps even in how research is written, what is coherent from the start following such a start into an end it presupposed already is, when Ontology in practice wishes to be pursued into any fruitful development, unreduced, the most unfaithful to what there is and, for the purpose, the falsest. Filling the blanks must wait for themselves to be filled, or not. We will now shift in to *Irreductions*, having woven closely the circle we started with.

2. An eventual irreduction of Philosophy to be

We now conduct a close reading essay on aspects of *Irreductions*, with no intention of exhausting the subject for good, focusing mainly on the principles of irreduction and of relativity. Greatly aware that more will remain unanswered than solved. By, at least, three reasons. An eventual inability of the writer. The ambitious nature of the project itself. And the specific characteristics of Latour's thesis both on the irreduction of things and on things per se. Chiefly, the uncanny characteristic they have of not keeping still but temporarily by force. Thus, what we aim at is not the "Irreduction of Philosophy" per se but, "An eventual irreduction of Philosophy to be", guidelines towards. We begin by discriminating two prior challenges as to the difficulties of answering and following all the possible questions entailed within the primary text.

The first is the formal disposition of the book itself. Where affirmations appear to want to logically follow from each other, with frequent remittals from one to the other likewise. As if a logical tree was at stake. At first, such a presentation would demand the painful testing of arguments step by step. Eventually the translation of natural language into one or more formal ones in order to adequately proceed. One thesis could not cover the full deployment of just this topic unless it was exclusively devoted to it. Still, it must be reflected on. Such a geometrical or logical method of disposing the text is noteworthy in a book who thinks so little of logical justifications of knowledge by taking logic as just another material weapon of strength in the arsenal of winning by association and by connection. As is evident in the second chapter of the text.

The mathematical disposition in the way of presenting the text must then be seen for what it is, an explicit demand of rigour, no doubt. That rigour, of carefully threading step by step, must be a demand to be followed. But it must also be seen as something akin to a literary style, a performing option. Many of the sentences written do clearly show it. This is evident, as what is written, from iteration to iteration, is not distanced, does not avoid interjections, exclamations, adjectivities, rhetorical questions. Theatricality, even. It never runs shy from first-person speech. From an address to. From a proclamation in court. Weirdly enough, not a court of reason. But a court of force, stacked on in a disposition that does not distinguish between the need for rigour and the need for emotion, need for expression, need for peculiarity, need for rhetoric, need for literature.

Therefore, many divergent things in the text are following each other, associating and connecting with each other. More than just wanting to have one thing logically following neatly from another through the shortest path available. We also feel, in the process, that such a disposition hides, or reveals, that what is written is not a finished product. Constitutionally it is not yet fully done. The demand of rigour is then the demand of tracking as faithfully as possible a process which is, coherently, in the making and not yet made-to-follow. An effort of tightening the weave or the net to better show, as it may, the spaces left between weaves and threads. Perhaps an ongoing philosophical field study into irreduction, as the author sees it. This is the text, after all, where Latour is first facing the explicit need of actually doing Philosophy. Case studies aren't enough to dispel what, according to him, are underlying prejudices on what reason and force are. How do they act when science and knowledge are dealt.

This is, then, the first starting difficulty: a conflation between a literary, or called as such, way of writing and expressing, and a more apparently logical, or called as such, way of presenting it. Both are to then be taken into account with no attempts of reducing one to the other. Or even of accepting the dichotomy between one and the other, for what counts. One other thing is to be mentioned regarding the formal disposition. Sentences are usually quite short, aphorism like. Fragments one could say. We have, then, fragments being placed and/or organized in a sort-of-logical grid. Though remaining as if enclosed in themselves at the same time. Such fragments extend through four chapters, and are interrupted by a series of *Interludes*. Such interludes are, fully, first person speeches often of a more confessional nature, appealing to personal experiences, where the text runs freer in length. Somewhat lacking in the fragmentation of the actual chapter's sentences, dwelling into narrative. That they are interludes, not footnotes for examples, tells us that, regardless, they are as much part of the text as anything else.

By an interlude what is usually meant is a short interruption. Different from what came before and from what will come afterwards. Something in between other things. Interludes are supposed not to extend much in time as well. Interludes are, under common sense understanding, not permanent. However, within the book and what it stands for, such a definition of interlude would be self-defeating. Nothing is taken, in fact, as for the ontology in practice aimed, equal to what comes before or to what comes after. And no thing is there who is not in-between many other things. Woven together with many other

things. What are these interludes, then? What everything is. An intertwining among many others. Composing, in their heterogeneity, what is, what the book is.

The second starting difficulty is the sheer scope of references contained in *Irreductions*. If this web of references were to be pursued up to its fullest degree extensive literary and philosophical digging would have to be made that one thesis cannot hope to achieve. True is that many authors or texts are mentioned and used, hinted at even, though almost never quoted, whose philosophical background is undeniable and who serve as a savagely appropriated starting point for Latour's reflections. They go on adding themselves up associatively, one following the other. These authors are more often than not to be denied, even mercilessly attacked in the course of the work. Not being analysed in depth, one could also say, they are mostly being thought off, thought away. Thought "by others". Translated-betrayed. Associated with others, by one "other", Latour himself. Often, disrespected-betrayed stepping stones for the text to proceed. The betrayal lacking both the appearance of a principle of charity and lacking contextualization, framing, integration, chronology.

Aristotle, Machiavelli, Leibniz, Spinoza, Kant, Feyerabend, Nietzsche, Wittgenstein, Levi-Strauss, Kant, Comte, Lacan, Barthes, Foucault, Braudel. To start naming a few. Besides these, authors from Philosophy, and Sociology, and History, we see, with no pre-delimitation of domains or hierarchization of relevance, authors who come from Literature, Fiction, Art. This establishes, and almost neatly demonstrates, another trend of the work, in itself a difficulty as well. That of purposefully conflating genres between Philosophy, History, Sociology, and Literature. Which makes perfect sense given what we already wrote on Rhetoric's and Semiotics' role in the construction of entities. In fact, it could be argued that literary references, if anything, count more. As if all things that are written things end up as being, quite simply, concretely and materially speaking, subsects of that which is called as literature. Philosophy included.

To exemplify, Tournier's retelling of the Crusoe story is fundamental in the introduction, previous to chapters and interludes. One particular irreduction acted on the initial narrative plot, extracting consequences thereof. Musil, also, will be precisely mentioned when logic is analysed, bashed on even, in chapter II. As much as the idea of "without qualities" enters the arena by being associated with "by itself". Of things "by themselves". Tolstoy also plays a much relevant part, shown with little doubts as the case

study of Pasteurization is titled "War and Peace of Microbes". The list goes on and on. Up to Kawabata's "Masters of Go", of all things. Latour's argument, on this accumulation of authors and references could very well be that those authors are being translated-betrayed at length in order to construct a new network. Here and now. They are building bricks to be used.

It is then up to reader to decide if in the end this tendency flares his nostrils up with no chance of absolution from the crime. But if it fully does, there will be little to gain from the work. The tendency makes, all things considered, a relative sense in the book's guidelines. As it makes a similar sense in what comes to dealing with the past of disciplines and domains. And with narratives to the legitimization of those written works not wanting to call themselves Literature. Those surfing the opposing dichotomy splitting Philosophy, or Social Sciences, from the literary. Authors and references, here, do not come in to justify a genealogy, a reclaiming of a given domain. Coherently as to the webs which, according to Latour, Philosophy ought to construct upon. The history and construction of reduced disciplines and reduced genres is, in practice, relevant more to their present irreduction in novel networks, this book included, than to solidify and constrict beforehand which are the domain restricted available routes.

We can then half-conclude that, to these goals, the chronological framing of the History of Philosophy is of lesser relevance than the associations and connections, of multiple natures, that can be made with it. Regardless of who and what came first. This also serves to dismiss a certain view which defends that, mostly, one idea or theory comes after another as if answering to it in a sort of straight line. Or even periodical line. As in, for example, one cannot understand Marx without Hegel. Which could be aptly translated as one cannot construct Marx in the way it has been constructed without having constructed Hegel beforehand. There is no denial that there may be relations thereof. But that those relations are the only ones to be carefully looked at or that they are in some way sufficient or predominant in understanding, or constructing, what is said to come next, that is to be denied. As usual, neatness where no vagueness is left is a, let's say it, ontological sin. The effort to eliminate such vagueness a pushing of trouble beneath the blankets.

Also, if little point was seen in splitting History in History of Science and History of Society or of Culture, lesser point can be seen in pursuing the same constricted framing

when it comes to History of Philosophy. Connections are multiple and encompass many heterogeneous domains and fields. They are not stronger or weaker for being nearer in time. They do not work chronologically. They do not box in disciplinary domains. In this sense, to work as if randomly is perhaps to be more faithful as to how they are originated. Constructing things as they come when they do come. There is, regardless, an aspect to be stressed. Albeit betrayed and left out to fend for themselves, these multiple references would make no affection, would carry little connecting power, in anyone ignorant of Philosophy or Literature. Or all of the various domains and disciplines they are associated with. Enriching the text with explorable routes, they do presuppose an ideal reader who shares both academic culture in the fields they report to and a wide general familiarity with the domains and disciplines side stepping along.

Such is further noticeable when authors are not directly mentioned while their presence is evident. The first premise of the book, apart from eye blinking to Kant, one of those who recurrently appears in this way, properly illustrates the point by appealing to Machiavelli's *Prince*. Without referring him. Such an appeal is expectable given that the intended goal includes reframing the roles of reason and force up to how they are to be seen in the construction of an ontology. What will hopefully become Machiavelli like clear is that reduction, and irreduction, are seen as the (only) means to every end. At every end game on how things turn out they are the final justification of all the means used. One hiding them as if they were not there, which is called reclaiming potency and potencies in the book. The other stripping them out one by one, which is called showing force and exposing the forces. Be it where Knowledge is due. Be it where Power is due. Be it where Beauty is due. Domains, and everything else, are constructed, validated, made to resist, by such means of reduction and irreduction.

Such means justify, are the material justification of, all possible ends. We will thus be mainly focused, in order to navigate, on where things do start. The title of the work, which stands for its central operating concept and proposal. That of performing irreductions while dealing with reductions. Even if such operating concepts are to be translated-betrayed in the end through another one. Under which reductions and irreductions are both forms of associations. From this, we proceed to the stating out analysis of sistematicity's role and of Philosophy's role (Metaphysics, practical Metaphysics and Ontology) in this context. Again, with much forcefully left out. Or, in

consonance with the underlying thesis of the work, un-associated or poorly so. Before, though, the two starting difficulties having been already exposed, together with some of their immediate offshoots, we have to deal with the actual structure of the book.

Structure:

There is one *Introduction*, four *Chapters*, seven *Interludes*. The chapters are, respectively, called:

1. *From Weakness to Potency*. It contains two interludes:

Interlude I: *In a Pseudoautobiographical Style to Explain the Aims of the Author*

Interlude II: *Showing What a Relief It Is to Stop Reducing Things*

2. *Sociologics*. It contains only one interlude:

Interlude III: *Escaping from a Contradiction That, in the Author's Opinion, Might Have Perplexed the Reader*

3. *Anthropologics*. It tops all chapters with three interludes:

Interlude IV: *Explaining Why Things-in-Themselves Get by Very Well without Any Help from Us*

Interlude V: *Where We Learn with Great Delight That There Is No Such Thing as a Modern World*

Interlude VI: *In Which the Author, Losing His Temper, Claims That Reducers Are Traitors*

4. *Irreduction of "The Sciences"*. This chapter finally contains only one interlude:

Interlude VII: *In Which We Learn Why This Precis Says Nothing Favorable about Epistemology.*

All chapter's sentences[291], properly, are organized numerically. They all report to, for example in the first "1.1.1", then "1.1.2" and on, "1.2.1" and on, in rare cases going up to a fourth "1.1.1.1". Introduction and Interludes do not follow this exposing practice. But interludes do appear on the sequence of specific iterations, which most probably means they interact primarily with them, or are needed to understand them, or simply

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[291] Quotes from *Irreductions* will follow this structure in the pages to come. Footnotes will be reserved to other texts.

associate strongly with them, or even comment on them though this is not apparent in their texts. We will take the book as it goes, starting with the *Introduction*.

2.1. Setting Things Irreduced And Free

The *Introduction* is well packed. Each of its (long) paragraphs launching nicely what is to come. The first paragraph starts with a thesis which is to be denied, that *there is something else in science, something that escapes social explanation* (Intr., 153). Two lacks could account for the prevalence of the above belief. The first, superficial, would be the *lack of empirical studies* (Intr., 153). The second, *much deeper philosophical arguments about knowledge and power* (Intr., 153), arguments which cannot be tackled on the basis of accumulating empirical studies but only through philosophical work. The book will then address the lack of philosophical arguments able to countermand such rejection of *"social" explanations of science* (Intr., 153). Yet, the countermanding will extend not only to science but to all available domains.

We say "philosophical arguments", first because it is explicitly stated: *I decided to shift from the empirical and, as Descartes advised us, to spend a few hours a year practicing philosophy* (Intr., 153). Second, because another argument, not directly mentioned here, both the subject to be of another book and already presupposed in previous ones, works together with the philosophical by redefining the scope of what social stands for. The "social" in commas the quote above mentions corresponds to a narrowed scope of the term, which is to be surpassed. That of Sociology as a discipline of social interactions, dynamics, and organizations, with a parcelled subject: the aforementioned "social". Exactly the Sociology which would have failed as per Science and Technology Studies tenets.

The redefined social, by the redefined Sociology, aims at a new foundation/translation of the term's scope and of the corresponding practice that accordingly follows, through the wider notion of Sociology as an activity dealing with associations overall. What flows together or is together. A science of associating and of breaking associations, their how-to. An Actor-Network Theory. Which could then be used as the Rosetta Stone, the quasi-universal drawing chalkboard, where multiple domains previously thought as intrinsically distinct in nature and method of approach successfully associate or not.

Associations falling under this revised terminology are to be classified just as stronger or weaker. As resisting or not resisting to what may break them. Bearing lesser or greater strength-reality. How, and why this is so, is one of the crucibles of the analysis to follow, by simultaneously expanding and diluting the meaning of the social. Not existing at all if thought as a separate matter subjected to the frame of one predetermined discipline and division. Yet all-present if translating the ways in which things stick, or not, together. The use of a quotidian expression as "stick together" is on purpose. It lacks, as much as possible, the technical frame that would place it under anything more specific that plain overarching associations. The underlining is ours:

> *(...) it is possible to remain faithful to the original intuitions of the social sciences by redefining sociology not as the 'science of the social', but as the tracing of associations. In this meaning of the adjective, social does not designate a thing among other things, like a black sheep among other white sheep, but a* <u>*type of connection between things that are not themselves social*</u>*. At first, this definition seems absurd since it risks diluting sociology to mean any type of aggregate from chemical bonds to legal ties, from atomic forces to corporate bodies, from physiological to political assemblies. But this is precisely the point that this alternative branch of social theory wishes to make as all those heterogeneous elements might be assembled anew in some given state of affairs*[292].

Still, the book pretends, to deny that *there is something else in science, something that escapes social explanation*, to address the strictly philosophical reasons for it to be so. All gathered under one main assumption:

> *This is the assumption that force is different in kind to reason; right can never be reduced to might. All theories of knowledge are based on this postulate. So long as it is maintained, all social studies of science are thought to be reductionist and are held to ignore the most important features of science. Although, like the postulates about parallel lines in Euclidean geometry, it seemed absurd to deny this presupposition, I decided to see how knowledge and power would look if no distinction were made between force and reason.* (Intr., 153)

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[292] Latour, 2005: 5.

It is to be noted that the philosophical questioning seems to predate the sociological one: the social mentioned in this quote is not under commas. Even under a revised notion of what Sociology and the social are, the accusation of reductionism would stand, at least if its object is science. But, most probably, a similar accusation would apply to all other possible objects. Sure, the irreduction the book first intends and claims to operate is that of the sciences as a form of dominant knowledge taken as privileged in theoretical treatises who spend great pains in explaining why it is, in fact, stronger. Such goal is what is immediately stated and evident, even if only explicitly dealt in the final chapter. But, in a deeper layer, both concept of irreduction and operation of irreducing will apply directly to all understandable as knowledge and to all understandable as power. To reason and to force. Their relations and conflations.

Where complexification and obscurity also begin is in the curious use of "reducing". It is said that because a given A is thought as irreducible to a given B that all studies of a C, an activity or a domain or a nature, are said to be reductionist. One could by now add another factor to be included in the problem at hand, besides knowledge and power: Beauty. However it is seen. Doing so, one arrives directly at the well-known trinity of Knowledge, Power, and Beauty, ending up in what appears to be a fundamental leitmotiv of philosophical systems. We could thus state, to further elucidate the premise on hand, that as long as Knowledge, Power, and Beauty, are seen as irreducible to each other, distinct theoretical objects, all studies who "socially" or socially explain either of the three domains would be named as reductionist. Unless, that is, an irreductionist Philosophy is born. They would not grasp, say, a primordial specificity which distinguishes one from the other. While at the same time reducing them all to a single origin who produces and feeds them. Their distinction however, at least if seen as an effect, appears but too obvious.

The key point here, as stated before, is first the notion of "effect". The becoming of effectiveness. Of making something effective. Of making some things stick together. Associations resisting or staying apart. Breaking and diluting or weaving themselves stronger and stronger. The focus on effectiveness is to be added in the pool where the redefined social composed of associations already is:

The sciences have no more content than the social groups. Those two symmetric phantasmagoric beings are obtained only by a reductio ad absurdum*, and we are only just beginning to perceive both its danger and how to face up to it.* [293]

Then again, all things considered, we do face a book called *Irreductions* who seems to ambiguously play fault on a supposedly erroneous and faulty belief on the impossibility of reducing A, named "right", to B, named "might". It's a curious use of "reducing" that Philosophy alone will tackle.

The term *irreductionist* appears for the first time in the last sentence of the first paragraph, following four questions where the rhetorical strategy is evident. If denying any distinction between reason and force, knowledge, and power:

Would the sky fall on our heads? Would we find ourselves unable to do justice to science? Would we be condoning immorality? Or would we be led toward an irreductionist picture of science and society? (Intr., 153)

The options seem clear. To deny the presupposition we will face absurdity, impossibility of accounting for what there is, impossibility of moral standards, catastrophic dooms of irrationality. Or, we will have to come to terms with the weirdness of Ontology. Of how we give account of what there is when having to travel in irreductionist grounds.

Paragraphs 2,3, and 4 begin answering by, at first appealing to a literary work by Tournier. Referring on the process another one by Defoe. The first of the many references we have already mentioned:

This shift from a reductionist to an irreductionist philosophy closely resembles what happened to Robinson Crusoe when he finally met Friday. I am talking here not about Defoe's story but about the original version of the myth offered to us by Tournier (1967/1972). (Intr., 154)

The shift to irreductionism does not begin its explanation with philosophical concepts or references. To approach an irreductionist Philosophy, or irreductionist shift,

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[293] Latour, 1988: part 1, 146

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literature and fiction, and myth, are what Latour associates with first. Coherently with Semiotics' and Rhetoric's roles in Actor-Network Theory. It could be postulated that, as a matter of fact, nothing happened, *strictu sensu*, to Robinson Crusoe, Defoe's or Tournier's. Addressing it as nonsense. Robinson Crusoe is a fictional character. Both works are works of fiction. But it could also be postulated that, as a matter of fact, nothing actually happens to philosophical concepts. Addressing them as nonsense.

Second, what Latour calls upon is a re-working of a myth (his own words), which is not actually a myth in a traditional sense. Unless authored and relatively recent fiction is also mythology. Tournier's work is but the translation-betrayal of an authored work of fiction. Where myths are, most of times, taken as anonymously seeding the collective.

Such a translation-betrayal is, third and still, to be considered as an "original" version of the myth. In spite of being a re-working, a version. Thus, as will be seen in the course of the book, to say something differently is, for all ends aimed at in an irreductionist shift, always to say something new, therefore, to say something original. No matter if the intent is just to give a different version of something already said. A guideline which can be derived from is that to better say how things are, to say of what is in an ontology in practice, you are forced to keep saying differently. Better yet, that you will necessarily say differently. Regardless of wanting to or not.

To sum so far, we conclude that what is a myth is put into question. What does it mean to be original is put into question. Where to start a philosophical reflection, what is the philosophical domain, both are put into question. And, what happens to fictional characters and/or philosophical concepts is put into question.

Fourth, what is this relation of "closely resembling"? It surely does not mean that the eventual properties of such a shift might be deducted from Tournier's novel. But it means that, albeit original, Tournier's novel gains in being associated with Defoe's. Regardless of how many treasons are to follow. Likewise, the shift from reductionism to irreductionism gains in being associated with both of them and with literature. Equating nicely with how references are to be further treated in the book. Still, this relation of "closely resembling" does seem vague as to how such a shift could be translated back into strictly philosophical or strictly scientific discourse if there is such a thing.

Fifth, the appeal to the novel of Tournier also gives us a two-fold objective for the book:

His story starts off like Defoe's, but halfway through the novel Friday carelessly blows up the powder magazine and Robinson finds himself as naked as he was on his first day on the island. For a moment he thinks of rebuilding his stockade, his rules, and his disciplinary measures. Then he decides to follow Friday and discovers that the latter lives on an entirely different island. (Intr., 154)

The book intends to closely resemble the blowing up of the tools from which reduction replicates successfully, is successfully established and solidified accordingly, is successfully ordered more and more tightly along more and more uniform routes. Then, to proceed, by *following*. By deliberately choosing not to rebuild and regroup those reduction tools, stocks, rules and the disciplinary measures to implement them.

Faced with an anomaly, a shattering event which momentarily sets things *irreduced and free*, choose, for the purpose of irreduction, the methodological road of avoiding the re-construction of reduction apparatus. Do not painstakingly re-construct what is so easily, albeit momentarily, blown away. On the course of the work this means, or implies, an "as if" strategy. A fruitful way of understanding what "closely resembles" stands for. Not immediately an analogy. Not at all a deduction. But a *sui generis* approach to Ontology in practice who also asks for imaginative leaps. "As if", in the case at hand, no distinction is there between force and reason. "As if", in the case at hand, we did not know, or could not know, how to begin reducing again. To start from somehow surer grounds, we can advance that irreducing is not constructed from "if-then" but from "as if". Therefore, referencing literature appears as unavoidable even in the strictly philosophical goals the book aims to achieve.

We also read that before the careless blowing of the powder by Friday in Tournier's novel *Crusoe thinks he knows the origin of order: The Bible, timekeeping, discipline, land registers, and account books.* And that *Crusoe thinks he can distinguish between force and reason* (Intr., 154). The quote lays out further building blocks on the construction and metrologies of knowing, of order, of reduction, of force and reason. The underlying thesis assumes that Crusoe, the character, does not really know "the" origin of order, as there is none singularly as much as there is no single origin, that might be known, birthing all others. The pinnacle of a reduced Ontology.

Crusoe has instead constructed an ordering via the reduction tools discriminated in the quote. By accepting a prior metrology and the instruments to disseminate it. Imposing

for all practical ends an order which is not there, as it is. Stacking intermediators through reason, taken as a single force, which does not know itself as just one more force among others, one more translation-betrayal among mediators. Readers will surely remember the role assigned to public administration in the successful propagation of an Ontology: timekeeping, land registers, account books. The bible's role seems to relate both with anthropocentrism, manmade, and subject oriented views, which enter the paragraph in its end sentence.

Friday, on the other hand, *finds himself among rivals, allies, traitors, friends, confidants, a whole mass of brothers and chums, of whom only one carries the name of man. Crusoe senses only one type of force, whereas Friday has many more up his sleeve* (Intr., 154). Friday's relations are horizontal, flattened in equanimity, not over or under but among. Needing constant negotiation, constant translation-betrayal among fully fledged mediators. He deals not with one strong force from which all others are to derive, submit to, align with, but with an infinitude, heterogeneous, of competing forces.

The final sentence in paragraph 2 alludes now to Philosophy. As with Crusoe's myth with a double fork allusion to Copernicus' revolution added up, necessarily to a philosophical reader, with Kant's reworking of the Copernican revolution:

> *Instead of beginning my philosophical tract with a Copernican revolution – reducing the island to Crusoe's will – I therefore start from Friday's point of view and set things irreduced and free.* (Intr., 154)

The earth will not be replaced by another fixed point, the sun. Thus, no centrism must be at the replacing stake for an irreductionist shift (which neatly explains why simply replacing subject for object won't do). Neither will the possibilities of knowing and experiencing be reduced to subjectivity, transcendental or otherwise. Neither the subject nor the object are to be central to knowledge. The opposing dichotomy again defaults. There is a humorous bypass in the fact that Kant's Copernican revolution travels on an analogy with Copernicus' heliocentric shift, "as if" Kant's Copernican revolution "closely resembles" Copernicus' original movement.

That the word "will" is introduced, associated both with Crusoe's reduction and with Copernicus and Kant, puts us at a loss if wanting to directly take the work as a criticism of Kant. Placing at least Schopenhauer and Nietzsche in the web of connections

to be tracked. A Pure Reason is being merged with a Will to Live and, strikingly, with a Will to Power. Thus, in an allusive, distorted way, Latour appears to be claiming that Pure Reason on knowing, Life on its blindness of perpetuating, and Power on the force aspect of the equation, do converge to further his point. That force cannot be, as Ontology in practice is aimed at, distinguished from reason as much as knowledge cannot be, on the same grounds, distinguished from power.

Paragraphs 3 and 4 are, comparingly, very short. 3 giving examples of forces. 4 giving a wide scoped argument on gaining knowledge while coming to terms with replacing "force", if the word ill fits for some, for "weakness". Apparently, it's opposite. Both paragraphs start with a methodological guideline, or a substantial ontological stance, needed for setting things irreduced and free. If the stance is substantial, to begin adapting to the notion that things are, in fact, irreduced and free already. The guideline in paragraph 3 reads as: *I need, like Friday, no a-priori ideas about what makes a force, for it comes in all shapes and sizes* (Intr., 154).

Usually, shapes and sizes refer to objects, not to forces, such is the first stating that jumps out. Forces can be seen as objects, matters, materials. Then, we have those forces are made by, constructed by, *what makes a force*. The "what" here is a bigger set including any eventual "who". At the same time not distinguishing, in the making of forces, what from who. Such distinction is, however, implied when a who, Latour, needs *no a-priori ideas* both to set things irreduced and free as to gain knowledge on them as irreduced and free. The immediate question, not addressed, is if it is possible, remotely, to have no apriori ideas whatsoever, and on the particular issue he wants or needs to have none of. But, the term apriorism appears in conjunction with ideas. It is not implied that he needs no apriorism, period. No ideas, then, apriori, on *what makes a force*.

The guideline in paragraph 4 reads as: *To follow this argument, we should not decide a-priori what the state of forces will be beforehand or what will count as a force.* Immediately followed by: *If the word "force" appears too mechanical or too bellicose, then we can talk of weakness* (Intr., 155). The apriori is now conjoined with decision making. Much as forces may be in multiple so-called states, winning, loosing, assimilating or not, disseminating or not, as much as we can't even be sure of what counts or not as a force. Besides this, seemingly an appeal for practical Metaphysics as per Actor-

Network Theory together with a somewhat conflicting materialism, the introduction of the first alternate designation of weaknesses severs immediate associations of force with power, strength, and with a mechanistic mind frame or world view, as an apriori idea one could say.

Forces compete for power, but they are not powers. They are in fact lacks in power from the onset, thus weaknesses. And they are not mechanic, meaning weaknesses or forces include all those aspects of reality to which a mechanistic explanation is said not to have fitted. Namely ideas. Or theories. Or subjectivities. Or realms of freedom as in the goal of setting things irreduced and free. All of those can, as much as anything else, count as forces or weaknesses, strikingly illustrated in the examples of forces, and their characterization, that Latour sweeps through in paragraph 3. The illustration of these forces also gives light on what is the battleground of a priori ideas. It is not by accident that, apart from one, all of the examples are examples of theories, philosophical, biological, sociological, physical, and moral.

The examples of forces are in fact all examples of ideas, which are taken as forces. At this stage almost, or totally, as if they were material. No world of forms subsiding, no Popperian third world, no dualism per se of mind and matter. But evidently, the dichotomy being banished, with a strong pull to materialism if having to choose at gun point. Such forces are actants and actors, materially, regardless of being figured, fittingly or not, as ideas. So, though they come in *all shapes and sizes*, a large set of them is mentioned as *Some forces are evil and used to be associated with magic and the devil* (Intr., 154). The irony will be clearer later on. What we have for now is that a lot of previously consensual actants are now dismissed as superstitions, wrong beliefs, non-scientific views of what there is.

Also, that this is associated with a moral judgement of what is good and of what is bad, generally. And with an overall pre-rational activity said to be magic. What we also have in *used to be associated,* past tense, is that it is not, supposedly, so anymore. As if such forces and their associations have been clarified. Enlightened through science, reason, modernity, enlightenment itself. However, we also have that those forces still act. Still are actants. Despite being figured and attributed differently they have not gone into oblivion and into lack of strength-reality. Much of this will lingering will be developed through considering as if magical the beliefs that ideas are not forces like all others.

Meaning, as if magical the belief that they are not material in the way Latour constructs this term. In fact, according to it, they are nothing but. It becomes then a magical belief the belief that ideas, or methods, do something. As much as if saying that the devil does something. They do things, yes, but simply because they are not ideas, methods, theories, but, plainly, forces, or weaknesses. Or, using Actor-Network Theories, actor-networks, heterogenous assembling's wanting to, in the end of paragraph 3, *seek hegemony by increasing, reducing, or assimilating one another* (Intr., 154).

This sort of relational definition is the first explicit take on what forces are by how they work and act for a hegemony seeking goal. Which makes that the *jungle with its tangle of forces grows across the island* (Intr., 154), back into Crusoe's metaphor. If the acts of increasing, reducing, assimilating, are what tangles the jungle and makes the jungle, this is so when no force turns hegemonic, going from seeking it to achieving it, to forcing it. It seems thus, that to more faithfully grasp how what there is comes to be what is needed is to decrease, to irreduce, to sever hegemonic assembling. Thus, to show the work of forces, weaknesses, their allies, as forces or weaknesses which, by definition, are never hegemonic. This helps us, then, to understand why the second example of a force is thus alluded to in the paragraph, immediately following magic, evil, the devil: *Others are Aristotelian and seek to realize the shape that lies within them* (Intr., 154).

Hegemony demands, for Latour, that forces become disguised as potencies. A term he translates-betrays full throttle from Aristotle who, not coincidentally, is also traditionally taken as the father of Metaphysics, if truly or falsely being another matter altogether. The first chapter of irreductions will exactly deal with such disguising, construction, or metrological push. To conclude that nothing lies within anything else, for an Ontology to be more faithful. Needless to say, again, he will not analyse Aristotle in any considerable depth. He is introducing a character, a type of force at play whose references are mostly internal to how he tackles it in the book, and should be dealt accordingly as to how it acts in the roles assigned to it. In it, potency is an illusion. The illusion of potency corresponding to an as if magical belief. Irreducing then, has to do with dismantling such illusion. As if such illusion could be added to the pool of idols, as in Francis Bacon, that frustrate the gaining of knowledge.

Still, the introduction pins a metaphysical, or ontological, intent from the onset. Attacking as it seems the distinction, still bearing strength-reality in the collective,

between potency and act as it is associated and enters into more or less consensual ontologies. That he uses the term "shape" introduces the relevance of keen words to be used. Such as symmetry, asymmetry, and many others. Other Aristotelian leitmotivs will be denied, or attacked, or disassociated throughout the work. That there is science only of the universal is one of them, replaced for its exact opposite. That different methods are required for different so-called sciences is another one who runs through underground. Given that the explicit intent is to construct a philosophical treatise, that Aristotle is granted such predominance in order of appearance makes sense.

As it makes sense, given the reference to Descartes already on, to introduce the confessional aspect the work shares in introductions and interludes. Leaving open if these examples of forces are not parts of a meditation analogous to the Cartesian, but one where no certainty will follow through or be, as it may, asked for. Introduction and interludes seem to follow this, apparently inner and confessional, self-dealing heuristics, hand in hand with the different style comparing to actual chapters.

The second example of forces runs away from Philosophy and associates Economy and Demography with evolutionary Biology in a way not so easily relatable as the Aristotelian allusion:

> There are Malthusian or Darwinian forces which always want more of the same and would invade the world with their exponential growth if other equally greedy forces did not check them. (Intr., 154)

One can easily relate exponential growth with Malthus. With Darwin perhaps only the agonistic play of concurring forces to the same non infinite resources. Still, it seems far-fetched and not particularly successful, the jump too steep. Evident is that Malthus in Demography and Economy and Darwin in Biology play analogous roles, far fetchingly, as the one Aristotle plays in Philosophy in general, and in Metaphysics particularly.

The Aristotelian allusion played itself in the present tense while this one plays in a conditional form. There are types of forces who *want more of the same* and would succeed in such replication of identity if others, of the same kind, would not put them on check. If the irreducing forces, of which the book is an example, are of the same kind is controversial. But that they do aim at putting such replicating forces on check is certain. We get to know that such replication is not a linear sum. It will grow exponentially if not

checked. As principles, or universals, which will thrive to assimilate everything they can by what they construct as being the same, in their scopes, relegating what isn't to contingency or particularity. Here, we thus unravel an association with the Aristotelian allusion. The pun to be explored is that, in the course of the work, directly applied to logic in the second chapter, it will be often implied that there is per se, no sameness, no identical, in what there is. Though forces act who wish it to be so and metrologically construct it thus by acts of differentiation and by acts of sameness.

Up to now, then, we are speaking of forces who appear to have to be fought and checked if irreducing is the goal. Examples perhaps of the a priori ideas already mentioned. It is never enough to stress that Aristotle, Malthus, or Darwin do not stand, exclusively or mainly, for the actual books or theories, as if they existed in a non-material frame, of those authors. But also, to how they associate in the collective, idol like, how they contribute to a reducing act where, according to Latour, force and reason are considered not co-extensive.

The third example of forces introduces Physics together with a particular nuance: *There are Newtonian forces which always want the same thing and travel along the same trajectory so long as they are left in peace* (Intr., 154). Forces alluded to as Newtonian in the slightly heretic tone the book keeps sharing along no longer want *more of the same* but instead seek to remain the same over and over, constructing themselves on sameness plus identity. Newton's character stepping in as another wanting to be hegemonic influence such as Aristotle, Darwin, or Malthus. It is not the case, then, that such forces aim at growing exponentially, their hegemony would rather consist of remaining undisturbed, unquestioned, freed of anomalies breaking their courses.

When appealing to relativism, albeit if and only if one is entrapped in a dichotomy whose necessary counterpart is absolutism, Latour seems to translate-betray often metaphorically and deliriously from general relativity, to better grasp what an irreductionist practice and view is all about. Among a plethora of other metaphors, up to the denials of Euclid's fifth axiom. That Newton enters the stage reinforces this trend, while pushing for the additional understanding that examples of forces so far refer to explanations or theories aiming at being final both in their fields and in the ontologies therefore derived. Thought and constructed as such.

Newtonian forces correspond to an ordered mechanics which keeps course unless something disturbs it. Aptly indicated as them being *left in peace*, left alone even. The underlying irony is that, according to the book, nothing is ever, at any moment, just left in peace. Peace is a constant balance of hot and cold war's running in the background or in the foreground. Such forces, no matter how they may play themselves, are never just left in peace, and are never alone, starting with the in-practice unavoidability of observer induced modifications. To set things irreduced and free, such warlike acts and relatedness these forces share are to be brought into the ontological practice of describing them, of tackling them, of irreducing them.

It is also alluded, in the process, that the emphasis of reducing is one where no peace will ever subside, by the need it fosters of having to constantly keep forcing it as much as by the fact that it is, practically, impossible. A tantalus demand, condemned beforehand. Sooner rather than later, caves will explode as the one of Crusoe did explode. Anomalies and disturbances are what there is, encircling constructed specks of reduced orders, instrumentally useful as they may turn out to be in given times and given places. Thus, to gain knowledge, and knowledge on Ontology in practice, a non-reduced knowledge gaining process, it is that which stops us from finding peace in reduction that is to be sought. Be it the particular, the contingent, the unpredictable, the anomaly. The same thing never actually being the same thing. An Heraclitan opening gambit.

Up to the end of the paragraph, the last two forces exemplified, referred, alluded, are associated the first with Freud: *There are Freudian forces which do not know what they lust for-displacing, substituting, metamorphosing, or paralyzing themselves as the need arises* (Intr., 154). The second with Nietzsche: *There are Nietzschean forces, stubborn yet plastic, wills of power giving shape to themselves* (Intr., 154). Two new characters who can hardly be as directly associated with scientific knowledge or scientific intent as the previous ones.

One of these, the Freudian, introduces a principle of pleasure with no defined target. A pulsion of *lust* dissociated from consciousness or conscious behaviour and conscious intents. Dissociated from rationality and self-awareness. Motivated by needs, as they arise. The act of these Freudian forces is described, inward turning, by three verbs, to displace, to substitute, to metamorphize, the three disjunct with a fourth, to paralyze. The first three reflect more on the betraying aspect of translation-betrayal. The fourth reflects

an inertia of indecision. Of restricting movement or of not being able to move. A play with another non-literal meaning of what it is to be reduced. Thus, now we have forces that mostly betray themselves. If it weren't the case that they have no privileged access to self-knowing allowing coherence to be imposed and any sort of betrayal to be verified as such, for lack of any motivator who is not blind lust. Blind lust whose object is unknown to the ones lusting.

Their nature, if there is such, can be then deemed as irrational or a-rational, strictly confronting the Cartesian allusions the introduction begins with. Most notoriously when and where a Cartesian view of the I, and of method, is to be superimposed with a Freudian one. For the first time, explicitly, a set of forces arise in the text to which, or to whom, the distinction between reason and force, rational or irrational, slides fully to reason being either on the losing side or on the irrelevancy side as to how they act as they do. Consequently, it appears that such forces are not so negatively taken as the previous exemplifications. And may come to assimilate all others regardless of how all others pretend to know what they are and what they are to stand for. Preposterous as it may seem, Latour often works associatively and given the relevance that Kantian "things in themselves" acquires in the book to follow, highly betrayed naturally, the coming in of these Freudian forces and their unconscious through the collective does extend a web of the I that both upturns the cartesian subject of clarity and the Kantian fiction, Latourian wise, of a Transcendental I. Upturning Freud too, meanwhile, by translating him.

To be taken upfront for irreducing is that we do not know, apriori for sure, and can hardly come to fully know, even a posteriori, what is it we exactly lust for. What is it that things, forces, weakness, go lusting about and for? Faced with overwhelming needs, for certainty and clarity of knowing it seems, a paralyzing occurs which puts at hold displacing, substitutions, metamorphosis. A paralyzing which reflects itself as another instantiation of reduction. The irony stated is equating reduction with a neurotically contaminated effect of such overwhelming. Reducers are, to put it plainly, sick paralyzers of displacements, substitutions, metamorphosis.

The to-follow *Nietzschean forces* also put rationality and reason at bay. But, contrastingly, now introducing will, an active impetus. Where there only was a passive lust, arising of needs. Forces, Nietzschean, are now attributed with, simultaneously, stubbornness and plasticity in shaping themselves onwards, willing to the power that they,

therefore, lack. Thus, *weaknesses*. The morphologic allusion in using the verb "shaping" turns relevant both for what it is not, what is chosen out, and for the role the term will play in *Irreductions*. Such shaping is, as well, done by the forces to themselves while willing to the gain of power. It presupposes, once more, no prior meaning, no prior order, no truth but, if stepping on the Nietzschean association, it presupposes interpretation. One more knot in the dispensation of a priori ideas.

The possible full-fledged relativistic consequences, coming out of this, are bashed by the observance that some forces will succeed or have succeeded in gaining power, strength-reality in the associated actor-network terminology, while others won't, or have not. Such success or lack of success having to do exactly with how the shaping is being achieved and/or solidified. Forces, then, stubbornly and plasticly forcing themselves onwards into a shape, assimilating and associating others.

Shaping themselves, the verb used, is not idealizing themselves, rationalizing themselves, subsuming themselves, theorizing themselves, Shapings, we could say, are empirically trackable as to how they achieve and maintain stability or consensus in asymmetries. But they are so only *a posteriori* via Ontology in practice. The exemplification of forces appears then to end with two of them that are positively taken. Who seem, contradictorily as it may sound when passivity of lust and activity of will are checked together, relevant to the practical approach of all possible exemplifications of forces. And/or apriori ideas lingering still. This links with the fourth paragraph. There, forces are equated as to how gaining knowledge on them is to be achieved:

> *It is because we ignore what will resist and what will not resist that we have to touch and crumble, grope, caress, and bend, without knowing when what we touch will yield, strengthen, weaken, or uncoil like a spring. But since we all play with different fields of force and weakness, we do not know the state of force, and this ignorance may be the only thing we have in common.* (Intr., 155)

The Socratic injunction we can track running through the background of this quote is, if things are to be *set irreduced and free* (Intr., 154), not to be solved via the pursuing of definitions or via a rational certainty, able to leave the senses behind. As was the case in the Cartesian meditations alluded at far in the beginning of the introduction. More, the terminology hereby used is overtly tactile. It implies hands on confrontation with materials, in a rather straight forward sense. Reminiscing exactly of shaping, sculpting,

constructing, touching. Plus, we can see the positive taking in of the previously alluded to Freudian forces, "caress" and "grope", and of the previously alluded to Nietzschean forces shaping's, "yield", "crumble", "bend".

To *uncoil like a spring* vividly points to the sudden destruction of reductions: Crusoe's caves exploding or the jungle reclaiming again its grounds. As much as it pushes for the need of aiming to reduce what is touched into a shape. Warning that Id-Like pulsion's may burst through all controls dully placed to restrain them once and for all. To resist or not to resist is, in the book as in Actor-Network Theory, a gate expression for how what is more real or less real comes to be shaped and stabilized as such. The fifth paragraph will give examples on it.

The fifth and sixth paragraphs, both rather long, illustrate the fourth. Stacking examples of activities, all taken as material, matters of action, standing for some of the *different fields of force and weakness* (Intr., 155) we play with. These examples are not randomly chosen, connecting with Actor-Network theory favourite themes, preceding their recurrent use in the book in one moment or another. They appear to aim at a widened scope of the most collective relevant fields where we are forced to acquire working knowledges or know-how. At the same time, mostly on the sixth paragraph, strangeness and discontinuity are achieved by calling up activities which are, at a first glance, far removed from any sort of theoretical privilege. The seventh paragraph, rather short, leaves exemplifications behind, hinting at a new materialism which is to come out of *Irreductions*. Summing up partial conclusions, it moves toward such a new materialism which concludes each of the preceding fifth and six paragraphs. The eighth and ninth paragraphs, also rather short, retrace steps to Crusoe's myth as translated-betrayed by Tournier.

Comparingly, the exemplifications of activities, or of forces as activities, occupies greater writing length than what was spent on ideas as forces. Putting forth the notion that ideas or their force are trackable, or at all existing, only as activities. Similarly, that knowledge, knowing gains, is trackable, or at all existing, only as know-how. Nothing less, nothing more.

Fifth paragraph examples split in a first set where Latour begins with health-surgery:

> *One person, for instance, likes to play with wounds. He excels in following lacerations to the point where they resist and uses catgut under the microscope with all the skill at his command to sew the edges together.* (Intr., 155)

To be noted the use of words as "play", "follow", and "resist".

Latour then moves to war, doing us good to remember that in *Science in Action* both health and war are the main motivators for the practical investments baselining technological and scientific practice:

> *Another person likes the ordeal of battle. He never knows beforehand if the front will weaken or give way. He likes to reinforce it at a stroke by dispatching fresh troops. He likes to see his troops melt away before the guns and then see how they regroup in the shelter of a ditch to change their weakness into strength and turn the enemy column into a scattering rabble.* (Intr., 155)

The dyadic motivators of health and war having been asserted as the first examples, we must also note the emphasis on "like", calling up on the Freudian forces previously mentioned, the affirmation of no knowledge "beforehand", and the encompassing process of turning *weakness into strength*. Still on this first set, preceding a first explicitly stated theoretical conclusion, health enters again, but this time specifically related with childcare. Leaving us with dealing with sickness, dealing with war, and dealing with child-care as the main activities assignable to humans. Those that, for an Ontology in practice, do make the supporting wheels roll. Which is a rather materialistic and empirical stance on what truly makes humans both to seek knowing and to engage in acting:

> *This woman likes to study the feelings that she sees on the faces of the children whom she treats. She likes to use a word to soothe worries, a cuddle to settle fears that have gripped a mind. Sometimes the fear is so great that it overwhelms her and sets her pulse racing. She does not know whether she will get angry or hit the child. Then she says a few words that dispel the anguish and turn it into fits of laughter. This is how she gives sense to the words "resist" or "give way." This is the material from which she learns the meaning of the word "reality."* (Intr., 155)

 As a matter of fact, the reintroduction of an example related to health, though relatable to war by introducing fear and aggression, bridges the first set of examples with the second by surreptitiously engaging what we do with words. It endorses a pragmatic

and a performative understanding of that which we do with words. Rather than appealing to referring or saying things about a given entity or entities, to which words would point. Words, therefore language, the underlying theme who neatly resonates with education and learning via child care, are from the onset equated with actions, needs, likes, fears. The turning of weaknesses into forces, play, not knowing beforehand. Games of forces and not games of reason.

The cruciality of this stance will punctuate many of the visions of language, translation, communication, theories, that fill *Irreductions* to the brink. Again, it seems that "resist" or "give way" are the main culprits, as in the previous examples of the paragraph, to following the play of what and how we do what we do "within", not just "to", the world. Similarly, that meaning is learned through this process which is material and depends on materials. A particular word, flooding into Ontology as it is, gains most ground: the word "reality", under commas in the text. The next example follows suit and will backtrack to again meet with what it is about in the prior examples of forces as theories and ideas. Conflating precisely, as we already hinted at, the oft taken for granted distinctions between Philosophy and Literature. This second set of examples wants us following both fields, eventually all fields, as doing things with words, after all:

> *Someone else might like to manipulate sentences: mounting words, assembling them, holding them together, watching them acquire meaning from their order or lose meaning because of a misplaced word. This is the material to which she attaches herself, and she likes nothing more than when the words start to knit themselves together so that it is no longer possible to add a word without resistance from all the others.* (Intr., 155)

Words become a material, as cat gut under the microscope, children's faces, soldiers on a battle ground, under this new materialism being proposed. For all practical purposes no demarcation is postulated between words and things. Perhaps the main apriori idea to be off ridden to set things, words included, irreduced and free. The quote also introduces possibility, or a possibility criterion. It is possible that which is able to resist the resistance of others, of *all the others*. Given the encompassing association of reasoning with words or languages, that they are here, and language, accordingly, characterized as forces and materials as much as everything else under the sun, is a revealing substantive take to the argument that, if any reduction would be licit, that would be that reason is reducible to force.

Or to further and to better express it, that force is to be irreduced from the illusionary shackles of some of its forces being, after all, reasons and not forces, theories apart from materials being materially dealt with. Words are but materials, and but forces. That the quote plunges into sentences and not just words, but at the same time envisioning sentences as a constructing upon words being mounted, assembled, held together, as if bricks, is similarly a particular mounting and assembling of the theme which could be followed by itself. The minimal unit appears to be, for Latour, words, thus not sentences, certainly not propositions, which can certainly relate to the predominance of the word "reality", as strength-reality, to that of the word "truth". Truth bearing sentences have already their meanings acquired through *an order*. What makes them stick or not comes long before such an order is orderly shaped.

The conclusion of the paragraph then reinforces this and establishes a, perhaps the only, common to all forces, criterion of understanding the how of turning weaknesses into forces:

> *Are words forces? Are they capable of fighting, revolting, betraying, playing, or killing? Yes indeed, like all materials, they may resist or give way. It is materials that divide us, not what we do with them. If you tell me what you feel when you wrestle with them, I will recognize you as an alter ego even if your interests are totally foreign to me.* (Intr., 155)

One could now believe that, via the emphasis on language and words, we would be entering a solely human universe, presupposing the exclusive association of language with mankind. This would be so only if words were taken as fundamentally different from everything else, which is not the case. Regardless on our position as to if language is or is not an exclusive property of humans. As they aren't different on the account of being materials, just possibly on the account of being one more, among many of them, different material, but material nevertheless, this is not the case. Turning the roads back to Vendredi's jungle in Tournier's novel. Upsetting any Copernican revolution which would constrict the limits of the world to the limits of language.

Examples in the sixth paragraph are four in number, starting with cooking. Cheese "cooking" to be exact. A controversial example to which the book will return, stating it to be as complex or as simple as any whatsoever form of scientific practice. Thereby deflating it or inflating it according to perspective chosen. But, certainly, flattening it out.

Cooking is followed by biological research on cultured cells. By the engineering of machines, aircrafts in the case at hand. Ending with the activity of seduction or, in a larger perspective, mating strategies. What is by these examples clearly proposed is that no specific activity, as such, may claim hierarchical superiority or hierarchical precedence over any other, no prevalence of apriori demarcation criteria over any other. At least if such criteria were to be justifiable by the materials to be tackled with, from cheese cooking to theoretical physics. As much as no activity can claim, per se, to reduce any other activity, explain it, give better account of it than itself, to faithfully represent it or faithfully replace it.

Describing the how´s, following the how´s, of each activity in its material clash of forces and wrestles with weaknesses, is then the only road which proceeding onwards demands. Irreducing what might explain way, or plainly subdue it, by deriving it from others. Thus, this very need of following the forces themselves, of following the actors themselves. The unavoidable crucible is that similar limitations necessarily apply to a philosophy, philosophical activity or philosophical force, aspiring to set things irreduced and free. Thus, it would have to be followed accordingly, failing on the process any aspiration of explaining the clashes other forces do with their materials, which is congruent with Actor-Network's views on describing as explaining´s sine qua non.

But, and quite contradictorily, it holds that in as much as in said activities, even if making use of different materials and different lusts, different singularities and contingences in their growth seeking, a common ground can be found on the basis of them being but forces, but weaknesses, materials. Being trackable while subject to the possibility of associations (by another activity, another passion, another force, another lust – that of an irreductionist philosophy or force in the case here detailed), multiple threads who lead to multiple Romes which are, nevertheless, Rome, can be woven out. Also in the sixth paragraph, the appeal to feeling at the end of the fifth, *If you tell me what you feel when you wrestle with them, I will recognize you as an alter ego even if your interests are totally foreign to me* (Intr., 155) (off-putting as it is connected with being told off, spoken off, somehow privileging words after all as will be necessarily the case on a written work as *Irreductions* is, weren't words as much forces as anything else), is held stronger in this paragraph via two affirmations, coming after two of the examples

proposed. The first affirmation follows the down to earth deflation of cooking cheese and reads, underlining is ours:

> *One person, for example, likes white sauce in the way that the other loves sentences. He likes to watch the mixture of flour and butter changing as milk is carefully added to it. A satisfyingly smooth paste results, which flows in strips and can be poured onto grated cheese to make a sauce. He loves the excitement of judging whether the quantities are just right, whether the time of cooking is correct, whether the gas is properly adjusted. <u>These forces are just as slippery, risky, and important as any others</u>.* (Intr., 155)

The resulting look alike of a deflating strategy, dismissive even, attacks the perceived inflation of some forces at the expenses of others, an inflation which is seen as arrogant throughout the work, as much as a definitive hallmark of the overarching sickness of aiming for reductions as the paradigmatic tools for knowing. The bashing of this perceived arrogance moves most of the excessive writing, expressed by a strongly dramatic rhetoric. Its pretension is to overcome and flatten out the prejudices associated with, which would stop short the acceptance of the new materialism sliding through beneath. What the look alike of a deflating strategy actually is there to work, supported in such an unexpected invocation of cheese cooking, of all things, first in the paragraph, though, is, as in Actor-Network Theory's tenets, to stamp a dissolution of the very, Latour would say a priori, ideas under which we go on deflating or inflating things on expense of others, riding on predetermined reasons towards it.

Still, the appeal to cooking has another under the counter goal, that is, keeping the focus of theoretical lenses on despised but arguably fundamental facets of human's material impetus to action, hereby stressing food, feeding, dealing with food, dealing with feeding, thus cooking. As in the end example of seducing and mating. Clear, is that the attack hereby launched wishes to siege and destroy the predominance or inflation or superiority of some or all those activities which are termed as pertaining to a demarcated scientific practice or method. Per the title of the work and per its fourth chapter, The *Irreduction of the Sciences*. Some or all those practices, activities, forces, which would gain success and dissemination on having, according to an inflationist stance, better, not just stronger and not only stronger, reasons. Granting towards this end that the testing, as it is, of the putative comparative strength-reality of any reasons amounts to, all things

considered or fully upweighted, to treat them as, exactly, forces, stronger or weaker but forces no matter.

The road here to be built to set things irreduced and free must then begin and end, given the superiority and distinctiveness scientific practices and methods are endowed with, with what Latour calls the irreduction of the sciences. As other roads, past, had to begin and end with the irreduction of religions. This need to proceed to the irreduction of the sciences is, as a matter of fact, the very same need of irreduction which demanded of Latour to pursue a philosophical, or more philosophical, treatise. Flattening out all players to be met as but forces. To achieve it, he is forced to pinpoint the vanity, arrogance, and incorrectness, of priorly determining which are the most slippery, risky, and important of the forces. Instead of but following them, allowing them, through any means available, to speak, tell, show, associate, connect, test, wrestle for and of themselves. Thus, cooking and cheese cooking step in. As slippery and risky as anything else.

The second conclusion follows immediately after the second example in the paragraph, example consisting in the passion for cultured cells and experiments on petri dishes. Secondarily ending up with what seems the banishing of any sheer possibility of doing away with the first-person perspective and its perceived flaws. While relating it with something who is hardly cleanly definable. The afore mentioned "feeling". Underlining is again ours:

> *He likes the rapid movement when he sows invisible traces with a pipette in the Petri dishes. All his emotions are invested in the future of his colonies of cells. Will they grow? Will they perish? Everything depends on dishes 35 and 12, and his whole career is attached to the few mutants able to resist the dreadful ordeal to which they have been subjected. <u>For him this is "matter," this is where Jacob wrestles with the Angel. Everything else is unreal, since he sees others manipulate matter that he does not feel himself.</u>* (Intr., 156)

The quote might indicate that empathic growth is a sine qua non condition of what real or unreal turn out, in practice, to be. That to assert of the strength-reality of matters alien to one's struggles it is foremost needed to understand that though matters may be alien, the feel of struggling with them is, trial wise, sharable. Focusing on such struggling-with becomes the path by which an alien matter may be felt as personal, node by node. Made collective according to how many individual nodes it touches and how many trials it keeps resisting to. Reality, then, in this materialistic stance, becomes both a factor of

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resistance and a factor of connecting. Established via, no matter the discourse, multitudes of always singular, particular, temporally and spatially localized nodes. And, to further, its minimal unit of confirmation is a feel. Quantitative increase of such nodes of "feeling", remembering that the word play of feeling does not limit to emotions or the like but forcefully includes what lays in the domains of tact, touch, material resistance, is then how a reality and a matter begin to affect the whole and be shaped.

The paragraph's end, with the example of the seducer, that a delirious mind could see as an allusion mock to Kierkegaard being thrown in, stresses another characteristic of the irreducing project on the same riff of having to put away with a priori ideas. Underlining again ours:

> *Another person enjoys only the gentle fear of trying to seduce a woman, the passionate instant between losing face, being slapped, finding himself trapped, or succeeding. He may waste weeks mapping the contours of a way to attain each woman. He prefers not to know what will happen, whether he will come unstuck, climb gently, fall back in good order, or reach the temple of his wishes.* (Intr., 156)

To Bartleby's famous *I´d rather not say*, Latour, wittingly or not, could be seen as introducing in the core of his own sayings, as applied to the methodology and the concrete how-to of *Irreductions*, an analogous injunction under the form of "I would rather not know". And I would rather not know *what will happen*. The pun is that to know, in a strong position of knowing as actually "knowing", and actually "knowing" what will happen, is seen as impossible by short. Certainly, impossible beforehand under the sort of felt materialism hereby sought after. Thus, I would rather not know, first, because, simply put, it cannot be "known". Know-hows are gainable only by witnessing and feeling the how. Meaning, by witnessing movements who cannot ever flee temporality, spatiality, materiality, enacting and performing.

The seventh paragraph moves towards summing or associating this up, two new words gaining relevance to concluding. These words are "association", which we found at large while dealing with Actor-Network Theory, and "pure", which we haven't. But which, on the Copernican revolution thread of allusions footsteps, is here to dismiss any shred of said to be pure reasons reality. Or any utility in searching for them, as the want itself of such a search is rigged. It is also here to dismiss any shred of pure matters. Pure anything, in what applies to Ontology in practice. Given such impure associations, thus

named despite purity being not, by loosening the sense of impurity as its opposite, the third word coming out of these two is "homogeneous". Corresponding to nothing at all, new materialism wise.

An aesthetical criterion is also woven in when prior materialisms are spoken of with a dismissive "pretty", where "petty" could be also written. Therefore, placing them as things to be contemplated, looked at. Billboard paints where something not fully material, distanced and judging, reason and mankind as its warrior, would look from afar, see from afar in a perspective this new materialism to-be is to call faulty and erroneous from the onset. Against this fruition apparatus, Latour calls for immersion in the jungle among its inhabitants, where time for contemplation is rather scarce and distancing will not end well be it the case that the caves explode. The full quote follows, underlined by us what is to happen when the new materialism grows its course:

> *So, we do not value the same materials, but we like to do the same things with them – that is, to learn the meaning of strong and weak, real and unreal, associated or dissociated. We argue constantly with one another about the relative importance of these materials, their significance and their order of precedence, but we forget that they are the same size and that <u>nothing is more complex, multiple, real, palpable, or interesting than anything else</u>. This materialism will cause the pretty materialisms of the past to fade. With their layers of homogeneous matter and force, those past materialisms were so pure that they became almost immaterial.* (Intr., 156)

The underlined sentence amounts to a principle, starting with *nothing is*. Of which many fill the first chapter. We are to signal this stylistic, or logical, or rhetoric choice as bearing meaning on its own. As nothing is, in this new materialism, unassociated, pure, or homogeneous, all being associated, impure, and heterogeneous, despite we arguing to strengthen and grow views or forces to make it not so, and thus building ontologies that demand orders of precedence and delimitated significances and relative importance's, complexity, multiplicity, interest and value are distributed overall. At least, that is, prior to a winning force becoming consensually more felt. More resisting. Succeeding in instilling greater hegemony and shutting up others. Or, better, including others, explaining away others, speaking for others. This is paradoxical, as some things have been, at least, said throughout this introduction to be stronger, more palpable and more real than others, namely those that resist, those forces that won or are winning. But not

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because they are so. But because they are turning, association through association, to become so as if they were so, reducing and locking instead of irreducing and setting free. Launching the first chapter ahead, *From Weakness to Potency*, this turning to be as if so, for all practical matters, results of the quantitative strength-reality accumulated with many means of which all forces make use. Scientific practice included.

The eighth paragraph proceeds with the tabula rasa analogue informing the whole of the introduction, on several thread aspects. The idol banishing thread were aprioristic ideas take the role of Bacon's idols, as it were. The translation and rehash of the famous Socratic sense on not knowing. The rejection of Cartesian aspirations to finding a once and for all, unassailable, sure foot for knowing. We are left, then with a remaining ontological doubt as, albeit the oxymoron, the sole ontological certainty, in practice. The paragraph reads as:

> *No, we do not know what forces there are, nor their balance. We do not want to reduce anything to anything else. We want instead, like Friday, to feel the island and to explore the jungle.* (Intr., 156)

Besides this, the predominance of "want", collectively assigned as in a political speech, somehow implies that there are sides to be taken. A war to be fought for voices who are mostly silenced. While getting us back on track with the description of some forces as Nietzschean, warlike behaving. However, the immediately out jumping tune lingers on the illusory, epistemologically, and limiting, ontologically, nature of a knowing, reduction packed, which believes, or has believed, in the utopia of certainty, origins, foundations, principles, orders. We travel with more than a foot on sceptic's territory. All in all, nevertheless, more faithful knowing´s are being sought. Those who are actually possible one could say, where apparently doing worse for surety is doing better for adequacy, unflinchingly.

The ninth and final paragraph enters then into literary ground, at first. But at second it illustrates that adding up is always gaining more. Even if the adding is potentially infinite and, following its infinity, ever incomplete. The paragraph is also, mostly made of successive interrogations, questionings. A curious stylistic choice which must be associated with the overarching use of the word "nothing" when it comes to virtually all the principles the first chapter will be filled with. Making of affirmations, at a closer look,

negations just the same. The final sentence, underlined, shows then why literary mottos have to step in for grasping of the work's characteristics, and "feels":

> *This text follows one path, however bizarre the consequences and contrary to custom. What happens when nothing is reduced to anything else? What happens when we suspend our knowledge of what a force is? What happens when we do not know how their way of relating to one another is changing?* <u>*What happens when we give up this burden, this passion, this indignation, this obsession, this flame, this fury, this dazzling aim, this excess, this insane desire to reduce everything?*</u> (Intr., 157)

A final note to the appearance of the heavily laden term, in twentieth century philosophical tradition of "suspension", whose more recent associations bind it both with phenomenological bracketing and with phenomenological reduction. The withholding of packed assumptions as to the positing of anything outside our minds. The suspension of judgement itself aiming for a non-theory filled observation of the inner. Suspension, accordingly, allows newer inputs on the translation-betrayals at use, as to a genealogy thereof. While sticking together with the unavoidability of twinning reduction with irreduction further ahead. We now already have a glimpse of opponents and of adjuvants on the how of dealing with the suspensions to follow in the work.

Surprisingly, though, given what has been written so far, we do also have that relativism, per se, will be taken in the book as a game only the weak play. Meaning, a certainty of a specific nature is attainable under the new materialism proposed. Albeit not, if a reduction is also at stake, one of pure essences. Thus, to sever the knots strongly associating sceptical suspension of judgement with the sheer impossibility of knowing is a goal intended. Threatening a contradiction entering the construction from the start, as its seminal building block, making it unattainable. Due to be remembered is that knowing is in fact, as has been depicted here, know-how. And that not knowledge is the main goal but how´s of gaining knowledge are. Though belief may never come as fully rational, by voiding of reasons as reasons, likewise reasons are not necessary to knowing. Force is, or is proposed to be.

Still, Latour is now, as to references explicit or implicit, purposefully, or not, including Husserl in the cooking pot of the same dish where Descartes was spilled on previously, and Kant entered as a condiment. For *Irreductions* wishes itself as a philosophical treatise. Such a term of suspension also associates, if philosophical tradition

is juggled, with the Greek *epoché*. Namely, with the Pyrrhonic use of the term. Of which we can say two things that may come handy to Latour's use of suspension.

One is that, on such a translation betrayal here hinted at, it would appear that suspension is not to apply for all said to be non-evident matters, such was the case in Greek versions of it. As for what we are unravelling, no matter is evident period, sense data included, constructed in the wider view of constructing Actor-Network Theory asks. Apart, that is, from a strange community of feels and how to of wrestles and trials which would allow some overcoming of differences and incommensurability.

Another is that the culminating goal of Ataraxia could translate-betray nicely with the intended outcome from hopefully overcoming the burden, passion, indignation, obsession, fury, dazzling aim, insane desire, etc., Latour's words, of reducing. Seen as a concomitant sickness. But it won't, as the second Interlude in the first chapter will show. Thus, we reach into, at the end of our close reading of the Introduction, a reduction of sorts leading to irreducing whose unspoken genealogy seems, albeit Cartesian, Kantian, Husserlian overtones, to similarly associate and juggle with, for example, a reconnecting with Aenesidemus' ten tropes. As below:

> *The first mode relates to the differences between living creatures in respect of those things which give them pleasure or pain, or are useful or harmful to them.* (…) *The second mode has reference to the natures and idiosyncrasies of men* (…) *The third mode depends on the differences between the sense-channels in different cases, for an apple gives the impression of being pale yellow in colour to the sight, sweet in taste and fragrant in smell.* (…) *The fourth mode is that due to differences of condition and to changes in general; for instance, health, illness, sleep, waking, joy, sorrow, youth, old age, courage, fear, want, fullness, hate, love, heat, cold, to say nothing of breathing freely and having the passages obstructed.* (…) *The fifth mode is derived from customs, laws, belief in myths, compacts between nations and dogmatic assumptions.* (…) *The sixth mode relates to mixtures and participations, by virtue of which nothing appears pure in and by itself, but only in combination with air, light, moisture, solidity, heat, cold, movement, exhalations and other forces.* (…) *The seventh mode has reference to distances, positions, places and the occupants of the places. In this mode things which are thought to be large appear small, square things round; flat things appear to have projections, straight things to be bent, and colourless coloured.* (…) *The eighth mode is concerned with quantities and qualities of things, say heat or cold, swiftness or slowness, colourlessness or variety of colours.* (…)

The ninth mode has to do with perpetuity, strangeness, or rarity. (…) The tenth mode rests on inter-relation, e.g. between light and heavy, strong and weak, greater and less, up and down.[294]

As much as to Agrippa's five tropes according to Sextus Empiricus:

The more recent Sceptics offer the following five modes of suspension of judgement: first, the mode deriving from dispute; second, the mode throwing one back ad infinitum*; third, the mode deriving from relativity; fourth, the hypothetical mode; fifth, the reciprocal mode.*[295]

What cannot easily be bypassed is that to suspend is, in some sense, reducing the awareness of some aspects to hopefully let others arise untainted. Paradoxically, as it is, a form of reduction as suspension is asked so that irreduction may proceed. Given no dualism, under the dichotomy destroying tendency, but still given an evident push for materialism reworked a-new, if taking the dichotomy at any face value, different materials invalidating the opposing monism as predominant, the suspension here would never conform to immersion in the contents of our minds under Cartesian or Husserlian tracks. That seems as certain as it can be. If anything, such reduction would stack on feels, matter of materials being struggled with, as expressed. Plus, the how of those feels. Leaving behind any hopes or intents of a Cartesian stump of wax eidetic reduction. Or any viable attainment of the basic building blocks of phenomena. As, to paraphrase, nothing would be more basic than or, furthering on, purer per se. By such suspension now introduced, we are then made to assume, things shall instead become irreduced and free. Leading us right into the first chapter to irreduction and relativity.

2.2. The Principle of Irreduction

The first chapter, *From Weakness to Potency*, begins the aphoristic and proto-geometric mode of presenting the subject matter, with five major subdivisions capable of

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[294] Diogenes Laertius, 1925 [III c. CE]: IX, 80-88). Cf. Sextus Empiricus, 2000 [II-III c. CE?]: I, xiv, §§36-163.
[295] Sextus Empiricus, 2000 [II-III c. CE?]: I, xv, §§ 164-177. Cf. Diogenes Laertius, 1925 [III c. CE]: IX, 88-90.

being immediately discriminated. They are first those sentences preceded by 1.1, beggining with the so named *Principle of Irreduction*, sentences who subdivide up to 1.1.16 with still some aditional subdivisions of subdivisions. The Principle of Irreduction reads as:

> *1.1.1 Nothing is, by itself, either reducible or irreducible to anything else. • I will call this the "principle of irreducibility", but it is a prince that does not govern since that would be a self-contradiction (2.6.1).* (Ch 1, 158)

We can right away stress that it carries its own small comment, while directing us to much further ahead in the book. Misplacing chroonological readings from the start, providing us alternative ways of approaching the text. Countermanding the traditional sequential deployment of supposedly theoretical texts. A choice that must be taken as significant, formally. Similar cross referencing indications, another trend in the work, will ask us to go back and forth. By reading *2.6.1*, in the end of the second chapter, we get to know that, despite the presentation style, it is not supposed that from some principles stated the rest is to be derived, can be derived, or ought to be judged as being simply derived from. It reads as, underlinings are ours:

> *2.6.1 All research on foundations and origins is superficial, since it <u>hopes to identify some entelechies which potentially contain the others</u>. This is impossible. If we wish to be profound, we have to follow forces in their conspiracies and translations. We have to follow them, wherever they may go, and list their allies, however numerous and vulgar these may be. • <u>Those who look for foundations are reductionists by definition and proud of it. They are always trying to reduce the number of forces to one force from which the others can be derived</u>. The greater their success, the more insignificant the chosen one becomes. The most profound is also the most superficial. <u>We might just as well treat Queen Elizabeth as the United Kingdom, or the opening sentence (1 . 1 . 1) as the present text</u>.* (Ch.2, 188)

Words to note on this first cross reference to a chapter further on are "entelechies", Aristotelian and Spinozian at large. And "potency", to be translated-betrayed from its Aristotelic connotation. The Principle of Irreduction begins flushing the cards. To our despair also including Machiavellian and Kantian substracts in the unruly shuffling. There are 16 major aphorisms or sentences or affirmations in the first subdivision then, as to take them as propositions would not seem entirely correct, under this peculiar

presentation of Principle of Irreduction. We are afterwards led to 1.2, beggining with the so named Principle of Relativity. The Principle of Relativity reads as, underlining ours :

> 1.2.1 <u>Nothing is, by itself, the same as or different from anything else. That is, there are no equivalents, only translations</u>.
> In other words, everything happens only once, and at one place.
> If there are identities between actants, this is because they have been constructed at great expense. If there are equivalences, this is because they have been built out of bits and pieces with much toil and sweat, and because they are maintained by force. If there are exchanges, these are always unequal and cost a fortune both to establish and to maintain;
> • I call this the "principle of relativity." Just as it is not possible for one observer to communicate with another more quickly than the speed of light, the best that can be done between actants is to translate the one into the other. <u>There is nothing between incommensurable and irreducible forces: no ether, no instantaneousness</u>. It is true that this principle of relativity aims to reestablish the inequivalence of actants, whereas the other principle was designed to restore the equivalence of all observers. In both, however, we have to get used to breathing in the absence of the ether. The stuff of which I speak is rare, dispersed, and mostly empty. Gatherings, saturations, and plenitudes are uncommon and dispersed, like large towns on the map of a country. (Ch 1, 162)

We see that it also has an inner comment. Meanwhile, it cross comments on the previous Principle of Irreduction, while alluding to General Relativity Theory and outdated views on the existence of ether between celestial bodies. As opposed to void, one might add. We also see that it is first put forth, then said in "other words". Immediately after we are hinted that to say in other words is not to say something equivalent. Accordingly, words as "translation" and "actant" step in from Actor-Network Theory. We seem to also be told that in any situation, there are winners and losers. An interlude immediately follows the enunciation and inner comment of this principle – *Interlude 1: In a Pseudoautobiographical Style to Explain the Aims of the Author* (Ch 1, 162-163). The style is then not just biographical, not just autobiographical but Pseudoautobiographical. This interlude is, of all things, an exorcism, Latour's own words, of reduction. Reduction which he describes as, after having given examples, as:

> To put everything into nothing, to deduce everything from almost nothing, to put into hierarchies, to command and to obey, to be profound or superior, to collect objects and

force them into a tiny space, whether they be subjects, signifiers, classes, Gods, axioms-to have for companions, like those of my caste, only the Dragon of Nothingness and the Dragon of Totality. (Ch 1, 163)

After the Interlude, the Principle of Relativity part enters into 13 subdivisions, with more additional subdivisions in several of these 13. From Irreduction and Relativity we get to the third main subdivision of the first chapter, where no principle or appearance of such is, at least in the form of the previous ones, enunciated. Instead, we seem to enter a dynamic discrimination of some forces which would explain how they come to acquire potency, seeking for hegemony and growth, fulfilling the title of the entire first chapter. Such forces, not reasons, are given a role of reducers while being seen as, perhaps statistically, exceptional in the grand scheme of all others which may be found.

The form of enunciation changes from *nothing is* to *All*. Which is again a formal stylistic way of saying that is significant per se. The beginning of the third subdivision reads as:

1.3.1 All entelechies may measure and be the measure of all other entelechies (1. 1. 14). Nevertheless, certain forces constantly try to measure rather than be measured and to translate rather than be translated. They wish to act rather than be acted upon. They wish to be stronger than the others.

• I have said "certain" rather than "all" as in Nietzsche's bellicose myth. Most actants are too far apart or too indifferent to rise to the challenge, too undisciplined or devious to follow for long those that speak in their name, and too happy and proud to take command of others. In this work I speak only of those weaknesses that want to increase their strength. The irreducible others have need of poets rather than philosophers. (Ch 1, 167)

We sense a shift towards actuality. Meaning, a shift between the "in principle" and the "in theory" towards the realm of "in practice", conducted by a will for strength which we already know amounts to a determinate wish for both strength and reality, strength-reality. A shift from how it may be to how it actually is. The scope of the philosophical is somehow restricted to those peculiar forces which pride of winning at all costs. As all the others, it is said, cannot be subject to, or do not need, philosophical discourse. Now, as the book shows at satiation, poetic style also showing it in length, this will not be so. Though it is mostly so in the subdivision at hand. This part will be more focused on those

practices that actually govern, to paraphrase on the Principle of Irreduction commentary, than on those which don't or do not wish to.

Serves to say that conscious first-person proclamations often betray, in the course of affirmations which add up not being simply derivable one from the other, the very clear-cut goals they were trying to portray as their own. Thus, separate analysis of them will often result, as it is supposed to be in reality at large, faultier. Up on pair with the description of those Freudian forces called upon on the introduction. There, already contradictorily mingled with those Nietzschean forces similarly mentioned. To add up, the beginning of this third subdivision asks the intended reader to go back to a set of sentences reporting to the principle of Irreduction, which seems but an alliteration of Protagoras' sophistic leitmotiv: *1.1.4 Everything may be made to be the measure of everything else.* (Ch 1, 158) Now, though, if there is no privileged measurer, at least in the realm of mays, it seems that in the realms of what actually is or isn't it ends up turning to be as so, or as if so, for practical purposes. Before, at least, irreductions start taking their toils on forces. By now, we get to confirm, too, that the term actant has already been dealt with in prior subdivisions as another way of saying, though not equivalent if coherence is minimally asked for, forces, weaknesses, entelechies, or monads, and other expressions to the same end.

The Third subdivision expands into 7 additional subdivisions before a second personal interlude steps in again: *Interlude II: Showing What a Relief It Is to Stop Reducing Things.* (Ch 1, 169-170) Though the title of the interlude could presuppose actual relief and justify for an eventual ataraxy intended or attained, what will here be shown is anything but. Which the following illustrates:

> *Does this mean there is fusion, ataraxia, or lack of differentiation? No, of course not! All the differences are there. Not a single one is missing. And all the attempts to reduce, produce, simplify, hierarchize, totalize, or destroy them are likewise there, like so many differences which add themselves to those that they wished to suppress.* (Ch 1, 169)

The interlude reads, as well, as yet a further comment to the Principle of Irreduction, which now gains affinities keen with a practice of personal liberation if repeatedly uttered. Nevertheless, no redemption of any sort may be achieved, judging from the text. Association may be the case, fusion won't be the case. Agonistic struggle may be the case, ataraxia if it be the case, it is but illusionary peace or temporary truce. Constancy of

differentiations may be the case, piling up and up in translations and betrayals. Full identities or full equivalences won't ever be the case, taken that the distance between nearly and fully is gargantuan.

The fourth subdivision of the first chapter, aiming at describing how what won't be the case can appear as if, for all practical purposes, it is actually the case in given spaces and given times, begins with:

> *1.4.1 Certain actants test their strength against others, declare them to be passive, and make an alliance with them that they themselves define. By imposing equivalences which they direct, they spread themselves step by step from passive actor to passive actor.*
> *• We too often tend to start with "exchanges", "equalities", and the "transfer" of equivalents. But we never talk about the preliminary work in which these equivalents are forged. It is as if we spoke of road networks but never of civil engineering. However, there is as much of a difference between equivalent and making equivalent as between driving an automobile and building a freeway.* (Ch 1, 170)

To be signalled that actants, yet unfigured thus, spread from actor to actor. An actor being an actant which has already been given a figuration and/or an attribution. They do so by imposing equivalences. Imposing being rather different from just negotiating or just discover, implying force rather than argument or reason. Besides imposed, thus willed, equivalences are said to be forged. A double entendre to forgery, falsification, and forge, metal working using extreme heat to shape matters in predetermined forms, by force. By bending, by hammering, by the use of moulds. The roadworks metaphors, here making its appearance, will be of paramount significance in the second chapter where logic, the purported high way for reasonings, will be one of the main culprits to be flared as to the belief in reductions dissemination. Note as well that where we had "nothing" or "all", we now have "certain", as we also did in the previous subdivision's first stanza. This points to an interpretation choice who could consider subdivisions 1 and 2 as a set, and subdivisions 3, 4, 5, as another. It is in many ways so. This fourth subdivision of the first chapter will only have 6 subdivisions overall, though some of those are, as before, themselves subdivided, proceeding a tendency of diminishing quantity towards the end of the chapter.

The fifth and final subdivision ends the chapter by clarifying, at least trying to, the particular translation-betrayal Latour applies to "potency", asking us to go back twice in the process:

1.5.1 A force cannot be given those forces that it arrays and convinces. By definition it can only borrow their support (1.3.4). Nevertheless, it will claim what does not belong to it and will add their forces to its own in a new form: in this way potency is born.

• When an entelechy contains other entelechies which it does not contain, we say that it contains them "potentially." The origin of potency lies in this confusion: it is no longer possible to distinguish an actor from the allies which make it strong. From this point on we begin to say that an axiom implies its demonstration "in potentia"; we begin to say of a prince that he is powerful, that the being-in-itself contains the being for itself, though only "potentially." With potency injustice also begins, because apart from a happy few-princes, principles, origins, bankers, and directors, other entelechies, that is, all the remainder, become details, consequences, applications, followers, servants, agents-in short, the rank and file. Monads are born free (1.2.8), and everywhere they remain in chains. (Ch 1, 173)

Going back to subdivision 3, as asked, we read:

1.3.4 Although all entelechies are "equally" active, they may appear to be in two states: dominating or dominated, acting on or acted upon. For an entelechy to be called passive, it need only fail to answer back.

• I am not saying that there are active forces and ones that are passive, but only that one force may act as if another were passive and obedient (1.1.14). For the passive force, of course, the point of view is entirely different. There are a thousand reasons for feigning obedience, ten thousand for wishing to be dominated, and a hundred thousand for remaining silent-reasons that are never suspected by those who believe they are served. (Ch 1, 168)

Going back to subdivision 2, as asked, we read:

1.2.8 Every entelechy makes a whole world for itself. It locates itself and all the others; it decides which forces it is composed of; it generates its own time; it designates those who will be its principle of reality. It translates all the other forces on its own behalf, and it seeks to make them accept the version of itself that it would like them to translate.

• Nietzsche called this "evaluation," and Leibniz "expression." (Ch 1, 166)

In the back going we are, further, asked to back again, note. We are now amidst state-of-the-art philosophical literature being brought in, Spinoza, Leibniz, Nietzsche. Together with Aristotle's potency and critical innuendos on logical implication. Curiously, Latour first needs to go back following the use of the word "definition". Grasping too well that the idea that something is thus and thus by definition is awkward to say the least given what was before written. Unless we translate "by definition" as meaning something as "by its shaping", mangling around with definition as a finishing crafting wise. Still, it does not sit well. If it reports to an intra-textual definition, axiom like were we to be cynic, then the implication, were not implication itself criticized, would be that logical implication would be needed and intended in the work. Which the geometric presentation does ask for, and did for the mentioned Spinoza. This sort of difficulties is patent throughout and we somehow dealt with them previously, but they are still in need of reinforcing while crossing the hybridity *Irreductions* reflects.

So, the "birth", another curious word to use, of potency is tainted by a definition of force we shall have to examine further on. Then we read that even when distinctions are not possible to be discriminated, they are still there nevertheless, between incoming rulers and aligned allies arrayed. Even when, we could say, all sensorial evidence does is to show that they aren't. We just, it seems, give up on finding them or dealing with them, reduction begins its course of potency from weaknesses to weakness, from forces to a force. This fifth subdivision is the shortest of all with only four subdivisions. It does read as a conclusion, properly to the entire chapter. As a, to use the word again, finishing, definition, final shaping, that may launch what we seek.

We now turn to the core aspects of reduction and irreduction, as they integrate the Principle of Irreduction. The simultaneous use of both concepts of reduction and irreduction, woven together with their corresponding operations and associated practices, strongly favours the hypothesis that both, and not just the irreducing of *setting things irreduced and free,* will play a part in the exposition. Apparently, in a somehow equal footing. In spite of the book's title then, that which is said to be reducing stands as paramount as that which is said to be irreducing. Twinned in fact. As if in an osmosis where none of them is capable of being fully understood, theoretically and in practice, if singled. Consequently, standing to possible attention that neither would occur, as it is,

one apart from the other when following the deployment and disseminations of forces is sought after. This is reinforced by both reduction and irreduction appearing to be denied and affirmed at different moments, or even simultaneously, as seems to be the case in the Principle of Irreduction.

Both made out, further, as if possible and as if impossible in different moments and even simultaneously. Even alternatively or simultaneously considered as instrumentally useful, or not, for the analysis of a given force, a given state of affairs, a given event. Considering they first appear to oppose each other this sounds like a startling contradiction. Either undermining bivalent understanding or at best like a full throttle dive into the poetics previously asked for when speaking of the irreducible others who do not wish to grow into hegemony. If so, or if a deliberate contradiction is at stake, bordering absurdity as a first premise, if it were the case that we are dealing with but premises, such contradictory play is one assumed and expressed from the very start of the text in the commentary of the principle itself. In what would count, were it so, as the first premise. We then read :

> *1.1.1 Nothing is, by itself, either reducible or irreducible to anything else.• I will call this the "principle of irreducibility", but it is a prince that does not govern since that would be a self-contradiction.* (Ch 1, 158)

Taking at face value the sentence carrying the principle the expression that immediately needs as much disambiguation as possible, which might help us in solving the issue being proposed, including its apparently contradictory nature or not, is "by itself". The exclusive disjunction per se, following under "Nothing", or "Nothing is", if we leave the "by itself" behind, is not hard to figure out, offering no great difficulty. It would be false, at a direct glance, if something were to be both reducible and irreducible to anything else. Or if nothing were to be reducible of irreducible to anything else. The exclusive disjunction within the principle, if taken per se, needs to be true that a given thing is only reducible or only irreducible to something else. Thus, where reduction would be irreduction could not be, and vice versa. Effectively making them as if opposites in a given thing, act, situation, state of affairs. Now, if we were to make an inclusive disjunction out of it, it stands to attention that both could be at the same time. It would be the case that something, the same thing, could be reducible and irreducible, reduced and irreduced, at the same time, or just reducible or just irreducible at times. However, it could

not be the case that a thing is simultaneously not reducible and not irreducible to something else. Were the inclusive disjunction denied, under "Nothing is" we would have that there are some things, at least, which are not reducible and not irreducible. This option would leave us as well with a seemingly contradictory statement.

Thus, pushing for an inclusive disjunction also doesn't make sense. Reducing and irreducing seem to oppose each other in the fashion of one implying not the other. Unless we by some particular strategy arrive at the conclusion that the irreduction being treated is not identical to simply not reducing. Nevertheless, from what is written and from the systematically conjoined use of reduction and irreduction this seems to be the case going on. Latour does imply not only that there are some things that are both reducible and irreducible to anything else and both not reducible and not irreducible to anything else. But, pushing the conclusion further from logical consequence, where the denial of "nothing is…" would but demand "something to be…", he is in fact implying or asking us to believe that everything is both reducible and irreducible to anything else and both not reducible and not irreducible to anything else. Which is again, once more, a contradiction per se.

Unless we carefully discriminate and mostly disambiguate the why and what of the expression "by itself". The sheer utterance of the above conclusion by Latour seems to logically invalidate discrimination of knowledge from absence of knowledge by starting with an absurdity from which everything may be deduced. And to invalidate moral or reasonable justifications for governance or power. While at the same time, if not eventually by the expression "by itself", denying the very sentence placed as a book starting premise. Denying in the process any instrumental utility of seeking both logical justifications for knowledge and of seeking moral justifications or reasoning to governance or power.

It invalidates theoretical justifications of knowledge and their instrumental utility as opposite assertions can appear as possibly true and false at the same time regarding anything whatsoever. Knowledge would be, at first, a matter of choice dependent of arbitrary decisions. Ultimately, and not so arbitrarily, a matter of power or strength in forcing that choice onwards according to given intent, wishes, will, tastes. It invalidates any moral justification of power and the instrumental utility of justification seeking it as no fundament to it would exist rather than arbitrary choice according to the same factors.

And, not so arbitrarily after all, the eventual strength to make it remain, grow, disseminate. In a deeper sense this is exactly what Latour does want to state from the onset of the Principle of Irreduction.

First, that there is for sure no logical justification of knowledge, a theme he will vastly digress on the second chapter, from which we can immediately quote:

> *2.1.8.1 Nothing is by itself either logical or illogical. A path always goes somewhere. All we need to know is where it goes and what kind of traffic it has to carry. Who would be so foolish as to call freeways "logical," roads "illogical," and donkey tracks "absurd"?* (Ch 2, 179)

Second, and consequently, no moral justification of power or any reasonings or reasons that could justify it, atone for it, give account of its why and how, per se. The end result is, always in the practical spectrum of the new materialism proposed, though, logics and moral having been banished, that power is its only justification by gaining, through trialling, the strength-reality to persist. Strength to which any morals that helps it persist can and will be added, as yet another factor of strength, again by and with power.

As much as knowledge will ultimately result of a choice enforced by power, more accurately expressed as strength, validated by trials to which it persists and resists. The end result is that only "might", or strength, ultimately remain. As anything that remains does so by surviving and adapting to trials which would make it fall if not met. Dissecting this power is one the things irreducing is supposed to achieve. In *Pasteurization of France*, published together with *Irreductions* as its first, non-philosophical half, Latour launches *Irreductions* thus:

> *Indeed, as soon as we stop reducing the sciences to a few authorities that stand in place of them, what reappears is not only the crowds of human beings, as in Tolstoy, but also the "nonhuman," eternally banished from the Critique. If we succeed in this emancipation of the nonhumans from the double domination of society and science, it will be the finest result of that perhaps clumsily begun "anthropology of the sciences." However, in order to reach that aim, we have to abandon many intermediary beliefs: belief in the existence of the modern world, in the existence of logic, in the power of reason, even in belief itself and in its distinction from knowledge. I have to write, not as a sociologist or even as a historian of the sciences, but as a philosopher, and to define those trials of*

strength of which I have made such extensive use in this history of microbes. That is the
aim of the second part of this book[296].

So, crowds of humans are to appear and crowds of non-humans are to appear and entangle along. "Crowd" as a name calling forth unruly disorganization, disorder, with no such thing as a society ordering them and no such thing as science ordering them. Mingling with no modern world. Thus, no post-modern world as well. No logic, no reason, no belief where it is opposed to knowledge. If, on such lines, Latour does want to say that some things are, or everything is, both reducible and irreducible to anything else and both not reducible and not irreducible to anything else, while making due that strength is the primary factor in realizing things as effective, and if the original sentence towards it is a contradiction, there must be something in the sentence allowing us to pull through from this difficulty. Which is, at least, double. It leaves us with a contradiction and makes everything allowed in terms of building knowledge or gaining power. Similarly invalidating the whole purpose of writing as a philosopher and the effort the work explicitly intends to achieve. Thus, a self-contradiction, as the commentary goes, and a prince, albeit Machiavellian, that does not govern, as the commentary goes.

No knowledge remains justified or justifiable. No power needs justification or is reasonably justifiable. But, worse, no explanation becomes possible even if arising at the end of longer and longer descriptive chains. Everything turns out as inherently arbitrary and unsolvable relativism the only hint of a norm among the multitude of crowds. This is not, however Latour's point, from what we can read in a sentence who directly remits back to the opening part of the first chapter where the Principle of Irreduction rules. We quote it below as it proves a point and allows us to banish precipitous identifications of *Irreductions* with naive relativism:

1.3.6 Since nothing is equivalent, to be strong is to make equivalent what was not. In this way several act as one.

• "Anything does not go." Discourses and associations are not equivalent, because allies and arguments are enlisted precisely so that one association will be stronger than another. If all discourse appears to be equivalent, if there seem to be "language games" and nothing more, then someone has been unconvincing. This is the weak point of the

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[296] Latour, 1988: part 1, 149.

relativists. They talk only about forces that are incapable of allying themselves with others in order to convince and win. By repeating "anything goes," they miss the work that generates inequivalence and asymmetry (1.1.11). (Ch 1, 168)

Anything does not go. Relativists play weak arguments. Games, and games of language for what it counts, or just games as games, are no faithful depiction of what happens in practice when strength asymmetrically narrows the ontological lanes that can actually be followed. From the above quote, that is a given. The confluence with naïve relativism falls. We see a definition of strength, or one of the definitions of strength, where the toil of constructing equivalences, which by themselves are not though the expression "by itself" has already been left out for having been dealt with, effectively makes the multitude of unruly crowds into a ruled and ruling one. Or acting as if one for all practical purposes. In Actor-Network Theory terminology, instances of making an intermediary out of crowds and crowds of mediators.

We see as well, for a philosophical reader, an alluded mistrust towards Feyerabendian proposals and towards Wittgenstein's language games as if at best they could do no more than merely scratch surfaces, leaving away all the relevant depictions they were intended to provide when dealing with growth and hegemony seeking forces as they are in practice, materially. By the definition of strength given, by the assimilation with growth and hegemony seeking forces as aiming to its gain through deploying reductions over reductions, we also arrive at reduction as a way of making equivalent what is not. While irreduction appears to again make inequivalent what was made equivalent, re-stating forces as weaknesses. This would be exactly so were it not for the introduction of potency further ahead, stressing that force, as a matter of fact, always depends on the unruly crowds and not on the ruling one.

We must then turn to the expression "by itself" to find out how it could make sense and be instrumentally useful, even ultimately claiming to offer a strong non absolutist solution to relativism or surface scratching explanations, that something or everything is both reducible and irreducible to anything else. While being both not reducible and not irreducible to anything else. To do so we must find a denial of "by itself" capable of allowing the conclusion above, as the Principle of Irreduction affirms that nothing is "by itself" thus and thus. Such a denial would express that something is, or at least something

is, or everything is, by such and such, thus and thus. The denial is expressible as, simply, "by others".

The sentence would then read first as "everything is, never by itself but always by others, both reducible and irreducible to anything else". Or, more consequentially but perhaps less faithfully to the intention, "some things are, never by themselves but always by others, both reducible and irreducible to anything else". But, as the denial where "by itself" slays in is that of an exclusive disjunction the sentence must also read "everything is, never by itself but always by others, neither reducible nor irreducible to anything else". Or, more consequentially but perhaps less faithfully, again, to the intention, "somethings are, never by themselves but always by others, neither reducible nor irreducible to anything else". These two last sentences bear the greatest difficulties pertaining to the self-contradictory nature and to non-governance as it seems "others" are not needed for things to be neither one nor the other.

This may be solved by postulating that "by itself" corresponds to nothing at all or, on a milder tone, that "by itself" corresponds, practically in terms of ontology in practice, to nothing at all. Thus, not even being an option after all. As it is, the whole crucible of the matter depends on "others". It is by "others" how a thing turns out to be, or can be, reducible or irreducible, or anything else altogether which may be said-as being of it or being of it. Such is what is being put forth. If real or unreal. If effective or not. If reducible or irreducible.

Things by themselves are then unbonded, unassociated, inaccessible, are powerless. Little to nothing can be expressed of them. And whatever may be expressible would always be, under the new materialism sought, bordering irrelevancy. Even in the sentences I now write, whatever a thing by itself may be as of sentences and of me, it is already being associated at least with English language and with myself plus a multitude of concurrent things. My little philosophical knowledge, all the different and heterogeneous associations by others who compose what is translated and associated with the word "me", etc., etc. Crowds, and crowds, and crowds which crowd.

Readers will immediately note that a more than mildly Kantian "family resemblance" with "thing in itself" enters the ground arena as one of the indirect allusions we have mentioned. Musil, also, who will be extensively when logic is analysed, does also get in via the idea of "without qualities" entering the arena associated with "by itself".

The Kantian allusion is graspable as justified, intra-textually, by the reference to an anti-Copernican revolution the introduction made use of as by following the many references or allusions where Kant is made into a target. Shrewd readers will also note however that, purposefully or not, though we believe it to be so, "in itself", as in the Kantian trope, is quite different from "by itself" as Latour writes it, allowing us at least one more baseline for interpretation.

The former, "thing in itself", or "in itself" per se, implies or asks that something is in a certain manner with an "in" contraposed to an "out". A definite demarcation of spaces, so to speak, between which a frontier is evident or an abyss which has to be soared is revealed. A discontinuity or clash. Additionally, it seems to reinforce the same internal versus external dichotomy that Actor-Network Theory's use of the notion of network wishes to overcome and dissolve. The latter expression, "by itself" or, if it were, "thing by itself" implies or asks that by the use of "by" things would occur almost self-sufficiently or were acted upon in such and such a way self-sufficiently. Isolated, indivisible. Or that something is made to act in such and such a way, in the case of just "by", by something other than the thing itself which is thus acted. Curiously enough, still, and though that this is what is being implied or asked, we have that the use of "by" conflicts with such self-sufficiency trough remitting to something being or happening "by". Even in the case when such "by" is "by itself". Reinforcing the interpretation that says that "itself by itself" is simply not. Per se, or practically, as "by itself" is already "by others". The opposite being not.

If we further look at what may be implied in the denial of "by", we find that it seems to immediately, perhaps necessarily, demand what is to follow it in a given sentence where it is used. It demands something else, and is perhaps only clarified with something else following it. Sure, it may have a denial preceding it as in "not by" but hardly will the word "by", as it is, have a clear opposite or straightforwardly claim to have it. As to the denial or opposite of "in", it can be rather straightforwardly stated as "out", or "out of". Showing the same dichotomic demarcation to be translated-betrayed away we did refer to. It does not necessarily demand anything following it or anything preceding it. "By itself" a thing is inaccessible, cannot be worked on, said of. Even if it exists or not is left unanswered as one cannot ultimately and practically, and materially under a putative new materialism, tell it's state or of its "by itself". It is a metaphysician's Schrodinger cat

which is not even, by itself, inside any imaginary box whatsoever. Both reducible and irreducible. Both not reducible and not irreducible. Or any other quality perhaps.

One could from here enter traditional philosophical arguments on, for example, essence and existence. The "in itself" and the given. Universals and particulars. And on, piling tenets of philosophical discourse. But, closely reading the work, such is never the option it is framed towards. We must stick then with the fact that "by others" is offered as a way out of the contradiction, while at the same time reinforcing the contradiction, making of the Principle of Irreduction one which does not govern and one which self-inflicts harm to anything possible throughout what is to come. And that, albeit the family resemblance, "by itself" does translate-betray "in itself" in a way to be explored along. In it, that any given thing, be it contradictory as it may, even when "by itself" it is already so "by others". That such contradiction lingers at all corners of all theories, such as those the new materialism is to bash against.

The awkward contradictory or self-contradictory non governance nature of both reducing and irreduction (concepts and/or operations we can say) together, as stated in The Principle of Irreduction to whom the book owes its title, is somehow even more mitigated, dealt with or reflected with Latour's self-professed exorcism of reducing in the first *Interlude*. Right after the beginning of the second subdivision of chapter one. We tackle it here a little bit beforehand. This subdivision is the one, remember, where the Principle of Relativity is introduced. Reducing is to be here seen as the disparate and restraining need to fit things together or apart under any one given principle, or given set of principles. Directly hinting again at the self-contradiction and non-governance of any principle it seems. Backtracking with a particular emphasis on the afore mentioned Principle of Irreduction.

It is as if that who or which is translated as "things" could be derived or deduced, when it is not and cannot, from the framings of any putative principle under which those things were made to fit by these or that chosen or salient properties. Or, to introduce a tenet of Actor-Network Theory, made to just follow from. Enticing a playable distinction between which at least two understandings of what to follow means are clashed. One on the lines of following the actors. Another on the line of what logically follows or does not logically follow. Something the second chapter will deal and develop with at length. Nevertheless, from this point, the game whose pieces are put to move through the

exorcism of reduction and through other first subdivision aphorisms, intertwined with the denial of "by itself" through "by others" in the Principle of Irreduction, is yet another route to solving the contradiction issue we are meeting heads with.

The eluded or trialled distinction is the strict demarcation between what logically follows, or the relation of logical consequence under which contradictions surely do apply, and what materially follows as associated with, joined with, under this new materialism or materials, to which no contradiction can by definition apply in any relevant sense. In the second chapter this is expressed as stating, more or less explicitly, that nothing logically follows if it does not, our own words, associatively follows materially, first, in one way or another. We quote:

> *2.1.1 All reasoning is of the same form: one sentence follows another. Then a third asserts that these are identical even though they do not resemble one another. Thenceforth the second is used in place of the first, and a fifth affirms that the second and the fourth are identical, even though... and so on, until one sentence is displaced while pretending not to have moved, and translated while pretending to have stayed faithful.*

> *2.1.2 There has never been such a thing as deduction. One sentence follows another, and then a third affirms that the second was implicitly or potentially already in the first (1.5.1). • Those who talk of synthetic a-priori judgments deride the faithful who bathe at Lourdes. However, it is no less bizarre to claim that a conclusion lies in its premises than to believe that there is holiness in the water.* (Ch 2, 176)

Once more, it should be noted that in *2.1.2* Kant is on the firing line. The backtracking demanded by the *2.1.2* stresses again that performance towards trials is the only way towards solving and governing the self-contradiction of the Principle of Irreduction, at the base of the new materialism. Though never "by itself". We quote it in full up to *1.1.5.2* as what is proposed demands it:

> *1.1.5 Whatever resists trials is real.*
> *• The verb "resist" is not a privileged word. I use it to represent the whole collection of verbs and adjectives, tools and instruments, which together define the ways of being real. We could equally well say "curdle", "fold", "obscure", "sharpen", "slide." There are dozens of alternatives.*

> *1.1.5.1 The real is not one thing among others but rather gradients of resistance.*

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1.1.5.2 There is no difference between the "real" and the "unreal", the "real" and the "possible", the "real" and the "imaginary." Rather, there are all the differences experienced between those that resist for long and those that do not, those that resist courageously and those that do not, those that know how to ally or isolate themselves and those that do not. (Ch 1, 158-159)

Note that, coherently with the scope widening of Protagoras' sentence, no theoretical privilege is given to the word or verb "resist". Though it still practically appears first, and so is first, in the current webbing, which others shall follow. And that, still under the new materialism, tools and instruments, which must be broadly understood in Actor-Network Theory views on them, are given equal status as to defining that which being real stands for. And that, again in the footsteps of Actor-Network Theory, names are not included in the written listing, only verbs and adjectives. Definitions are thus, as expressed before, performative and enacted. Something the choice of words and verbs to the effect further stresses. All of them are purposefully related to more or less prosaic actions, again mostly tactile, with the possible but not straightforward exception of "to obscure". Such words may be given other metaphoric senses true, but it remains that their most consensual use is material and tactile. Thus, any ontology of how it is or not for something to be real is, by their choice, meant to start on such grounds.

That "to obscure" is used as keen to "resist" in a connection with more or less real, becomes particularly relevant. Traditional metaphors of knowing or of defining appeal to its opposite, to enlighten, to give clarity. Certainties being given, as in the Cartesian case, a character of evident clarity, or of dismissing of veils. From such an obscurity we get that, despite the apparent contradictory nature of the expression, to define properly, and materially wise in the sense intended, amounts to fostering more and more strata of undefinition, of deforming. Making it harder and harder to see clearly, or to know clearly say, if ontology in practice runs through. To give light by enlightening, so to speak, would stand as a move to idealistic depictions, we can conclude, which even if satisfying is not faithful to what there is. But instead limited to but verbs and words and lacking tools' and instruments' roles. Whatever light there may be apparently seen, it is but a gradient of obscurity.

Note as well the repetition of the word "real". First, questioning its use as distinctively opposite to "unreal". Second, questioning its use as distinctively opposite to

"possible". Or, if we follow another translation-betrayal, as distinctively opposite to what is not actual but could be. On the second use, we quote from the fifth subdivision of the first chapter. It neatly connects with the themes now dealt with and enlightens us on the general stance towards possibilities and realities here introduced:

1.5.1.1 Talk of possibilities is the illusion of actors that move while forgetting the cost of transport.

• Producing possibilities is as costly, local, and down to earth as making special steels or lasers. Possibilities are bought and sold like everything else. They are not different by nature. They are not, for example, "unreal." There is no such thing as a free possibility. The files of consultants are expensive-ask those who went bankrupt because they produced too many possibilities but did not sell enough. (Ch 1, 174)

Possibilities then, in anything, are seen as factors, in practice, of the same resisting set of materially toned words. Which, no other way existing, are more than any others capable of making sense to what being more or less real means. And possibilities are as materially seen as instruments, technologies, matters or commodities. No more and no less under the new materialism proposed. Further, they are never, it seems, displaceable into spaceless and timeless abstractions. The underlying proposal asks for an unflinchingly practical approach to Ontology and, therefore, to Philosophy. While criticizing the costs one actually pays, without acknowledging that one is indeed paying them, when turning it into a theoretical endeavour, of a second order some would say, a theoretical endeavour whose costs are free only in appearance.

In the first subdivision of the first chapter, we are dealing with, the theme of "possibilities", albeit introduced, will not be explicitly mentioned again. But we see, nearing its end, an aphorism travelling in similar roads. Those of contingency. That also links to what was said on contradictions, aka impossibilities. Or on tautologies, aka necessities. It reads as:

1.1.15 "Everything is necessary" and "everything is contingent" mean the same thing-that is nothing. The words "necessary" or "contingent" gain meaning only when they are used in the heat of the moment to describe gradients of resistance – that is, reality.

• The length of Cleopatra's nose is neither significant nor insignificant. Circumstances determine, for a time, the relative importance of whatever it is that makes them up. Chance and necessity cannot be allocated their roles in advance. (Ch 1, 161)

If contradictions are thus dismissed, necessities or what is necessarily so follow, logically and ironically, the same track. Leaving us with a materially oriented dismissal of tautologies at least if by themselves. Without contradictions and necessities there remains no once and for all or strictly formal way of defining what is the possible or what is the contingently so. Likewise, no road seems viable enough to allow for any apriority. We are left only with material, never formal, posteriori definitions. "Necessary" is a factor of greater and greater to full present resistance. "Impossible" a factor of smaller and smaller to no present resistance. Extending the materially possible is then but a matter of testing resistance of new associations, while strengthening them at each defeat. For philosophy this means toiling. Not formal reasoning, not deduction. Experience, testing, and trial, are ever in demand.

Sentences as the above *1.1.15* keep drinking on the Principle of Irreduction. They may be true or false, ironically enough they may possibly be true or possibly be false, only "by others". And amount to nothing if those others are not met with. Though they may gain, still by others, in the heat of the moment or heat of the battle, a somehow rhetorical meaning which still reports to the translation-betraying of reality as a factor of resistance and/or associated words and feels. Which always demands trialling, testing, shaping, modifying. Acting with and acting through. As everything is in itself by others, tested by others. Nothing contains others, causes to effects, premises to conclusions. Everything is by others allied with others. According to the thesis, there is no other way and there is no place outside.

Even so, after equating resisting with all those alternate words where obscurity steps strangely in, and translating-betraying them all with how what is said to be real becomes so, making it possible to say that whatever obscures trials is real for example, one word still appears to lack. Such a word is "knowing". Which could still be used if on the prosaic acceptation of, plainly put, Mary knew John. Considering that such use is not the standard in epistemology, why knowing is not there in any special or specific role becomes the underground river for the two concluding aphorisms in the association of to be real with to resist that *1.1.5*. aims to achieve:

> *1.1.5.3 No force can, as it is often put, "know reality," other than through the difference it creates in resisting others.*

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• In the old days it would have been said that force and knowledge are coextensive, or, as in the fable, that "the strongest reason always yields to reasons of the strongest."

1.1.5.4 Nothing is known – only realized. (Ch 1, 159)

Epistemology, by the above, gains no overarching status in terms of method and of demarcation. It is as much and as less as anything falling under resisting or not resisting, with or without strength-reality. As much as anything falling under allying or not allying. Latour's exorcism of reduction, coming in the first *interlude* might help us, at this point, to better deal with the Principle of Irreduction. It reads as, underlining is ours:

"Nothing can be reduced to anything else, nothing can be deduced from anything else, everything may be allied to everything else." This was like an exorcism that defeated _demons_ one by one. (Ch 1, 163)

While in Descartes we had a malignant genie to be defeated here the need is, in somewhat similar terms, to defeat not one but many thus said demons, where the differentiated treatment of knowing or the exclusive emphasis on knowing is but one of many, hardly special. Everything may be allied to anything else, as underlined, while denying that something may be reduced or deduced with absenting of "by others", means that the favoured relation as to discriminating ontology in practice is a relation of associations, a term that we had already encountered in the *Introduction*. Or, of their lack thereof. An associatively material relation of alliances and breakages where some things, for lack of a better expression, are followed by and follow other, for lack of a better expression, things, through a rhetoric of things according to Actor-Network Theory's guidelines on what the expression stands for.

Thus, not the relation of logical consequence where a thing, to push it a lot further than what established definitions allow, or sentence or proposition, follows another in the sense of being deducible or derived from it. Thus, undermining the privileged ways and tools in which thought is said to be justified, coherence granted, consistency met, rationality defined. Valuing associations instead of logical consequences. Privilege is therefore turned to alliance, to negotiation. To what flows or not materially together, sticks or not materially together. Diminishing, by this process, whatever sense may arise from speaking of contradictions. Accounting that a contradiction supposedly is that which would never logically follow from a given thing, unless that given thing is already a

contradiction. Or, in the case of our principle, a self-contradiction tainted with non-governance. But from which, then again, everything can logically follow as everything follows logically from a contradiction.

Thus, by denying that anything follows another thing in the logical, formal, sense, contradictions as the one where everything is both reducible and irreducible to anything and both not reducible and not irreducible to anything else lose their unsurmountable status. While leaving room for anything to follow along depending on factors which are not, to use the expression, logical or theoretical or abstract, but realizable or realized by how they resist or do not resist. If anything described as logical or theoretical surmounts, it is deemed, same wise, in the how and why of its resisting as such. As much material in the sense being pushed forth as anything else who resists or not. This is gladly expressed in the two aphorisms immediately following the Principle of Irreduction. Where we see what must govern given that the principle itself doesn't. They read as:

1.1.2 There are only trials of strength, of weakness. Or more simply, there are only trials. This is my point of departure: a verb, "to try."

1.1.3 It is because nothing is, by itself, reducible or irreducible to anything else that there are only trials (of strength, of weakness). What is neither reducible nor irreducible has to be tested, counted, and measured. There is no other way. (Ch 1, 158)

The verb used as a departure point has again the intentional characteristic of swimming through both the trialling aspect and the attempting aspect of its use. The latter also reflecting on what the work at hand in *Irreductions* aims to be. One more attempt, to be tested, where certainties, or necessities, or principles, are to solve nothing, constitutionally, once and for all. Trialling, to try, the overall departure point, seems to translate-betray in three actions. Where two of them, from all already said, appear to backbone a reducing, and not an irreducing, project to be: to count and to measure. One more hint to the unavoidability of reduction and irreduction working positively or negatively together, self-contradictory wise. Still, privileged measurers or privileged counting apparatus', in theory, are soon dismissed, in practice, by the aphorism to follow. Which is, as we already said, a scope widening of Protagoras' often repeated maxim: *1.1.4 Everything may be made to be the measure of everything else* (Ch 1, 158).

Note that "by itself" has vanished in the current enunciation and that, everywhere this happens in the text, the expression "by others", though not said, is implicitly called upon. And note as well, still, that a need to count is practically needed when there appears to be, or there always is according to the text and according to the crowdy nature of what is practically faced while dealing with Ontology, more than one factor, or principle, or matter, at stake. Which is a staple of the new materialism proposed. With the added difficulty that among such many needing measuring and counting we find ever-growing heterogeneity bordering incommensurability at departure and at arrival. Which thus must be made commensurable in one way or the other via measurings and metrologies translating-betraying what they are the measure of. Such is, as stated, the only way, forcing reductions to be put to work.

This is further reinforced by another aphorism in the first subdivision of the first chapter, where no measurer, or counter, or trialling force or weakness, is left out, regardless of its current standing:

> *1.1.8 No actant is so weak that it cannot enlist another. Then the two join together and become one for a third actant, which they can therefore move more easily. An eddy is formed, and it grows by becoming many others.*
>
> *• Is an actant essence or relation? We cannot tell without a trial. To stop themselves being swept away, essences may relate themselves to many allies, and relations to many essences.* (Ch 1, 159)

The use of the term actant in *1.1.8*, instead of actor for example, makes sense if related to Actor-Network Theory's view on actions, actors and actants overall. But, as much as the traditional prior distinction keen to ontological philosophical discourse regarding essences and/or relations is dismissed as unworthy of use prior to trialling's which define it and define the how of its use, the same occurs here at how and why we arrive at the term "actant":

> *1.1.7 What is a force? Who is it? What is it capable of? Is it a subject, text, object, energy, or thing? How many forces are there? Who is strong and who is weak? Is this a battle? Is this a game? Is this a market? All these questions are defined and deformed only in further trials. • In place of "force" we may talk of "weaknesses", "entelechies", "monads", or more simply "actants."* (Ch 1, 159)

The use of actancy loses likewise any theoretical privilege, chosen but for the practical aspect of pushing simplicity in. And the philosophical intent of the work grounds further with alternate designations, a trend Actor-Network Theory also took from the onset. Here coming from Spinoza and Leibniz alluded with no great justifications of why it is so. Coming from Actor-Network Theory is as well the explicit use of what and who as pertaining to these forces which for simplicity's sake are also designated as actants. While the questions on them are not said to be answerable, but to be defined and deformed in a conjunction of the terms via, once more, trials. So, in the end we will not arrive at a faithful demarcation, corresponding to some sort of pre-existing ontology, where an "x" is either *a subject, text, object, energy, or thing*.

We will get, at most, to realize how such actants were defined and deformed, in a tandem, as such. Or, alternatively, reduced to such, resisting as such, realized as such, at given times and given places. The three options to how this comes to be, battle, game, market, work, similarly conjoined as defining and deforming do. Making of everything, and of Ontology as it is in practice, an agonic violent, forceful, struggle with. A play with rules where winners and losers also make entrance. An exchange where some turn richer, others poorer. Understandable all three mainly by their outcomes after the fact. There could be other starting options but they are not the first ones present in the enunciation. No thing is there, then, who is not definable and deformed as, at the same time, battling, gaming, market exchanging. These three and, consequently, neither one of them if singled out. Which applies to knowing, to Ontology, to Philosophy, to subject-object, text-thing, energy-matter, what-who, strength-weakness.

As previously quoted from Latour's exorcism, remember that everything may be allied to anything else. But only if by others. Never by itself, always acting upon others or being acted on by others, under the influence of others. What must now be duly noted, as to keep interpreting the Principle of Irreduction and the denial it states of "by itself" is that what is written is "by others". Not "by another". Or "by one other". There is a plural at stake, quantitatively and qualitatively. Such a plural does not comply to a unity, quantitatively and qualitatively. There is nothing homogeneous under the sun. And there are more things, Horatio.

These others by which things happen or do not happen, are real or are not real, are seen as multitudes, crowds. From the onset a virtually infinite number of infinite others,

most of them too wide or too small or to backgrounded to be noticed. Unless irreducing works its toil through the unavoidable reductions, via the counting and measuring trials and attempts such heterogeneous many practically demand. Missing multitudes which forcefully became left out in the act of reducing. Of fitting, of being made to follow. We had the freeing of the masses as a goal of political theory. Now we get the masses freed in Ontology, one could ironically say. Roaming masses with no class structure per se, certainly with no class ideology per se. They are just more than one or two. Too many to count. Too diverse among each to be summed up under one if not by strength.

Thus, they are not allied "by another" or "by other". This would imply that one speaks of another of the same kind, genre, or material. Or simply of others of the same nature, if predetermined natures would exist. What is meant is that these others which make things resist, persist, and compose them, are others between one another. Heterogeneous forces associating. Strengthening or loosening the ties that bind them. The others are many, too many to count, virtually infinite. And they are always heterogeneous. Too heterogeneous to be summed up or made to fit hierarchically under any one principle.

Reduction and irreduction act then, for the purpose of Latour's thesis, as an easy abbreviation handle, for simplicity's sake, translating-betraying a common thread in such processes by which effects ensue via associations and translations-betrayals. Being concepts of sorts, they mostly work as non-negotiable operations one's hands can never wash away, needing to be brought to light as such. Together with the missing masses they expose or hide, define and deform. If there is such a thing as finitude it consists in the unavoidability of reducing coupled with the need to perform irreductions. Of promoting multiple kinds of alliances, by force, if any sort of effective (together sticking) knowledge, bearing in mind the resisting aspect as paramount, is to be realized:

> *1.1.3 It is because nothing is, by itself, reducible or irreducible to anything else that there are only trials (of strength, of weakness). What is neither reducible nor irreducible has to be tested, counted, and measured. There is no other way.* (Ch 1, 158)

Any given epistemological jump or discontinuity pays its price to reduction in this sense. While irreduction will show that no such jump or discontinuity was there in the first place. But again, reduction and irreduction are both to be overcome "in practice". Or, translated-betrayed, to be correct, by achieved alliances or their breaking. A role the Principle of Relativity will apply through, in the process of making something stick

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together by constructing equivalences or translations, defining and deforming others by others. Still on the first subdivision of the first chapter we read:

> *1.1.9 An actant can gain strength only by associating with others. Thus, it speaks in their names. Why don't the others speak for themselves? Because they are mute; because they have been silenced; because they became inaudible by talking at the same time. Thus, someone interprets them and speaks in their place. But who? Who speaks? Them or it? Traditore-traduttore. One equals several. It cannot be determined. If the fidelity of the actant is questioned, it can demonstrate that it just repeats what the others wanted it to say. It offers an exegesis on the state of forces, which cannot be contested even provisionally without another alliance.* (Ch 1, 160)

Both reduction and irreduction are then ultimately privileged forms of translation-betrayal brothering with associations. Both occur by successive translations-betrayals by others which associate or disassociate, bind or loose, by force and by materials. Translation-betrayal by others is the key relation or operation at stake in the course of alliances and associations. The key that fuses reductions with irreductions under the same umbrella of force and strength as to make them remain uncontested. Thus, it unifies reduction and irreduction in a single operation, action, under associations and alliances, giving us one more reason to abolish the founding contradiction, which does not govern. And neither of reduction and irreduction is it to possible to determine a formal criterion for their success or fail which might expunge the need to materially follow them. Controversies, when and where they are made into a resisting force, are always resolved or not by "practice", via accumulation of strength or development of weaknesses. Keeping in mind that any gain of strength is a gain in reality, a gain in strength-reality. We move much further ahead to the last subdivision of the first chapter to illustrate the form those associations which reduce are said to take:

> *1.5.4 Though they can neither count nor sum the others, fewer and fewer forces with nothing of their own attribute the potency of all other powers to themselves. This is the reductio ad absurdum of the whole to nothing. Princes who are almost nothing act as if the rest, that is, everything, were no longer anything.* (Ch 1, 175)

The quote begins to introduce Latour's take on "potency". Basically, a lie that makes the forces of many as if they were contained in one, potentially, through reducing and the plus of added reasons. As opposed to force, which would set those many free and

exposed in their roles and their strength. According to the thesis expressed, "potency" will be translated as but a way to theoretically hide the forces that do the work, bypassing them, after the many have been enlisted into one or very few. Potency would hide the work of strength-realizing of those multitudes of heterogeneous forces, reducing what happens "in practice" in Ontology to what never actually happens but only possibly, or potentially, "in theory". However, what the quote also really does is to show us why reduction is unavoidable. Exactly because "by others" means multitudes too many to be counted and too heterogeneous to be summed up.

What can never be ultimately counted or summed up has to be "in practice" reduced, translated-betrayed to a greater or lesser extent to what can be counted or summed up. As much as it has to be and can always be, for the same reason, irreduced back and forth. For the same reason any reduction expressed as truth is false of what and how things really are and of how and why they become. Thus, the Principle of Irreducibility does not govern, but is. By turning to the others who cannot be counted or summed up, reduced or irreduced fully, one finds not reductions or even irreductions but a trail of associations and enlisting's. One finds associations and alliances, stronger and/or weaker, under those operations and actions which constantly ensue and constantly occur to things, by others. Reduction and irreduction thus stand, or in the end are translated as, for the deployment or non-deployment of alliances, of all kinds, and the breaking (ceasing by all means) of those alliances, by others. As this quote from the third subdivision of the first chapter, which ask us to trail back to *1.1.9,* shows:

> *1.3.2 Given that actants are incommensurable and that each makes a world as large and complete as any other, how does it happen that one becomes more than another? By claiming to be several, by associating (1.1.9).* (Ch 1, 168)

Other approaches to two relevant terms, pertaining to the how of making weaknesses or forces into potency, via reduction by others, are introduced in this first subdivision of the first chapter, to be followed and expanded further along. The first is asymmetry, which plays a vital role in Actor-Network Theory's use of generalized symmetry, flattening out of Ontology, and here on *Irreductions* as well:

> *1.1.10 Act as you wish, so long as this cannot be easily undone. As a result of the actants' work, certain things do not return to their original state. A shape is set, like a*

crease. It can be called a trap, a ratchet, an irreversibility, a Maxwell's demon, a reification. The exact word does not matter so long as it designates an asymmetry. Then you cannot act as you wish. There are winners and losers, there are directions, and some are made stronger than others. (Ch 1, 160)

Again, the word asymmetry is not privileged per se, as others weren't, but does indicate a necessary condition for the materialization of strengths realized. That of setting shapes, not forms and not models, whose difficulty in being reversed becomes more and more plain. Needing more and more resources, more and more others, more and more matters, to be achieved. Shapes are again, metaphorically or literately, on the practical and concrete side of any distinction between theory and practice. They must be understood on the lines of all those words who appealed to tact, touch, senses, as creases are so, by folding, by pressing, by crushing, by application of forces. Asymmetries when stabilized by force, kept as such by force and by performing them, create battle wins and battle losses and, strikingly, directions as well. Meaning they constrain, for all practical purposes in an Ontology in practice, which roads can or cannot be taken, games to be played, how hardly or how easily, how swiftly or how slowly, until reversibility is not an option due to excessive costs and exchanges become fixed. As in a ratchet or situation whose changes, of increases or decreases, rises or falls, are seen or perceived as if led by sets of irreversible steps.

The mention of an original state is somehow contradictory, if by original state one would mean an essential prior state. But the allusion to asymmetries as Maxwell's demons makes us understand that entropy, loosely defined, an absence of order, is the putative original state being put forth. That such asymmetries are made stronger means that more and more others are binding them, using more and more materials, more and more forces and force, as heterogeneous as can be mustered together. Irreducing is to dissect such a posteriori asymmetry and show it for the forces which are maintaining them strong and realized. Not for the current status of already being, for all practical purposes, as such, therefore recovering the in action or in practice focus of Actor-Network Theory. The aphorism gives us, likewise, a pragmatic intake, where no reason subsides, on how to promote success or failure of a given association, coherently with the Machiavellian allusions in the Principle of Irreduction's commentary.

If the Prince wants to govern, he ought to act in a way that is not easily undone. And when Princes, a metaphor which includes principles, noting one more double entendre with words, actually govern, it is because they achieved it, via the work of, following the metaphor, their ruled and subjects, reduced and silenced as such. Making us analyse any given asymmetry thus defined, in any domain whatsoever, practically, by the criteria of how difficultly the weave that binds it can be dismantled as it is. Thus, to how costly is such a possibility of dismantling, tracing back to the materially grounded view of what to be possible means alongside the conjunction between gradients of resistance and gradients of reality or of reification. Thus:

> *1.1.11 Everything is still at stake. However, since many players are trying to make the game irreversible and doing everything they can to ensure that everything is not equally possible, the game is over. • Homage to the Masters of Go (Kawabata: 1972).*

> *1.1.12 To create an asymmetry, an actant need only lean on a force slightly more durable than itself. Even if this difference is tiny, it is enough to create a gradient of resistance that makes them both more real for another actant (1.1.5).* (Ch 1, 160)

Once more note the material tone the use of leaning engages, and note that leaning into durability, what is less easily undone and less easily reversed, is a strategy for postponing entropy or the dissolution in a new binding, by and through tiny differences, which is very much relevant. The trail seeking of asymmetries demands a microscopical ant like following, as in Actor-Network Theory, for what makes a crease more durable, the tiniest possible pushing, pressing, folding. The second term is order and ordering, bringing along the problematization of disorder, associated with entropy and similarly with things by themselves, moving from the introduction of leaning on what is more durable, stronger, more realized, recruiting it, to how orders and where from did orders become. While at the same time dissolving a strict demarcation between what is ordered and what is disordered, by itself, mimicking the Principle of Irreduction approach to both reduction and irreduction. The following three aphorisms deal with it. We quote in full:

> *1.1.13 We cannot say that an actant follows rules, laws, or structures, but neither can we say that it acts without these. By learning from what the other actants do, it gradually elaborates rules, laws, and structures. Then it seeks to make the others play by*

these rules which it claims to have learned, observed, or received. If it wins, then it verifies them and has thereby applied them.

• Is any given order a convention, a social construction, a law of nature, or a structure of the human mind? We cannot say. But in love as in war all is fair in the attempt to attach the rules to something more durable than the moment that inspired them.

1.1.14 Nothing is by itself ordered or disordered, unique or multiple, homogeneous or heterogeneous, fluid or inert, human or inhuman, useful or useless. Never by itself, but always by others.

• Spinoza said it long ago: so far as shapes are concerned, let us not be anthropomorphic. Each weakness distributes a complete range of roles. Depending on what it expects from the others, it distinguishes the stable and the ordered from the shapeless and the moving. But since the others all distribute roles as well, a beautiful tangle ensues. Still, it is comprehensible why entelechies may mistake those they broke down, dismembered, or seduced for shapeless matter.

1.1.14.1 Order is extracted not from disorder but from orders.

• We always make the same mistake. We distinguish between the barbarous and the civilized, the constructed and the dissolved, the ordered and the disordered. We are always lamenting decadence and the dissolution of morals. Bad luck! Attila speaks Greek and Latin; punks dress with the same care as Coco Chanel; plague bacteria have strategies as subtle as those of IBM; the Azande falsify their beliefs with the gusto of a Popper. No matter how far we go, there are always forms; within each fish there are ponds full of fish. Some believe themselves to be the molds while others are the raw material, but this is a form of elitism. In order to enroll a force we must conspire with it. It can never be punched out like sheet metal or poured as in a cast. (Ch 1, 160-161)

Not surprisingly, verification, or justification is made out as resulting from greater force via winning the play of constricting the actions, and beliefs, of others, or of all relevant heterogeneous sorts of others, in a given time and a given place, provisionally. Applying rules, laws, or structures, likewise merges with their winning or not winning concretely, concomitantly with the fact. Note the negative connotation of learning, observing, or receiving rules, translating that if rules, laws, structures, are spoken for as such, it simply means someone or something is winning the play of stabilizing an Ontology in practice. Thus, how, when, where, what/who for, against what/who, with

who/what. Actants are said to learn from what actants do, by translating-betraying them. Not from their spoken-for rules, laws, or structures.

On the same already found apparently contradictory grounds, actants neither follow explicitly understood and pre-existing principles, or rules, neither act without gradually constructing them on the go. Always on the go as they keep translating-betraying each other seeking temporary hegemony. Given translation-betrayal, no explicit understanding is, anyhow, constitutionally possible, except by achieving hegemony and unequal exchange where some turn active, others passive, mediators constricted or constructed as intermediators. Note the upgrade from rules into laws, whose irreversibility seems greater and consequences of their breaking more forcefully pushed forth with greater costs, an upgrade resulting from mere accumulation, gradually strengthened, of rules and of the forces to make them compulsory. And note the third term, structures, patterns, organizations, plans, underlying schemes, forms, abstractions, dealt as much materially and on the go gradually elaborating as rules and laws.

Consequences of such affecting discourses on scientific method, logical or linguistic structures or forms, social structures or forms, staples of philosophical inquiry. Rules, laws and structures, revert into configurations of order or orders, prior to the unanswerable question, according to the text, of which demarcation they fall into. Or, to paraphrase what is written, to which underlying structure they would belong to, were structures followable as such, reducible as such in terms of Ontology in practice. Orders are but orders and orderings, one could say, which become so by nothing but their winning through others and by others. Their conventional, social, natural, mind like portrayal, but a factor of an additional elaboration forced into the win.

Next, in spite of a putative original state having been previously identified as entropy via the allusion to Maxwell's demons, the by others iteration tells us again that entropy by itself is as unattainable or as untenable as order, rules, laws, structures, are, the dichotomy once more failing short if taken as is. But, if order is as disorder at this regard, ordering gradually seems to gain predominance as unavoidable when actants engage in translating each other. Pushing strengths against each other towards a hegemonic pull. Be it on domains or terms strictly associated with Ontology as the questioning of one versus the multiple, as in the heterogeneity versus homogeneity questions or seeking's, as in what is or isn't of man, as in instrumental efficacy or utility

for achieving any sort of governance. Spinoza is alluded at first light to reinforce the flee from anthropomorphisms as to actants and forces. But the intended goal reflects on the view of any morphism as an order achieved by others who are winning, a shaping stabilized into successful dissemination via forces. Never just something potentially there, in Latour's take on potency.

The metaphor of the jungle we found in the Introduction makes a comeback by the use of the expression *a beautiful tangle ensues*. It ensues from the material distribution of roles and expectations, distinctions and counterdistinctions that agonic forces keep translating-betraying into each other when ontology as it is in practice is favoured. Its breaking's, dismembering's, or seducing's. The latter a vital term as to the tenets of the new materialism proposed, where matter is neither passive, nor mechanic, but has to be conspired, won, enrolled as a who as much as a what. As everything, besides, is under this new materialism as material as anything else whatsoever. As ordering and likewise reduction seems unavoidable when actants engage in translating-betraying each other's pursuing greater strength-reality, it turns out that, putative original state or not, where others make their toil no disorder or entropy can be accessed per se due to the overarching elaborating on the go of rules, laws, structures. Orders in order to win.

Thus, orders are everywhere in spite of the forces, such as the work we study, aiming to irreduce them as to free the jungle to speak for itself by describing the reductions it operates on others. As we then see, order is, as the text goes, *extracted not from disorder but from orders*. Extracted, again a term that implies a material activity with a given duration and effort, as distilled would for example. Instead of the more traditional terms such as abstracted, discovered, found, observed. Which would imply passivity or a predominantly theoretical, distancing take. The push for an Ontology in practice is a pull for entering the complexity of orderings more faithful to what actually is as it is, not a pushing out of orders or orderings per se in favour of the glorification of some underlying disorder. It is a push for a deeper description of constructions than the ones attainable by putting all hopes in reduction.

More so as, given that forces are weaknesses, domination has to be negotiated by conspiring with what is to be ruled or it will soon faulter. Meaning that only the bringing forth of the silenced weaknesses and the silenced forces, whose part is not looked at, will describe and more faithfully explain how an ontology comes to be, asymmetries are

stabilized, orderings developing into an order. The conflation of what is termed as epistemology and what is termed as politics is made evident by such, as the strength-reality of any given dominant order is and ought to be, according to the text, symmetrically treated as to how it is achieved and kept. A lack of ordering is never to be found, when others are making their toil by others, as long as metaphysical elitism is kept at bay.

2.3. The Principle of Relativity

The second subdivision of the first chapter begins then with the Principle of Relativity, whose text reads as, quoting again:

> *1.2.1 Nothing is, by itself, the same as or different from anything else. That is, there are no equivalents, only translations.*
>
> *In other words, everything happens only once, and at one place.*
>
> *If there are identities between actants, this is because they have been constructed at great expense. If there are equivalences, this is because they have been built out of bits and pieces with much toil and sweat, and because they are maintained by force. If there are exchanges, these are always unequal and cost a fortune both to establish and to maintain.*
>
> *I call this the "principle of relativity." Just as it is not possible for one observer to communicate with another more quickly than the speed of light, the best that can be done between actants is to translate the one into the other. There is nothing between incommensurable and irreducible forces: no ether, no instantaneousness. It is true that this principle of relativity aims to re-establish the inequivalence of actants, whereas the other principle was designed to restore the equivalence of all observers. In both, however, we have to get used to breathing in the absence of the ether. The stuff of which I speak is rare, dispersed, and mostly empty. Gatherings, saturations, and plenitudes are uncommon and dispersed, like large towns on the map of a country.* (Ch 1, 162)

Incommensurability, where others are not or where the others are taken out of the picture, makes that neither sameness nor difference actually apply. That everything is, by others, both the same as everything else and different from everything else. Turning the search for what is equivalent, nearing the same, or inequivalent, different, theoretically vain, unless the how's of translation-betrayal are, instead, practically followed throughout. Regardless, inequivalence, inability or impossibility of equivalence

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bordering identity, as granted by incommensurability and inability to compare or say on any grounds if others are not actively translating and actively trailing, is presented as the matter of fact of things as they are by themselves. Turning what appears to be equivalent as the problem to be dealt with as the result of translations which become stronger, thus realer. The work of making equivalent, of making identities or identifications, is there to hide what for Latour is the basis of any Ontology in practice to be. Times do not repeat. What is, is so only once. As much as spaces are always local and not transportable in other places.

Thus, the stepping stone of an Ontology as proposed is that nothing is who is repeatable both in space and in time. Everything is simultaneously only once and only at one place. Inequivalence therefore reigns, and identities between actants turn out as never faithful to what there is. If the Principle of Irreduction was said not to govern, the Principle of Relativity, of the inequivalence of all actants as said, makes of all equivalences, all identities, all exchanges, issues of governance or of ruling. Gradual elaboration of rules, laws, structures, through metrologies whose beginning is the construction of measuring of times and measuring of spaces, governing the oblivion that everything happens once at one single place. Times and spaces themselves which, if not abstracted and thus governed along do, explaining why this second subdivision deals with them at length, happen as well only once. Unable to frame one another or to frame each other. Thereby putting on the trial stand, as usual, Kantian Philosophy, with little concern to actually mention what is under attack:

> *1.2.6 Space and time do not frame entelechies. They only become frameworks of description for those actants that have submitted, locally and provisionally, to the hegemony of another.*
> *• There is therefore a time of times and a space of spaces, and so on until everything has been negotiated. Homage to Peguy's Clio (1914).* (Ch 1, 165)

Note the allusion to Peguy, who wrote, to Latour's agreement so far both in Ethics as in all other domains: «*Kantian ethics has clean hands but, in a manner of speaking, actually no hands.*»[297] And note that negotiation comes as if another way, of the closely resembling kind we found in the *Introduction*, of saying or translating translation itself.

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[297] Péguy (1992) [1910]: 331-332.

That part of translation which stresses that forces are, even when seemingly tamed for all practical purposes, enrolled, conspired with, persuaded or convinced, though by force, which is also weakness as shown before. Negotiation, then, trail like given the *absence of ether* and with no discontinuity from force to force, from thing to thing, actant to actant, network wise, governs too the construction of equivalences, of making equivalent. The construction of identities, of making the different into the same. The construction of exchanges, who cost fortunes, as said. Precisely because hands that toil are never clean and no harmony pre-exists in the agonic jungle which does not come from compromise of any sort.

The *absence of ether* dully reminds us once more of Actor-Network Theory and of the lack of faithfulness and lack of instrumental utility for an Ontology in practice of epistemological jumps which fly away from describing the clamps binding one thing to the others it keeps negotiating with. Thus, after the enunciation of the Principle of Relativity, the following aphorism enunciates a second principle, unnamed, whose saying in other words will stress negotiation, as the first stressed that *everything happens only once and at one place*. Where we find that in spite of any strength-reality of any equivalence constructed, any identity constructed, any exchange stabilized and maintained, incommensurability always remains acting and is not opposed to, in any given time and in any given place, to any commensurability obtained so far. Downing one more dichotomy as false for being over clean, a trend coherently pursued:

> *1.2.2 Entelechies agree about nothing and can agree on everything, for nothing is, in and of itself, either commensurable or incommensurable. Whatever the agreement, there is always something upon which disagreement may feed. Whatever the distance, there is always something upon which an understanding may be built. To put it another way, everything is negotiable.*
>
> *• "Negotiation" is not a bad word so long as it is understood that everything is negotiable, not just the shape of the table or the names of the delegates. Decisions also have to be made on what the negotiation is all about, when it can be said to have started or finished, what language will be spoken, and how whether we have been understood or not will be determined. Was it a battle, a ceremony, a discussion, or a game? This is also a matter of dispute, a dispute that continues until all the entelechies are defined and have themselves defined the others.* (Ch 1, 163)

Besides the Actor-Network Theory view of not giving solely to humans the use of such words or actions as negotiation, fully widening its scope as is to be expected, we have that negotiation is conjoined with possibility, with what can eventually occur. And possibility of agreement thereof, after some sort of commensurability is previously sustained or, in other words, a network is made to grow and is kept growing. Negotiation, as presented, is aimed at reaching an agreement and, as the word shows, the multiple forces, or *entelechies* as expressed, for the stressing of actuality versus potentiality, reality versus possibility, must find, each, such agreement acceptable. Remember, though, that negotiation comes after the use of translation-betrayal. It comes after all the metaphors putting forth outright hegemony seeking war and battle as the how of forces when dealing with each other. Making of negotiation still an instantiation of force. By other means or by other materials whose costs are lesser and whose fruits are provisionally worthier. Thus, not an instantiation of reason or of moving to higher grounds.

The use of entelechies right from the start in the present tense as disagreeing on everything seems to display that for Latour disagreement is what is more real, what is, what must be brought out by irreduction. Where agreement is a possibility which, when becoming real, still disagrees by shaping in asymmetries, reductions, unequal exchanges. The confusion at hand is further stressed by the replacement, for the first time, of "by itself" for the *in and of itself* we find in the enunciation of the principle in the aphorism. What happens is that Latour is moving from an emphasis in the actant or actor aspect to the network aspect of the actor-network conjunction. Making of translation one factor of circulation, exchange, soiled hands, a market where things step in and things step out. This gives us, still, one more contradiction as to what entities as actants or actors are. For once totally apart, for once nothing but what circulates through them. Them, who are no more than circulations and associations themselves, albeit endlessly war mongering, endlessly negotiating, endlessly elaborating rules, laws, structures, or networks.

If any of the principles stated more or less explicitly in the work aims at having hope of governance, as was achieved by the introduction of trialling and testing, some sort of solution has to be introduced. Or at least a question which is to remain aware throughout has to be introduced. He tackles the difficulty by poetic or metaphoric use of the term "monad" as one more alternate designation to forces, actants, weaknesses, entelechies. Including Leibniz, merely alluded, in such tackle. The Greek word predates

Leibniz, though, and is meant as what is singular, singularity, and/or what is alone, self-sufficient, untainted, such meaning neatly following in the Pythagoreans the notion of an indivisible origin. As if a fully closed network with nothing out of itself and where everything is in itself. In or out loosing relevance, in and out contradictory expressing what cannot be described in terms of in or out. Such a monad does divide, still, into a dyad, numbers, geometry, introducing us to the long reflections on unity versus multiplicity, the one and the many, and the overall problematizations of being versus beings, the whole and the parts.

Latour does not follow such theoretical routes on their own paths, does not pull through on that particular negotiation. But does use Leibniz as a stepping handle to expressly state that being(s) are *Chimeras*. Putting the apparent contradiction as in fact what always occurs, always is, in practice and in the reality of what resists. As if what is not a Chimera is not. Or is but a thing by itself which is everything and nothing at the same time. A hand with no hands. On the many, he writes immediately after:

> *1.2.3 How many actants are there? This cannot be determined until they have been measured against each other*. And: *We cannot count the number of forces, decide that there is a unique substance, two social classes, three graces, four elements, seven deadly sins, or twelve apostles. We cannot add up a total. In this peculiar arithmetic no one ever subtracts. We add as many subtotals as there are accountants.* (Ch 1, 164)

There is no total and to speak of totality is thus vain. In the *Interlude* mingled in this subdivision he also writes: «to have for companions, like those of my caste, only the Dragon of Nothingness and the Dragon of Totality. Tired and weary, suddenly I felt that everything was still left out.» (Ch 1, 163) Subtraction is another way of saying reduction, of having to count and measure for the purpose. Pulling once more for singularity through and through is the road chosen. The reference to accountants sits neatly with the role public administrations were said to have in Actor-Network Theory, the role of disseminating and stabilizing metrologies and ontologies. Of the many what can be said is that they are always more. Never less. If one wants to be more faithful to what is as it is in practice. Ockham's razor is thus cut out. Cutting the Gordian knot does not simplify the knot. It ceases the knot by setting ropes away into other, more, knots.

Leibniz enters the picture then, on a commentary to the next aphorism. Stressing the disagreement which is and at the same time the agreement that can be, via the back trace to 1.1.14, where anything was said to may be the measure anything else:

> *1.2.3.1 There are neither wholes nor parts. Neither is there harmony, composition, integration, or system (1.1. 14). How something holds together is determined on the field of battle, for no one agrees who should obey and who command, who should be a part and who the whole.*
> *• There is no preestablished harmony, Leibniz notwithstanding, harmony is post established locally through tinkering.* (Ch 1, 164)

The apparent or real contradiction, chimeric character of actants, monads, forces, weaknesses, is put explicitly forth further ahead with one more eye blink allusion to Leibniz:

> *1.2.7 Each entelechy defines: what lies inside it and what outside, which other actors it will believe when it decides what belongs to it and what does not, and which kinds of trials it will use to decide whether or not to believe these referees.*
> *• Leibniz was right to say that monads have neither doors nor windows, for they never come out of themselves. However, they are sieves, for they endlessly negotiate about their frontiers, about who the negotiators will be, and about what they ought to do. As a result they end up like chimeras, unable to determine which is the door and which the window, which is stage left and which stage right.* (Ch 1, 165)

What is actual, imbued with greater gradients of reality, is both already defined and already defines. Shapes and is shaped, asymmetrically, in the coarsely material concreteness of the way the word "define" is taken forth in the text, with no theoretical grasp striding it. A finishing who is a working process. Literally worked out. There is no such thing as purity, in other words. As far as governance and as far as principles which aim at governance, such is the state of affairs. Thus, irreducing, as a sort of theoretical project now, wishes to unbend, unshapen, without resorting to original blank or supposedly clean slates. Another seemingly contradictory difficulty as it can´t help soiling and getting soiled along. The focus, however, as in Actor-Network Theory, is not on the theoretical aspects of what irreducing is, as if it were a universal of sorts, but on what is, quite materially, being done with the appeal to such an operation, which is a translation-betrayal of intermediators into mediators. Again:

1.2.12 Nothing is, by itself, either knowable or unknowable, sayable or unsayable, near or far. Everything is translated. What could be simpler? (Ch 1, 167)

Doesn't seem simple, at all. Unbending, and uncapping, no blank slate or origin or fundament available, cannot help but to bend further, to betray further. Therefore, the guideline of taking care at least to take what is actual away from the prejudices its current shape is putting on as to appear as if done for good. As if purely and cleanly done. Thus, sidestepping, the end aphorism of the subdivision as manifestation of intent:

1.2.13 If everything we have to write about is to be debated and translated, then we need, as Descartes said, a provisional moral. When we speak of trials of strength, we must avoid using any terms that fix the relationship to the advantage of one side or the other. If this is not possible, we should at least try to write a text that does not take time and space but provides it instead. (Ch 1, 167)

A tangle, indeed, an uncertain mess lacking certainties. Or, as the commentary went, a sieve, an object meshed and perforated to separate and to strain what goes forced through, what goes forced by. Another example where the metaphor cast-off is crudely concrete, appealing to toil and sweat. Of how this subdivision approaches time and space we will speak further ahead. But on the contradiction seemingly affecting actants: actants are singular sieves of only once in space and in time, which have to be shaken and are shaken by others. Beings are chimeras.

Note that the verbs written for this clay work activity of defining as shaping are to believe, to decide, to use, to use to decide. No mention of to think or to reason, or to know. Verbs written which are, nevertheless, secondary to the defining as shaping. Addendas to how the mesh shakes and is shaken, poured, forced into other meshes.

Note as well the purposeful use of *referees*, that introduces, via the double entendre and the word play associated with, of using to decide what is to be believed by standards of judging and recognizing, by arbiters or touchstones, the plus issues of reference which are mostly associated with language. And, concomitantly, the plus issues with what is outside of language alone, external to language. Thus, this subdivision begins to tackle language shaping meshes or sieves versus reality shaping meshes or sieves. In the continuation of the aphorism we quoted above:

1.2.7.1 There is no external referent. Referents are always internal to the forces that use them as touchstones. (Ch 1, 166)

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By now, confusing or entangled as it may be, it ought to be less conflictual that no external referent does not equate to compulsory lack of strength-reality. Neither of what is referred nor of what refers. That internal is used to stress that what is outside or inside is as much a matter of negotiation as anything else, as written. Even if the notion of network clashes the dichotomic view, or simplicity thereof, for lack of any access to what is "outside" of a network. Any referent or referee is internal to the network using it, simply put. Outside the network, by itself, unconnected with, it amounts to nothing and to potentially everything. Thus, the network it is internal to can never be put on hold as if it weren´t there. Adamantly so.

Enunciations as the above quote are responsible for immediate dismissal of what we deal with here, if not understood within the full scope of the proposal. Consciously or not, Latour recognizes the tipping point of reader´s attention by bluntly bringing reality again to the follow immediately after:

> *1.2.7.2 The principle of reality is other people.*
>
> *• The interpretation of the real cannot be distinguished from the real itself because the real are gradients of resistance (1.1.5). An actant therefore never stops negotiating the number, the gradient, and the nature of these differences; the number, the authority, and the weight of those who negotiate; the number, the quality, and the reliability of the touchstones that they will use to judge the credibility of the referees.* (Ch 1, 166)

Reality is what resists, as written before. But the principle of reality, taking into account what has been said on principles, rules, laws, structures, is not resisting per se but, as quoted, other people. A curious way of putting it forth as it seems to exclude non-human actants from the ontological stabilization of what is real or not. When all that has been written so forth mingles and flattens out any distinction or asymmetry between humans and non-humans as to actant roles acting. Even as to the elaboration of rules, laws, structures, principles, and concomitant negotiations of. A solution is to extend to all actants, as has been done in fact, in Actor-Network Theory as well, the qualification of also being people: all passive of discrimination as a what and a who, focusing instead on the *other* in "other people". That the principle of reality is never something alone by itself. From what has been said, though, we keep meeting the difficulty stated through the chimeric nature of beings, both monads and sieves. A constitutional difficulty crossing all sections of the work.

Or, Latour is playing with the common-sense injunction that interpretation, another word to designate translation or even construction, another word which is not bad without being simply put as good or correct, is first and almost exclusively a matter of so-called human agents. As much as he is playing with the common-sense injunction that by interpretation the *real itself* is not grasped, as it would subside, remain somewhere non adulterated, by itself, independent of interpretation. Do note that, even if Latour strikes a *real itself* as everything and nothing at the same time, he is not directly denying it here in a theoretical manoeuvre. He is but saying that to distinguish, as to governance, such a putative real itself from its interpretation, just can't be done in an approach to Ontology stressing know-how instead of just knowing. It can't be done, as nothing is who or which is not already accessed solely by others. Regardless if such an attempt is a well-known philosophical staple so far. The ontological pull is that such attempts, never resisting, are never real or never realized. Therefore, strongly supporting that such a *real itself* is never actual. Always a possibility, as previously dealt with, whose costs are never paid or supported. An example of what he will determine as potency, lacking force. And an example of what has been previously determined as the insanity of reducing, full throttle.

However, he is also pushing for a methodological stress out of the unavoidability of interpretation as another word to say translation and to say negotiation, the main instrument to use when assessing any relation between any actants. Thereby forcefully associating with Nietzsche for the philosophical reader. Additionally, he is beginning here to defend the semiotic and rhetoric take on the how-to of the deployment of such relations which greatly characterizes both Actor-Network Theory and the project so forth of setting things irreduced and free, via a new materialism. As we see in the next quote, launching material semiotics, material hermeneutics, material exegesis, and not, as will be clearer in the second chapter of *Irreductions*, primarily Logics:

> *1.2.9 Is it a force of which we speak? Is it a force that speaks? Is it an actor made to speak by another? Is it an interpretation or the object itself? Is it a text or a world? We cannot tell, because this is what we struggle about, the building of a whole word.*
>
> • *What those who use hermeneutics, exegesis, or semiotics say of texts can be said of all weaknesses. For a long time, it has been agreed that the relationship between one text and another is always a matter for interpretation. Why not accept that this is also true between so-called texts and so-called objects, and even between so called objects themselves?* (Ch 1, 166)

A whole world means that that the struggle at stake, for hegemony it could be ironically added, does not aim to partiality. As beings are, or some beings are, those that pull for hegemony as Philosophy does, in spite of sieves, chimeric forces wishing to encompass all others in a whole. Regardless if they achieve it or not. Regardless if they resist as such or not:

> *1.2.8 Every entelechy makes a whole world for itself. It locates itself and all the others; it decides which forces it is composed of; it generates its own time; it designates those who will be its principle of reality. It translates all the other forces on its own behalf, and it seeks to make them accept the version of itself that it would like them to translate.*
> *• Nietzsche called this "evaluation," and Leibniz "expression."* (Ch 1, 166)

The difficulty causing Principle of Reality as other people becomes clearer. It becomes something that entelechies designate by exactly distinguishing which others take the role of people. Or the role of agents with the characteristics traditionally associated with human agents. Not just matters, not just inert, not just objectual. Some of the others are designated as people. They populate in a privileged way the whole of the world being made, being translated, being negotiated. The rest becoming designated as things, backgrounds, contexts, addenda, accidents. A dichotomy the new materialism must bash out if it wants to set things, what's and who's, irreduced and free. A want associated with a Niezschean evaluation aiming to result in a transvaluation as per a Nietzschean force as described in the *Introduction*. To which an allusion to the Leibnizian concept of expression, where everything expresses everything, is introduced with no length of comment whatsoever, apart from the affirmation that an entelechy, already a force, decides which other forces compose it. Meaning, that forces are composed of other forces, and on, with no single indivisible unit preceding and restraining such chimeric composition of everything in any given thing. The monads and sieves difficulty once again making its way in.

Still, making a direct association with Actor-Network Theory's need of a new vocabulary to overcome distinctions between nature, society, culture:

> *1.2.11 We must not believe in advance that we know whether we are talking about subjects or objects, men or gods, animals, atoms, or texts. I have not yet said, for this is precisely what is at stake between forces: who speaks, and of what?*

• We should not hurry to divide "nature" from "culture." Scallops also find that nature is a harsh taskmaster-hostile, nourishing, profligate-because fish, fishermen, and the rocks to which they attach themselves have ends that differ from those of scallops. (Ch 1, 167)

What remains lacking in the analysis of this subdivision is the apparent denial of Kantian views on space and time. It is said that a force *locates itself and all the others* and that *it generates its own time*. Therefore, neither time per se frames it, neither space per se frames it, in spite of it never occurring if not on a given time and in a given space. Once and never twice:

1.2.6 Space and time do not frame entelechies. They only become frameworks of description for those actants that have submitted, locally and provisionally, to the hegemony of another.
• There is therefore a time of times and a space of spaces, and so on until everything has been negotiated. (Ch 1, 165)

We turn them to what is positively put forward, as an alternative, regarding space and time both, look alike of privileged expressions of translation, negotiation, interpretation. Both primordial in the use of the conjoined expression, Actor-Network, as dealt before. Quite curiously, and though not framing per se, space and time seem to be primordial among trials and translations achieved. Or even pre-primordial to any further trials and translations. Taking the role of an arena where all further trials and translations move along trialling spaces and trialling times. Albeit confusing, this is coherent with the recording frame actor-network theory aimed at being. A recording frame able to encompass at large the wide scope of all particular actor-networks eventually at stake for any particular description.

This double nature, of a primordial trial and translation as much as the arena that has to be entered along, or better, connected further to, when clashing with any given force to whom trials and translations apply, is to be remembered. It is not very much clear at this stage in the book which is which and though a recursion to Actor-Network Theory might make it simpler, such would divert from the close reading of the singular Actor-Network *Irreductions* intends to display. This is aptly expressed in the following aphorism:

1.2.10 Nothing escapes the primordial trials. Before negotiation we have no idea what kind of trials there will be-whether they can be thought of as conflict, game, love, history, economy, or life. Neither do we know whether they are primordial or secondary before we enter the arena. Finally, we cannot tell until the end whether they have been negotiated or were received at birth, etched into the skin itself. (Ch 1, 167)

It is evident, though, that space and time, as the rest, come after negotiation. Even if after should not be seen as temporally after in a plain sense as, it seems, what comes after or before is also a matter for negotiation, translation, trialling. The final sentence of the aphorism is, then again, quite problematic, as it points to an eventual absence of negotiation, mitigated by the metaphor, again tactile, of etching into the skin, of branding, of carving. Etching also means, forcefully, to cut and to corrode. To slash into a material giving it a shape which will not regress to a prior clean slate state. It is both a carving, an ordering and a shaping. A cutting, a corroding from which apparently identical prints can be disseminated.

The now quite fitting metaphor is mingled with a receiving at birth, a printing at birth, a cutting at birth, which can also only be understood in the material sense intended. That of connecting to a strong intermediator, in Actor-Network's terminology, of constricting what can become actual by stabilizing an asymmetry. Thus, what can be named as a stabilized negotiation which is not questioned and not controversial. Keen to a black box passed along, whose strength-reality translates into durability and stable shaping, leaving very few things practically at stake, even if everything could possibly be at stake where it not etched. Composing the kind of forces whose cost when wishing to sever them is unsurmountable in all practical terms, as no moment zero is ever actual.

The final sentence is also quite problematic as, for all written so far, there is no viable end, period. No viable end which is not provisional. Leaving us as a matter of fact with an inability to tell anything whatsoever, if taken as is. This being true, it is also true that to "tell" points to a discursive knowing which narrates on something far from what it is narrating, which appeals to distance from what is being told. As much as it appeals, in the actual sentence, to a knowing which aims at diverting the all present, according to Latour, need to turn back to know-how by others. Which appeals to a final decision who is decided for good and for all. This, then, is what is being again denied.

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A solution, that is repeatedly hinted at, is that what cannot be told for good can be done. Can be remitted into a doing where hands are ever soiled. At every moment on a given different time and place. Irreducible to the times and places where it (didn't) occurred. So, the sentence pushes, once more, for the doing aspect of the new materialism and for Actor-Network Theory, subsequently. A doing who is sine qua non translation and betraying thereof, negotiation, interpretation, construction. Durability, or one other translating-betraying of time, is placed, then, as the achieving of irreversibility when a force is allied to stronger and stronger etchers, to pursue the word used.

The following aphorism begins this association of time passing, remaining, becoming hegemonically irreversible, with the effective association and effective binding of forces whose severing becomes harder and harder:

> *1.2.5 Forces that ally themselves in the course of a trial are said to be durable. Each entelechy generates times for others by allying with or betraying them. "Time" arises at the end of this game, a game in which most lose what they have staked.*
>
> *• Is this moment before or is it after? Is it overtaken, prophetic, obsolete, decadent, contemporary, provisional, or eternal? This cannot be determined in advance. It has to be negotiated.* (Ch 1, 164)

Note that the passing of time does mean that something has been severed for good. As it apparently must, always, if things happen, as was proposed, only once. Note also the commas encircling the word time in capital letters. What happens only once has necessarily to be generated anew once and once. Thus, entelechies, forces, generate time once and once, that is clear. As is clear that, given no end to the game but a provisional one, time, lacking commas, does not arise through spontaneous generation or just sticks there as an independent frame for beings to flow throughout. It keeps arising out of the negotiating stress of actor-networks. As much as any adjectivities towards it, or metrology to count and measure it, must be implemented and disseminated once and once, or it will be severed. As much a matter of agonic struggle as anything else. This is also treated in political terms, twinning the social and the natural:

> *1.2.5.3 It is often said in France that "there are" revolutions, but these are only actors which take their capacity to make time and history from other actors and thereby pass the others by and make them passè. Of course, the vanquished sometimes obtain their revenge and thus upset the order of times once more.*

• *Who, then, is the most modern-the Shah; Khomeini, the Muslim from another age; or Bani-Sadr, the President, who has sought refuge in Paris? No one knows, and this is why they struggle so much to make their time.* (Ch 1, 165)

Once more the point remains that no one knows. While all make and all do, humans and non-humans alike, with others and by others, with the hegemonic pull to act for greater irreversibility, by all available means. Or, translating-betraying irreversibility, for greater and greater survival through all available means:

1.2.5.1 Time is the distant consequences of actors as they each seek to create a fait accompli on their own behalf that cannot be reversed (1.1.10). In this way time passes.

1.2.5.2 Time does not pass. Times are what are at stake between forces. Of course, one force may overtake the others, but this can only be local and temporary because permanence costs too much and requires too many allies. (Ch 1, 165)

Exceptional permanence costs, practically speaking, demanding the whole of a collective to be supported for and maintained at length, are what give time, and space, their double nature, or their chimeric nature, of primordial trials and primordial translations. Those unavoidable for hegemony seeking forces. The provisional aspect of the struggle has already been asserted. But, in this aphorism, we also get the further introduction of times as being local, aptly calling to mind that actors are networks, actor-networks, circulations, as times are spaces or time-spaces in the sense of being not just one but not just two either. In fact, what is said on time mimics what is said on space. Always stressing the not knowing we accepted as an injunction into having to do. Into having to make it real by provisionally resisting more and more:

1.2.4 We do not know where an actant is to be found. The definition of its location is a primordial struggle, during which many get lost. We can only say that some locate and others are located. (Ch 1, 164)

And:

1.2.5.4 The freest of all democracies reigns between instants. No instant can crown, cripple, justify, replace, or limit any other. There is no last moment to condemn all those that came before.

• *Times are irreducible, and this is why "death" has always been vanquished. The end does not justify the means. Neither does death condemn life.* (Ch 1, 165)

Note that the word death is under commas. Latour seems to be writing that reduction is not faithful to what is. That it is illusionary. That, regardless of etchings and provisional winnings, things irreduced and free are what is and must be hammered in through excess of poetry and ambiguity, again and again into a pretendedly geometrical form. The next subdivisions then will move on to the illusion of potency.

Before, a quote from the *Interlude* in this subdivision that greatly illustrates the general feel behind what can be named as a conversion to irreduction, Corresponding, in Latour's words, to a liberating insight into life vanquishing death. These are lengthy quotes, but mandatory. The first exposes movements and examples of said oppression. What is not an option to follow for the setting of things irreduced and free:

> At the end of the winter of 1972, on the road from Dijon to Gray, I was forced to stop, brought to my senses after an overdose of reductionism. A Christian loves a God who is capable of reducing the world to himself because he created it. A Catholic confines the world to the history of the Roman salvation. An astronomer looks for the origins of the universe by deducing its evolution from the Big Bang. A mathematician seeks axioms that imply all the others as corrolaries and consequences. A philosopher hopes to find the radical foundation which makes all the rest epiphenomenal. A Hegelian wishes to squeeze from events something already inherent in them. A Kantian reduces things to grains of dust and then reassembles them with synthetic a-priori judgments that areas fecund as a mule. A French engineer attributes potency to calculations, though these come from the practice of an old-boy network. An administrator never tires of looking for officers, followers, and subjects. An intellectual strives to make the "simple" practices and opinions of the vulgar explicit and conscious. A son of the bourgeoisie sees the simple stages of an abstract cycle of wealth in the vine growers, cellar men, and bookkeepers. A Westerner never tires of shrinking the evolution of species and empires to Cleopatra's nose, Achilles' heel, and Nelson's blind eye. A writer tries to recreate daily life and imitate nature. A painter is obsessed by the desire to render feelings into colors. A follower of Roland Barthes tries to turn everything not only into texts but into signifiers alone. A man likes to use the term "he" in place of humanity. A militant hopes that revolution will wrench the future from the past. A philosopher sharpens the "epistemological break" to guillotine those who have not yet "found the sure path of a science." An alchemist would like to hold the philosopher's stone in his hand. (Ch 1, 162)

We can easily track the opponents. The second quote is the demons defeating experience, of the new idols, that pushes forth the work at hand under the new materialism, *at arm's length*:

> *It was a wintry sky, and a very blue. I no longer needed to prop it up with a cosmology, put it in a picture, render it in writing, measure it in a meteorological article, or place it on a Titan to prevent it falling on my head. I added it to other skies in other places and reduced none of them to it, and it to none of them. It "stood at arm's length," fled, and established itself where it alone defined its place and its aims, neither knowable nor unknowable. It and me, them and us, we mutually defined ourselves. And for the first time in my life I saw things unreduced and set free.* (Ch 1, 163)

2.4. From Governance to Material Possibilities

The next three subdivisions on the first chapter mainly depend on the further strong holding of both the principles of Irreduction and Relativity. On how they translate now into paths for governance via the stabilization of differences and asymmetries. Hand in hand with making as if equal and measurable what is, in itself, incommensurable. By how weakness turns into potency, as distinct from actual force, through stressing the betrayal aspect of translation together with the claiming to be several certain forces are said to pursue at the expense of other´s singularity. All these three subdivisions stand then, as previously said, as if a second part of the first chapter in the process of moving faster towards its closure. Faster in the establishment of its own network, a notion or term they effectively tackle and use at length. Additionally, as if moving from quasi philosophical principles, which do not govern except potentially, to domains more familiar to the growing Actor-Network Theory and its emphasis on what actually governs. On which forces do the toil and the work in ontology in practice.

Nevertheless, the proposal for an irreductionist Philosophy, under the new materialism proposed since the *Introduction*, is now to progress onwards. Strictly touch stoned on both the principles exposed in spite of their contradictory nature of not governing. The motto and way of turning into governance, depends or rather associates with an apparent, as if, distinction among forces. Between certain of them and all the others. Between outright hegemony seekers and non-hegemony seekers. Between said as

active and said as passive. Between measurers and those who are measured. It is given from the start of subdivision three:

> *1.3.1 All entelechies may measure and be the measure of all other entelechies (1.1.14). Nevertheless, certain forces constantly try to measure rather than be measured and to translate rather than be translated. They wish to act rather than be acted upon. They wish to be stronger than the others.* (Ch 1, 167)

Were we to conclude that the distinction corresponds to some sort of objective quality a few of the forces would possess, essentially or of their natures, and others wouldn't, what is written is that forces do try, do trial, not that they accomplish fully, do away with trialling. Or that they possess, or that they are. Not that forces are, as such, by themselves, strong. A noun. But that they wish to, aim at. Weaknesses, therefore. Forces try, by trialling others into accepting such roles of being measured, by trialling others into accepting the measures and the measurers. Into conforming to the translations exerted as final, doing them away from the concomitant betrayals. The distinction furthers from the postulate of hegemonic pulls, on and on, as if active forces, on and on, active measurers, on and on, into a discrimination of Philosophy being assigned only to those forces which reduce and are reduced. Wishing it. Desiring it. Needing it. As if in a backtrack to the so-called Freudian forces in the *Introduction*.

But that they wish activity rather than passivity, strength rather than weakness, does not mean they are per se active or strong. It may mean exactly the opposite, the claiming of something which is not. Or is not yet. Or cannot ever be. Poetry, literature or art, would be the sole options to approach all the other forces, entelechies, remaining or wishing to remain irreducible and apart from those certain which wish at reducing. Thus, one more argument to the need of entangling poetry, art, literature, with Ontology and its description. In the process, Latour denies the possible reduction of all forces to wills to power, Nietzsche wise, backtracking again to the *Introduction*. Juggling again allusions to Freud and Nietzsche, in the midst of betraying Aristotle's potency.

Quoting again:

> *I have said "certain" rather than "all" as in Nietzsche's bellicose myth. Most actants are too far apart or too indifferent to rise to the challenge, too undisciplined or devious to follow for long those that speak in their name, and too happy and proud to take command of others. In this work I speak only of those weaknesses that want to increase*

their strength. The irreducible others have need of poets rather than philosophers. (Ch 1, 167)

This intent of banishing from view and analysis the irreducible others is not to be kept throughout the text, as we have mentioned before. In fact, argument could be that the entirety of the work aims at bringing in the irreducible others fully back into Philosophy. Exactly by including poetry, associative doings, into Philosophy thus renewed. Stripping the activity bare from the pulse of only taking into account those forces, certain, who wish to increase by reducing others. Those certain forces, which are the weaknesses ending up juggling along with potency and claiming to be several for the gain of strength. It can be argued that the exact aim is once more the opposite aim. To take all the irreducible others into view, making a way for them to make their way in, their work and their works, without being reduced to unaccountable backgrounds, worthless residues, unaccountable mysteries, a-logical entities, networks leading nowhere.

This being the case, most of the rest of the first chapter, interludes apart, does mostly deal with such certain forces who aim at governance. With how they make it as if so for all practical purposes. Were we still to believe that there would be an immaterial quality in the forces who pursue such goal and make it as if so, something innate or inherent breathing the will to reduce into them, or potentially furthering the success in such reducing, we are soon reminded, backtracking to the first subdivision, that association and quantity, material and actual bindings, are ever what is at stake when such governance resists longer or resists more:

1.3.2 Given that actants are incommensurable and that each makes a world as large and complete as any other, how does it happen that one becomes more than another? By claiming to be several, by associating (1.1.9). (Ch 1, 168)

Certain forces are said to claim at being several, it is the plain claim that is put forth. Not that certain forces arrive at being, individually, several. Not that they arrive at being more than just a single weakness associating. While they do not claim to associate, but indeed associate, as is. As if several, while associating with several. Association is thus always the case. One weakness, force, entelechy, actant, claiming to individually be many actants, weaknesses, forces, entelechies, that is never simply proven to be the case, as is.

Despite acceptance of the claim by others. Never more than a claiming, albeit the work of reducing can make it feel as if so, make it be felt as if so, resisting as if so. If Ontology is to believe the claim, it believes in miracles, it will be said further on in the second chapter. The term feel is not used here at random: *Consistency is felt.* (Ch 2, 179) Such a claim is forced through, agonistically, by translations-betraying's, negotiations, battles, making of inequivalences, markets, exchanges, metrologies as possibilities for any exchange, times and spaces there included. Leaving Ontology in practice behind if the claim is taken as true, as actually being the case. As ultimately actual apart from the constant forcing of the claim. Still monads, still sieves, ever monads, ever sieves, the forces or weaknesses or actants or entelechies.

Arrived here, we grasp a first entry into Latour's views on potency as he is translating-betraying it. Potency is that which, in spite of being associated with others, by others, claims to be those others by itself, or to contain those others in itself. Downing more and more the visibility and the acting of all those others, as if they weren´t actually there, working beneath. As they always are, no account leaving them out is a worthy account at all, turning instead any explanation of governance into something keen to the miraculous. Forwarding to the second chapter to illustrate why the association with miracles, derogatory, is made:

> *2.6.5 There are only two ways of revealing forces. First, we can say that there are forces, on the one hand, and other things, on the other. This amounts to denying the first principle (1. 1. 1). In this way "real" equivalences, "real" exchanges, and "real" essences are obtained, and the world is ordered by starting from masters (princes, principles, representatives, origins, foundations, causes, capital) and descending toward those who are dominated (inferred, explained, deduced, bought, produced, justified, caused). Second, we can uphold the first principle right to the end. If we do so, there are no longer any equivalences, reductions, or authorities unless the proper price is paid, and the work of domination is made public.*
>
> *• The first way of working is religious in essence, monotheist by necessity, and Hegelian by method. It reduces the local to the universal and establishes potency. It abhors magic but nonetheless emulates its methods. The second way of working renders local what is local and deconstructs potency. It leads to scepticism about all magics, our own included.* (Ch 2, 189)

This neatly applies to concepts or notions as Being qua Being, a conceptual staple, quest and object, of Metaphysics and of Ontology, as defined by most of its history.

Interlude II: Showing What a Relief It Is to Stop Reducing Things aims to dismantle the constriction imposed by such over encompassing universal object. Upturning Ontology from such frame of measure. Where all and nothing are able to fit, roading us out of the networks working to disseminate it:

> *This business of being as being has become quite incongruous now that each entelechy has all the differences it needs to make a whole world for itself. The tide has changed. Before there were only things that had been reduced and things that did the reducing, with a residual being who rattled around in our heads like a pea in a pod. Does this mean there is fusion, ataraxia, or lack of differentiation? No, of course not! All the differences are there. Not a single one is missing. And all the attempts to reduce, produce, simplify, hierarchize, totalize, or destroy them are likewise there, like so many differences which add themselves to those that they wished to suppress.* (Ch 1, 169)

Interlude II: Showing What a Relief It Is to Stop Reducing Things, with which subdivision three ends, tidal changing away from being as being, dismissing it even, is also the one, besides, where the life affirming and freeing nature of the Philosophy thus to be reclaimed into action is again asserted. With little doubts remaining, after its initial proclamation, more experience wise, in the end of the prior interlude. This is done by associating, again, domains said as abstract with those said as concrete. Solving them together by refusing the dichotomy while not necessarily diminishing theory. So, albeit the remaining subdivisions in the first chapter move away from Philosophy as it usually is, or as Latour reflects on it, closely resembling Actor-Network Theory, they also move towards a philosophical and ontological proposal of what Philosophy could become, or ought to become associated with instead. Suffice to say no other domain has dwelt in the possible understandings and discriminations of being as being if not Philosophy. Or if not Literature, if Philosophy is seen as a subset of Literature.

We can conclude that, by the end of subdivision three, Latour is now justified, or has felt by resisting to a view on what Philosophy and Ontology consensually deal with, diminishing its strength-reality, into having shown that reduction is not the only road available. However consensually resisting that justification and that feeling will stand after clashing back with Philosophy and with the experience of it. And that reduction is

not, on the other hand, the better road to be followed and to associate with while in the midst of so-called strictly philosophical pursuits, overall. For as much as, conflictingly so, reduction is unavoidable, several acting as if one or one claiming to be several, demanding to be brought forth for actual governance to be more faithfully and more practically tackled.

First, not the only road or network available, then. Second not the better road nor the better network to keep on consolidating. Both by ontological reasons, under the accretion of Ontology as a coming together of all available Metaphysics through the pressure of what resists, and by pragmatic reasons, or what can be associated with the fullest way to conduct living, to fight oppression, hereby also assimilated with reduction. Irreduction, and Relativity, as Latour has dealt them so far, are thus staged in the interlude ending subdivision three as the best of all possible options to both ends of gaining knowledge, regardless of how such gaining is named, and of gaining freedom, regardless of how such gaining is also named. All differences and all governances still kept, though, not blown away by any sort of theoretical flight or philosophical Deus Ex Machina to be. Nothing lost but nothing gained. The name of the bird is internal to the network using it. It does not refer or referees the bird if those networks fail to produce and negotiate and force its maintenance. Poetically expressed amidst the *Interlude*:

> *The bird, far from its name, flies from the name that I give it, but continues to fly in treatises on zoology and the poems of St. John Perse. The gull is in its sky, irreducible to ours, but the language of the taxonomist is in the books, itself irreducible to any gull ever dreamed of, living or dead.* (Ch 1, 170)

Still, as we said, subdivisions 3, 4, 5 do deal with the how of reducing as it unfolds. Of the pull to absolutes and universals how it unfolds, when and where it disseminates through and through until potency hides the forces which do the work. Still, both Irreduction and Relativity accordingly play in the play as if Deus Ex Machinas during this dealing of the birth of potency. Deus Ex Machinas which, strikingly, are as if prior or away to the actual play to be performed. As nothing is said to be lost from them. Nothing is said to be gained from them. Still, they do appear first in the work. The first devices to which the irresolvable conflict of governance and non-governance owes its provisional solution in both senses of solution. A typical stylistic strategy of splitting words in the several forces binding them together to a single entendre. In the sense of

doing successfully away with seemingly unsurmountable difficulty and in the sense of being the minor components of a mixture that, in spite, is irrevocably tainted by them as the solute to the solvent.

Still, they do not conclude the drama unfolding, as Deus Ex Machinas often took the role for. Instead, they have initiated it prior to stage entering. Conflicting through it. Solving and tainting the drama beforehand while feeding its conflicts after hand. Still, now accordingly to the traditional use of Deus Ex Machinas, they do so suddenly. Abruptly. Unexpectedly. In an unlikely fashion. But, again, contrary to the traditional use, the drama is not resolved and still goes on. With everything to do and to be described in order to be eventually explained. With no visible end in sight. Not explained away, but explained nearly. For such a goal, contradictorily enough, it becomes in the follow unviable to resort to any additional Deus Ex Machinas.

No available cranes of reducing are there to rise actants to the ceiling, unless potency makes us believe as if so, act as if so, forcing us to irreduce. No trap door is there to make actors disappear as all the forces remain, acting still. Regardless of some of them claiming to contain several, to justify several, to deduce several from them, to replace several, to eliminate several. No principles, thus, are kept. Plus, there is no available stage exit, as there is no exit from networks that is not just one more network. Even no networks as networks subside, given that any network is an actor-network already, where actants make their roams. And, as said, no referent is external to the actor-network refereeing through its nodules and paths. Which begs for no absolute levers to become available. The only available and contradictory Deus-Ex Machinas, according to Latour the only ones actually needed and no more, those principles which do not rule and do not govern, are the Principle of Irreduction and the Principle of Relativity.

As they allow the changing of everything, while allowing for nothing to change, in spite:

> *"Nothing is by itself either reducible or irreducible to anything else," we say of all those who reduce, destroy, replace, deduce, permutate, explain, cause, redeem, restore, involve, determine, exchange, and buy. The tree of times, the trees of times, the forest of trees of times. Nothing is changed, yet the position of each force, each entelechy, each actor changes so completely that we breathe an air that we did not know we were missing before.* (Ch 1, 169)

And:

Nothing pardons, makes amends for, atones, balances, succeeds, subsumes, concludes, summarizes, or submits to itself. And yet we should indeed speak about a state of grace. Everything is light, for nothing has the power to bring about the dizzy fall of anything else. Yes, freedom to go, freedom to do, freedom to pass, freedom to let go. (Ch 1, 169)

And yet:

When the tree of times is left to grow, the act and its consequences are separated, and each becomes the means and the end of the other. It is thus impossible to atone for a means with an end, for a life of crime with a prayer, for a man with his children, for a managing director with his bank account. No equivalences, no market. (Ch 1, 170)

Still, the making of equivalences, the equivalence of several to one and of one to several does occur. As common sensical experience shows at satiation. Making of the incommensurable, including all the irreducible others, into samenesses and differences, commensurable. From such making, inequalities and inequivalences stack and spread. Are made more and more compulsory in terms of governance. As felt, as it keeps resisting into the real. They govern. Works of describing their how-to, from both principles and associating with both principles, them included, is the translation-betrayal that has yet and always to be done. Termite wise, tracking wise, nearly, at an arm's touch. Nothing has changed, in spite of everything changing as if by a Deus Ex Machina's grace, closely resembling a state of grace who does not atone, to enter once more in the contradictory domains, alluding to theology.

This termite wise tracing and doing, that must still be done if Philosophy has the smallest intent of governing anything, where *it is not the being as being that reveals* itself, albeit strongly merging with Actor-Network Theory, is called for in the fourth subdivision as the pursuit and need of no lesser than a better Philosophy. In both senses of better already depicted. More faithful to what actually is and better in better conducing to better living and breathing. If and only if constant soiled hands immersion is sine qua non accepted. And no more Deux Ex Machinas called for. From the fourth subdivision:

1.4.3 Between one network and another, as between one force and another (1.2.7), nothing is by itself either commensurable or incommensurable. Thus, we never emerge from a network no matter how far it extends.

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• It is for this reason that one can be Commandant at Auschwitz, an olive tree at Corfu, a plumber in Rochester, a seagull in the Isles of Scilly, a physicist at Stanford, gneiss in the Minas Gerais, a whale in Adelie Land, one of Koch's baccili at Damiette, and so on. Each network makes a whole world for itself, a world whose inside is nothing but the internal secretions of those who elaborate it. Nothing can enter the galleries of such a network without being turned outside in. If we thought that termites were better philosophers than Leibniz, we could compare a network to a termites' nest-so long as we understood that there is no sun outside to darken its galleries by contrast. It will never be possible to see more clearly, it will never be possible to get further "outside" than a termite, and the most widely accepted equivalence might appear, under trial, no stronger than a wall of clay. (Ch 1, 171)

No further Deus Ex Machina then. No out. No exit, no away. Note that exemplified beings, or better actants and actors and networks, actor-networks, are always specifically localized in the aphorism, at a place. Networks as a spatial metaphor is what is being now introduced in the association. An "x" at or in a "y". Never an "x" per se, by itself. More, Philosophy is translated metaphorically as termite's work, drooling its footmarks along the soils stepped. Far from the souring heights of eagles who flee land. Far from bovine ruminations in internal laboratories of abstraction protected from soiling. Not only there is no way out or way in, as from the two principles, coming back to subdivision three, it is stated that succumbing to the temptation of doing it otherwise is to inevitably do it worse. As far as Ontology and action are concerned:

1.3.3 Since nothing is, in and of itself, either equivalent, or not equivalent (1.2.1), two forces cannot associate without misunderstanding.
• Entente, arrangement, compromise, negotiation, scheme, combination, compact-all these terms can be used. Those who find them derogatory and believe that they conflict with more perfect forms of association fail to understand that it is never possible to do better, both because there is no equivalence (2.2.1) – and because nothing is, by itself, either reducible or irreducible to anything else (1.1.1). (Ch 1, 168)

Such worse doing adds up to the certainty of misunderstanding given by the Principle of Relativity. Stressing the precedence of inequivalence and incommensurability, forging in the proposed solution the betrayal aspect of translation-betrayal. Together with the agonic results following from, by which certain win, certain

loose. Some are compacted, others compact, the latter term used as an example in the aphorism. Regardless if such compacting, such loss, standing for an exertion of force which compresses or spatially reduces others to limited borders, appears as accepted compromise, or of equal benefit to all forces at bay in a metaphorical negotiated treaty of forces. Mimicking what real politics would contrapose to idealistic politics hopes we cannot help but think that Machiavelli is being associated with once again.

Misunderstanding having been asserted, the distinction between active and passive is then put forth to explain success and dissemination of one force over others. Keeping in mind that the distinction itself between active and passive is determined only on the go, via doings. Never solved for good, never on the stay. As it does not equate, obviously, to innate or inherent qualities of forces by themselves. For this path to be accepted as more or less faithful one has to accept, though, that all forces interact in terms of defining, shaping, compacting, each other and themselves. Relentlessly. Even if certain of those, as said, are to be seen as refraining or restraining from doing so, also by others. The irreducible others resisting at being reduced, or remaining incommensurable to any reduction, will be necessarily left out of Philosophy if Philosophy does not resist in but leaving them be or but reducing them.

On activity and passivity:

1.3.4 Although all entelechies are "equally" active, they may appear to be in two states: dominating or dominated, acting on or acted upon. For an entelechy to be called passive, it need only fail to answer back.

• I am not saying that there are active forces and ones that are passive, but only that one force may act as if another were passive and obedient (1. 1. 14). For the passive force, of course, the point of view is entirely different. There are a thousand reasons for feigning obedience, ten thousand for wishing to be dominated, and a hundred thousand for remaining silent – reasons that are never suspected by those who believe they are served. (Ch 1, 168)

Note the *"equally"* under commas. Which, if taken away from the sentence leaves us with activity, or lack of it, distributed throughout all forces and not just certain of them. Privilege is going now to activity in spite of the faltering dichotomy needing to be abandoned, as at least metrologically poor. The care asked for, besides the precedence of inequality among forces that the Principle of Relativity is responsible for, is in never to

presume, for good, passivity in any force, weakness, under exam, being walked over as passive and reduced. Including those roads we walk on in order to reach at supposedly certain conclusions. The distinction, in itself, is lacking, and not only by just superficially measuring what it intends at measuring.

What can be presumed, at most, is that an entelechy, the term called for, or an infinity of them, is practically being compacted, shaped, by another or by others. Coming into court as if more passive as a result of failing to respond in a seemingly active, noticeable way, to such compacting and shaping. The care is added to an apparent impossibility of asking from the silenced why is that so, hoping for true or fitting answers, as they are effectively being silenced onwards. In this sense, irreducing, which does not govern, is keen to forcing them to speak and answer back by unflinchingly re-introducing what is exactly their so-called activity. The how of it as it is able to be tracked and translated by all available means, roads, paths, networks, actants. Not just those certain ones which are to reduce them. For the underlying thesis this is sine qua non to inscribe a more faithful Ontology in what is currently spoken for as Ontology.

The necessary and sufficient condition, according to Latour, for the active versus passive distinction to resist, is that entelechies do not resist a given shaping or force exertion of another which is railing the association. That they *fail to answer back* to. Again, words demand digging up. It is not being said that they do not answer back, or are not always answering back, in one way or the other. Just that they fail in doing so. Probably due to failing in claiming successfully to be several. To failing in associating with several who are already stronger, more durable, more ahead on the paths of claiming to be several and of constricting several.

Among these who fail for all practical purposes and apparently disappear into passivity, the irreducible others which need poets, as described, some may be given the special status of not being interested in claiming to be several. Of being non hegemony seekers. Or, simply, that instead they actually lack the force to do so, which is to be the case given the absence of reasons as something extra to forces. Making of irreduction and of the work at hand an attempt into providing them with such force via other means than those of having to claim to be several. Associating them, instead, with more and more which do not claim to be several. Thus, strong holding the constant pull to singularity that

was already a characteristic of the forming Actor-Network Theory, supported on the Metaphysics of everything happening only once and at only one place.

Claiming to be several amounts to saying that one wants to be more than what another is, first. Then, that it claims to be so by itself and not by those others it claims to be, but isn´t. Coupled with misunderstanding or the unavoidable betraying aspect of translation-betrayal, the claim to be several turns, when accepted, into further and further grounding of the active versus passive distinction. For all practical terms of disseminating an Ontology, making it more and more as if so:

> *1.3.5 Since an actant can become greater than another only by being one of several, and since this association is always a misunderstanding, the one who defines the nature of the association without being contradicted takes control.*
> *• Where two forces proclaim themselves to be united, only one speaks; where two forces makes an exchange they deem to be equal, one always determines who defines the thing exchanged, how equality is measured, and when the exchange has taken place.* (Ch 1, 168)

Note the distinction between claiming to be several and being one of several, one among several. The latter corresponding to association, leaning on, sieving, which is always the case. To be one of several, one among several, is unavoidable in association as association is unavoidable. Still monads, still sieves. To actually be several is never the case for an Ontology aiming at more than immediate instrumentality by reducing. No explaining away the further by the further then, no laying bare of essences, nothing comes bare. No stripping the form from forms. There is no The Form, no detailing The Detail from the details, there is no The Detail.

Actants, the word used here which does not presuppose individuality of indivisibility, become greater than other actants always by being one of several when resisting to others, one among several. Thus, actant-networks into actor-networks. But no actor is by itself, greater than any other actor, no actor is the great actor. Neither need the several to be several of the same kind, several alike. To be one in several, one among several, is to be one in many, not one in a set of alike, previously discriminated as such. Association, then, is never equality with or identity with. Nothing can be done away. Therefore, there is neither union, nor equal exchange, due to necessary misunderstanding and necessary non equality among the associated. Something must be brought forth, as it

is made, paths network wise, roads construction wise, logics argument wise, shaping that equality, which is not, into being graphed and accepted as if it were.

Latour is now, then, moving to what we called metrology. Calling up into action who shapes-defines, referrers and referees, what is to be the exchange, its worth which must be patterned, measured, compared, equalized. Its time and its place, as primordial trials spread, aligning, convincing. Moving towards a Material Rhetoric, Rhetoric of things, which is a Material Semiotics. The aphorism below, besides nurtured by both principles so far, with a direct appeal to the Principle of Relativity, ask us to forward track twice. It translates nicely the roads of force and the roads to potency:

> *1.4.6 As soon as one actant manages to persuade others to fall into line, it thereby increases its strength and becomes stronger than those it aligned and convinced (1.5.1). This gain can be measured in a number of ways. It can be said that A is connected to others. Although in principle every connection is equally possible, it now becomes easier to link B to A than to C. A can also be said to command others. Although in principle these others lend their strength to A, they allow themselves to be controlled by it. A can also be said to translate the wishes of others. Although the others might wish to say something else, they agree that what A says is what they wanted to say but were not able to put into words. As strength can also be measured by saying that it can buy others. Although in principle the others are not worth the same amount (1.2.1), E or F agree to be equivalent to what A is ready to pay. Finally, it can be said that A explains others. Although the others cannot reduce themselves to A, they agree to be its consequences, predicates, or applications (2.0.0). In the final reckoning the work of making value and making equivalent means that A is stronger than others despite their incommensurability. 1t translates, explains, understands, controls, buys, decides, convinces, and makes them work.* (Ch 1, 172)

The verbs used are very much significant. Managing for administration. Persuading for Rhetoric of things. Falling into becoming aligned for the lack of resisting and the lack of dissonance or contradiction. Dynamically increasing as different from just becoming for good whatever is increased. Becoming stronger as different from having strength unscaled. Aligning as different from eliminating or replacing. Convinced, adjective, as made certain or firm, made solid, made durable, shaped. The word plays of convinced, convincing, conviction, run deeper still for the understanding of the polysemic use of certain forces, rather than all or none, that characterizes this stage of the text. To be

convinced is in many ways to presume or to have certainty, regardless of any actual correspondence to any so-called truth or to any so-called certainty.

The certain forces who are accused of calling reduction forth are those forces, among all of them, which are certain or which aim at certainty. Weaknesses fleeing from ambiguity, vagueness, insecurity, at the cost of making all those who don't as if passive and as if measurable on their own certainty seeking grounds. Irreducing, once more, is the progressing forth of the denial to accept the thus shaped forms of these associations as they are disseminating and as described in the aphorism above. Where one becomes, by successfully claiming to be several in many ways, there exemplified. Irreducing progresses by testing and stressing the control and controls of certainty. Of measurings towards certainty via the reducing of others to none. A task apt for the Philosophy the book is asking for.

As, according to a previous aphorism, this control alignment thrives from absence of contradiction as to the nature and how-to of associations, we can understand now why both contradiction and contradicting are vastly used and cannot be split from the proposed irreductionist work of Philosophy. Banishing contradiction is banishing its intended aims. If claiming to be several is to be dismantled in favour of, at least, being one of several, at least one in and out of several. At best, in favour of being an irreducible other. Thus, works of metrology and of commensurability are reductions that have to be tackled in order to understand actual governance, in the footsteps of the Principle of Irrelativity. Primal negotiations, as time and space were.

Note, after the initial verbs, how the aphorism tackles the measurings of gains, of becoming stronger than, which results in governance, distinguishing in each one between in principle and in practice. This is first done by a forward tracking to the aphorism, in the fifth subdvision, where potency is given a more or less strict definition:

> *1.5.1 A force cannot be given those forces that it arrays and convinces. By definition it can only borrow their support (1.3.4) . Nevertheless, it will claim what does not belong to it and will add their forces to its own in a new form: in this way potency is born.*
>
> *• When an entelechy contains other entelechies which it does not contain, we say that it contains them "potentially." The origin of potency lies in this confusion: it is no longer possible to distinguish an actor from the allies which make it strong. From this point on we begin to say that an axiom implies its demonstration "in potentia"; we begin to say of a prince that he is powerful, that the being-in-itself contains the being for itself, though*

only "potentially." With potency injustice also begins, because apart from a happy few – *princes, principles, origins, bankers, and directors, other entelechies, that is, all the* *remainder, become details, consequences, applications, followers, servants, agents – in* *short, the rank and file. Monads are born free (1.2.8), and everywhere they remain in* *chains.* (Ch 1, 173)

By now, what potency is, which has been networked along the entirety of the first chapter, is made evident. The backtracking in the quote once more dealing with how activity and passivity are assigned to forces. The incoming new aspect, which has also been prepared at length in *1.4.6* by the use of predicates, consequences, and by the forward tracking to *2.0.0*, is the direct allusion to pretensely logical terms as axiom or demonstration. Falling exactly under the same guidelines, of force and not of reason, as all the others of the rank and file. Irreducing reason, rationality, its potency, seems to ask for the reduction of reason to forces, meaning, to unravel the material allies it borrows force from in order to make of itself something more than just force. To add them in as potential reasons, as the aphorism goes, under new forms. We see now that this reduction is in fact the irreducing of such forces composing the potency of reason. At the same time we grasp once more that both operations act and associate together.

After this incursion to the fifth subdivision, *1.4.6* measures strength in practice, strength-reality, as to connect, command, control, translate, buy, explain, decides, convinces. We see no traditional measuring units, static grids, but actions. Under convincing, making equivalent, imposing of paths concretely shaping what becomes possible or not. And we have the measuring of "stronger than" also under the active role of making others work, relating with injustice and opression. The chaining of monads into falsity or illusion which an irreductionist Philosophy ought to dismantle and sever. The excess we keep seeing throughout the text, then, grounds in a Plato's cave as if upturned. An allusion that has to slide in. But one where forms or reasons now seem to be the actual culprit. The hubris of aiming at forgetting doxa, episteme, as the chaining tool.

Making others work demands that such work of others is always to be described and never ignored in the work of Philosophy. Always to be pushed to the front. That any explanation which pretends to ignore the concreteness and specifity of such others as to the how and why of governance is, in practice, dismissed as vain. In the footsteps now of

the Principle of Irreduction: by which trials this governance becomes so in practice and strength-reality is gained must always be the more precisely described the better. Strength-reality as applying to everything, so-called knowledge included, as of necessity:

> *1.3.6 Since nothing is equivalent, to be strong is to make equivalent what was not. In this way several act as one.*
>
> *• "Anything does not go." Discourses and associations are not equivalent, because allies and arguments are enlisted precisely so that one association will be stronger than another. If all discourse appears to be equivalent, if there seem to be "language games" and nothing more, then someone has been unconvincing. This is the weak point of the relativists. They talk only about forces that are incapable of allying themselves with others in order to convince and win. By repeating "anything goes," they miss the work that generates inequivalence and asymmetry (1.1.11).* (Ch 1, 168)

Remember the "equally" previously under commas. All actants, forces, weakness, are "equally", under commas. But this neither governs nor can it give any account of governance. Nothing theoretical or in principle can or will. What governs is their inequivalence or radical incommensurability, in principle, forced into a similar inequivalence in practice, where commensurability slides in. That they are "equally" inequivalent or "equally" equivalent loses its footing. What must be bridged and put at bay for some to govern others, even to become commensurable, or as if commensurable to others, is such an incommensurability and inequivalence of what happens only once, only at one place. Singularly. Such bridging can give account on how inequality and making equal are then juggled together step by step.

What also doesn't govern and is not called for, for the aims of getting back to an Ontology as Latour wishes it, is Being. Neither does Being unite beings. Even more if we speak of being as being, or of absolute being, as mentioned previously. Thus, we have here never one putative being that is several or all. Or is in several or all. Or contains several or all. Or several beings that are one or in one. Belonging to or contained in one. Participating in or deducible from one. To sum, there is no "one". Never just one universal reducer encompassing singularities, those monads which are sieves. We have instead, at the most, several acting for all practical purposes as one, which if they are anything at all, that is that they are several. It is such acting and doing, materially under this so-called new materialism, making others work, that governs the incommensurability into

commensurability by force up to the birth of potency. Acting and doing which act and do via allies and via arguments, arguments which are also allies who act via allies, albeit perhaps under a new form to be explored further ahead. Regardless, as much forces and as much material as all the rest.

These actings and doings are that which a Philosophy aiming at setting things irreduced and free, perchance first irreduced and afterwards free, must specifically uncover in its own places, in its own times. If it aims at a convincing, in both senses of the term, attempt at an explanation as irreduced as possible. But of this work it cannot escape as, contradicting the Feyerabendian trope, very little things actually go or went. Only such and such went at such and such a place, such and such time. By this aphorism alone it becomes plain wrong to include Latour in baseline Post-Modernism relativism, or in plain relativism per se, were it not already evident. Relativism per se never actually explains any governance whatsoever in practice. Truth of the matter is very little things do actually go and, when and where they go, they do so exceptionally and must be precisely accounted for on what exactly did their success. What and who actually worked in such and such a way. How and why, it became convincing.

Relativisms, as to governance, work only theoretically, if contraposed to absolutisms wishing to bypass and reduce particularity and singularity for the jump start of reductions. Only, too, if accepting the dichotomy of relative versus absolute at face value as an able measurer, which is not the role Latour wishes to apply to Philosophy. It would amount to nothing but a Philosophy in potency, of empty terms which do no work and don't work. A Philosophy never to have any governance. Severing the associations between Ontology and Theology, that greatly determined the history of the discipline from its onset, he moves on:

> *1.4.6.1 An absolute force is one that would be capable of explaining everything, translating everything, producing everything, buying and redeeming everything, and causing everything to act. As a universal equivalent, capable of substituting itself for everything, and a universal providence, capable of giving life to everything, it would be the prime mover and first principle from which all the rest could be generated.*
>
> *• Some people talk of "God" when they think of the force that is capable of redeeming the world by His Son, of explaining the origin and the creation, of translating into His word what every creature, animate and inanimate, wishes at the bottom of its heart, of shepherding us through the detours of Providence to that which we all desire.*

Because nothing is by itself either reducible or irreducible (1.1.1), this absolute force is also the absolutely pure expression of nothingness. Because of its very purity it has always fascinated mystics, warlords, captains of industry, and scholars in search of first principles. "Oh", they all say to themselves, "grasp a single force (a town, a chalice, an axiom, a bank), and the rest shall be given unto us." To avoid the panic of reduction, we must always say: "What is left is all (Interlude I-II). The great Pan is dead." (Ch 1, 172)

Naturally, to resume the often picked in negative allusions to a Kantian philosophy and objectives, we gather from the above that no such a thing as a pure reason may subside. Subdivision three, thus, ended its aphorisms by reinforcing actings and doings, keen to shaping and defining. Stressing even more the role of metrology in distinguishing between those which appear as active and those which appear as passive. Not in an absolute scale but in a scale of more or less than.

Fourth subdivision then immediately follows suit under such appearances of activity and appearances of passivity. It calls recurrently upon the roadworks metaphor so vital to construction and to the aphorisms on logic and logos. Or, that discourse which hides and evades its happening as actings and doings, imposing equivalences claiming to ground on arguments or reasons, instead of force and forces:

It is as if we spoke of road networks but never of civil engineering. However, there is as much of a difference between equivalent and making equivalent as between driving an automobile and building a freeway. (Ch 1, 1.4.1, 170)

Meanwhile, the concluding aphorism of subdivision three allowed us to do away with a dichotomy of sameness and otherness that has also clutched the starting flights of almost any Ontology so far, while invalidating hopes to henology in the process. Neither the One, nor the Absolute, nor Being, nor Being as Being, nor Knowledge will do for an irreduced Ontology. Acts and doings are what remains and what is not to be bypassed if governance is to be understood and potency irreduced. As much as description of singularities cannot be bypassed or ignored. If travelling on the dichotomic metrology opposing universals to singulars:

1.3.7 Since nothing is commensurable or incommensurable (1.1.4), the more active is the one that is able to define the mechanisms of measurement.

• There are acts of differentiation and identification, not differences and identities (1.1.16). The words "same" and "other" are the consequences of trials of strength, defeats and victories. They cannot themselves describe these links. (Ch 1, 169)

And, more precisely as to universals and generalities, under Actor-Network Theory's guidelines, subdivision four moves on:

1.4.2 When one weakness enlists others, it forms a network so long as it is able to retain the privilege of defining their association.
• In a network certain very distant points can find themselves connected, whilst others that were neighbors are far removed from one another. Though each actor is local, it can move from place to place, at least as long as it is able to negotiate equivalences that make one place the same as another. A network can thus be "quite general" without ever having to pass through a "universal." (Ch 1, 170)

Note, that what is defined, shaped, are not the others per se. But the association between them via the spreading of equivalences which are both imposed and negotiated in order to govern. And that it is a privilege, granted. Not a right, irrevocable. At least in principle. What follows in the rest of subdivision four is the introduction of networks as deflating universals into generalities, deflating universal into *quite general*. A no doubt intended vagueness translatable as more general than, "quite general" and "universal" under commas to assert that both expressions faulter. Standard Actor-Network Theory, if it exists. But, where all the characterization of actants and forces so far in the text, subdivisions one and two, had pushed forth the actor aspect of Actor-Network, we are now introduced to the Network aspect which accounts for spreading and fostering of inequivalences. More or less so-called activity, more or less so-called passivity, association wise. The expression itself is, as we have before dealt with, conjoined, not two but not quite one.

Such network aspect suffers, accordingly, similar alternate designations as the actor aspect did in the first and second subdivisions of the first chapter. Proving that the tendency to add and not subtract remains and is intended. Of saying differently to better say. Network is alternatively designated as a *spread*, as a *line of force*, line for force to spread, as *filamentlike entelechies*, as *gallery*, *way*, or *logic*. Logic, just one more road, or another alternate designation for network or network path, among others, not the road and not the network path:

1.4.4 A force establishes a pathway by making other forces passive. It can then move to places that do not belong to it and treat them as if they were its own.

• I am willing to talk about "logic" (2.0.0), but only if it is seen as a branch of public works or civil engineering. To speak in this way is more accurate than to talk, like Ulrich, of a General Secretariat for Precision and the Spirit. (Ch 1, 171)

Chapter 2 is titled *Sociologics*. It would be impossible to grasp without firmly remembering that associations and associating, as already dealt with in the first chapter and in overall Actor-Network Theory, are what is at stake by the use of "Socio". Meaning, the account and act of what is flowing together by others. And that "logics", in the chapter's title, is neither reduced to nor exclusively associated with the discipline or domain of formal logic, symbolic logic. Or even to the testing, by strictly formal tools, of arguments as expressed or constructed in natural languages, or as they are drawn from natural languages. The first chapter has prepared us at length for the above, footing us on the Principles of Irreduction and Relativity. Neither would it be correct the immediate appropriation of logics with mental reasonings, or reason itself as a faculty, a characteristic, a distinctive quality. Given the overall intention to show force is not different in kind to reason and that right is, under the curious uses of reducing and irreducing we have examined, reduceable to might, this is to be expected.

Even though, logic, mildly in the formal characterizations denied above, or as pertaining to reasoning, even to the better way of conducting so-called reasonings, further becoming a favoured methodology and within it to the so-called deduction, truth-preserving if the premises are true according to the canons, is mentioned at length in the very first subdivision of the chapter. To once more attack the distinctions between material and formal, in tune with the felt need to make due for a new materialism full-throttle. To push for the singularity of what happens only once and at only one place. This first subdivision is by far the largest in the chapter, of which there are six. It includes a succession of aphorisms on languages, theories, arguments, causes and effects, to end in the affirmative grasping of all of these as no more than translation-betrayals, exemplifying a privileged way in which forces become potency, their displacements forgotten as if they never had been:

2.1.5 Commentary is never faithful. Either there is repetition, which is not commentary, or there is commentary, which is said differently. In other words there is translation and betrayal. Despite this, exegetes never tire of imputing glosses to the text. The text is puffed up with all the glosses that it has to contain "in potentia" in order to justify all these readings.

• Texts are never faithful to one another, but always at some distance. (Ch 2, 178)

Thus, the second subdivision will proceed with translation-betrayal, once more as the sine qua non operation or act through which associations subside, progress, break. Where the first subdivision focused more on larger units of sentences, arguments, theories, languages, leading to reasonings and so-called mental processes, the second zooms on words and utterances, sayings:

2.2.1 To say something is to say it in other words. In other words, it is to translate.

• A word is put in the place of another which it does not resemble. A third word says that they are the same (2.1.1). A is not A, but B and C. Rome is no longer in Rome, but in Crete and among the Saxons. This is called "predication." That is to say, we cannot speak properly, moving from the same to the same, but only roughly, moving from the same to the other. (Ch 2, 181)

The treatment of logic or logics, nevertheless, as pertaining to the chapter's title is not achieved by or with technical expertise on formal languages, formal logics, logical systems, properly speaking of it, as the quote above implies. The conflicting aspect of forms as appliable to language and languages, be them classified as natural or non-natural, is treated on a sleight of hand where proper meanings are made to clash by adding to them, symmetrically, those meanings and uses which are, case to case, seen as not proper. Stacked here on no more than the Principles of Irreduction and of Relativity, in order to move through. Predication, which appears under comes in the quote, as "deduction" will often appear under commas, is an example of this treatment. The reduction to forms, structures, as pertaining to either mathematical forms or language forms, is specifically difficult to tackle fully otherwise, as it stands both for the most social according to the associative view fostered and as, in practice, the most predominant in our culture, philosophical and theological. Thus, almost too common in the knowledge gaining and shaping, the material counterpart to forms, networks, to be noticed. What must be

therefore irreduced. It is proposed as our main path of travel, the strongest actor-network in our hegemony seeking goals.

Of immediate relevance here in the second chapter is that, contrary to *Science in Action* where the main culprits were mathematical forms, geometrical forms, equations, diagrams, the stress focus to approach the formal is now mostly, at start, sentences, words, arguments, premisses, conclusions, language or languages. Thus, we may conclude that two major forces compose the strongest social bindings, paths, networks associations, as for turning other forces into potency, reduced, dominated even. Mathematics and languages, numbers and words, as they are materially implemented while, in the process, occluding that they are, for all practical purposes, as material as all matters. Both strongly associated with reason, reasonings, rationality.

There is but one semblance of principle in the first subdivision of the second chapter, at least as far as those we found in the first chapter under the expression "nothing is". Such semblance of principle, which does not govern, and which is not named, is:

> *2.1.8.1 Nothing is by itself either logical or illogical. A path always goes somewhere. All we need to know is where it goes and what kind of traffic it has to carry. Who would be so foolish as to call freeways "logical," roads "illogical," and donkey tracks "absurd"?*
> (Ch 2, 179)

This principle is to be backtracked by another aphorism, concluding the first subdivision. One where the Ethnology or Anthropology of the "moderns", under commas as the expression itself will be worthy of critique, slides in, predating the recurrency of the theme in chapters 3 and 4. Whatever the "magic" hereby mentioned is, the allusion to the Greeks surely puts on the path now of strictly philosophical disciplines, emergence of reason as a paradigmatic and parochial distinctive knowledge gaining tool, and the oft repeated distinction between Logos and Myth somehow already put at bay in the *Introduction* by appealing to a contemporary myth, that of Crusoe. Coherently, though, reason is not the starting culprit of the distinction, termed herewith as magical, but a parochial esthetical criterion whereby some dismiss the sounds of the languages of others, as they hear it and judge it:

> *2.1.11 If magic is the body of practice which gives certain words the potency to act upon "things," then the world of logic, deduction, and theory must be called "magical": but it is our magic.*

• Just as the Greeks called the fine languages of the Parthians, the Abyssinians, or the Sarmatans "barbaric," so we call the perfect arguments (2.1.8) of those who believe in other powers of deduction "illogical." (Ch 2, 180)

First, it must be remembered that the aforementioned perspective on associations, being what is at stake in *Sociologics* instead of the plain Sociology of the social, faulters if stacked in an accepted dichotomic distinction where what are words and what are "things", under commas, is made out as priorly and practically distinct. More so if the former, words and even languages, is seen as composed of non-material entities, fluctuating above matters and toils of humble work, non-material entities which regardless of their lack of materiality would still have the power to act, the power to govern. This applies to all similar entities eventually postulated as non-material, theories say, or concepts, forms overall. This is, for the purpose, ironically predicated, proclaimed and asserted off so, as exemplary of magical thinking, mythological thinking, superstitious belief, possibility and reality of shaping by immaterial hands. Deduction, on the other hand, suffers a similarly ironic description, corresponding to the magical belief that by subtracting something out of something you are actually adding something worthwhile to something, be it what you are subtracting material, unseen hands beginning to shape, or impure, or irrelevant, or not the essential, or not the true meaning, or not the proper meaning, up into achieving the form, the depurated thing, the conclusion that concludes all the subtracted others:

2.1.3 When many different sentences have been made equivalent, are all folded back into the first, of which it is said that this "implies them all." This single phrase is then bandied about, and it is claimed that all the others may be extracted from it "by pure deduction."

2.1.3.1 Those who reason in front of others and claim to extract one phrase from another are at best jugglers and at worst cheats. For years they have been practicing their tricks using rabbits and hats borrowed from onlookers. (Ch 2, 176)

By the chapter's end the same is applied to "thought", similarly engaged, under commas, for most of history associated with discourse or language in one way or the other, almost always adamantly so, a tenet of Analytic Philosophy overall if not of Philosophy, period. As ever a tactile feel or tactile reclaiming is making its way in, even

when the abstraction of "thought" is dealt with, not as a metaphor but aiming to express as literally as possible what occurs, and how, when thinking is associated with:

> *2.5.5 We cannot liberate ourselves from the powerful by means of "thought," but we will liberate ourselves from power when we have turned "thought" into work.*
> *• The colloquial expressions we use for the work of thought (racking our brains, bending our minds, chewing over ideas) are not metaphors but point to the work of hands and bodies common to all trades. Why, then, is this trade of thought, unlike all others, held to be nonmanual? Because otherwise it would have to give up the privilege of going outside its networks (2.1.7.2).* (Ch 2, 187)

Following the backtracking demanded in the aphorism it can be easily seen that the way of approach to *Sociologics* hereby intended will once more deny reduction, further moves toward absolutism or absolutes, universals, formalities, even if the roles of languages relations to so-called things which are away from them, referred or associated with them, a role which could be extended to concepts, is on trial in the chapter. Concurrently, an intended liberating political streak or task, implied in the wish and goal of setting things irreduced and free, still remains as a leitmotiv. Thus, the denial once more of the possibility, in practice, of reducing, and of abstracting as pertaining now to languages, be they so-called natural or so called formal, is what the backtracking at the end of the aphorism means to pursue:

> *2.1.7.2 There is no metalanguage, only infralanguages. In other words, there are only languages. We can no more reduce one language to another than build the tower of Babel.*
> *• Those who talk of metalanguage must mean, I think, the pidgin of the masters which is too impoverished even to translate what is said in the kitchen.* (Ch 2, 178)

Logics then, as expressed in the title, purposefully written in the plural and not in the singular, as languages is written in the plural, brings forth upon discourse, speech, words, deductions, reasoning, first. Those associations which, among other allies, step within language, apparently singular, as a *quite general* thing, and most of all with languages, in practice always plural, as concrete networks, for their bindings and for their strength. Banishing any solution to such achieving of strength coming from postulating any sort of metalanguage, or universal language, common language, singular language reigning over all. The chapter deals, at first, with the discourses of associations who use

discourse, forces and of weaknesses whose materials are concurrently heavily discursive, while still remaining materials, not subsumed under any Babel tower or system. But moving towards an ongoing examination, alluded if not fully explicit, associating such so-called logics, their forces and not their so-called reasonings, with the relevance the term "logos", another relevant binding or path strong holding the use of the term "logics", gathers in philosophical thought and practice. As much as, sidestepping, binding with the similar relevance the same term has gathered in Christian theology, in fact since the Stoics, as to the specificity of human reasoning, of a so-called anthropocentric divine word, an active organizer of being and beings, bordering the distinction between non-human animals and humans, civilized and non-civilized humans, barbarians. Recovering the Crusoe theme so strong in the *Introduction*, adding to it Hegelian overtones, alluded, by denying, in the use and scope of said logics of sociologics, that what is real is rational. Has a plan, an order, a reason, any complement to but strength resisting:

> *The first way of working is religious in essence, monotheist by necessity, and Hegelian by method. It reduces the local to the universal and establishes potency. It abhors magic but nonetheless emulates its methods. The second way of working renders local what is local and deconstructs potency. It leads to scepticism about all magics, our own included.* (Ch 2, 190)

Subsequently, such ongoing examination, if wishing to understand the use of logics as pertaining to logos and as central to Philosophy and Theology, confronts the overall conflicting associations the original Greek terms complies with, when freed of the cluster of its reductions, in spite of having been so exhaustively and univocally worked in one or two main bindings when it comes to the aforementioned Philosophy or Theology. That such main bindings are inherently limiting can be immediately seen both by simply consulting a Greek lexicon and by taking as is the dissimilar views on logos, dissimilar uses of logos, stemming from Ancient Philosophy itself. Though neither is explicitly used by Latour to directly argue his point. Implicitly though, as was already the case with the translating-betrayal of potency, Aristotle does come in, and perhaps in not such a negative light when we consider that Logos, in spite of the consensual pairing of Aristotle with logic, is similarly taken in the Rhetoric as but one of four modes of persuasion, the others

being Ethos, Pathos, Kairos[298]. Opening, by associating with rhetoric and persuasion, many of the roads the first chapter had dealt with and this one will now enforce when it comes to languages and reasonings, so-called premises, so-called conclusions, so called deductions, so called logics. Latour would hardly accept that in practice such distinction between these modes of persuasion might work effectively, could at all disentangle, apart from a constant translating-betrayal of each by each with no privileged dictionary or privileged translator. But it does seem that he takes kindly that Logos is, as all other associations and bindings would be, a mode of persuasion, of negotiation, of shaping, of exerting strength by others to others, the strength of the word in practice not coming at all from its, also Aristotelian, associations with logic, reasoning, valid argument. He would also obviously deny that such persuasion would limit to the spoken word, or to the word for what counts, given all written before on the Rhetoric of things, overall. In these, as in other matters, one can also not avoid feeling, similarly, that he once more moves towards, if anything, a positive reclaiming of Pyrrhonical views that also applies to the approach to the word, and use, of Logos, as pertaining to the title of the chapter, *Sociologics*. Let us remember Sextus Empiricus' words:

> *Opposed to every account* (Logos) *there is an equal account', we mean by 'every' every one we have inspected; we speak not of accounts in an unqualified sense but of those which purport to establish something in dogmatic fashion (i.e. about something unclear) – which purport to establish it in any way, and not necessarily by way of assumptions and consequence.*[299]

And now, as to establishing it *in any way at all*, the following aphorism from the third subdivision of this second chapter:

> *2.3.4 Nothing is by itself either logical or illogical (1.2.8), but not everything is equally convincing. There is only one rule: "Anything goes"; say anything as long as those being talked to are convinced. You say that to get from B to C, you have to pass through D and E? If no others raise their voice to suggest other ways, then you have been convincing. They go from B to C along the suggested path even though no one wants to leave B for C and there are lots of different routes that could be taken. Those you sought to convince*

have acquiesced. For them, there is no more "Anything goes." That will have to do, for you will never do any better (1.2.1). (Ch 2, 182)

Therefore, in the end the chapter will in fact conclude with an exhortation to the utility or need or relevance of Philosophy as to this irreduced version of what the many logos or many logics may entitle us to now travel through in the pursuit of material possibilities. And so conclude we:

2.6.4 How will we define this freedom to go from one domain to another, this scaling up of the networks, this surveying? Philosophy is the name of this trade, and the oldest traditions define philosophers as those who have no specific field, territory, or domain. Of course, we can do without either philosophy or philosophers, but then there might be no way to go from one province to the next, from one network to another. (Ch 2, 189)

Conclusion

Brief final considerations follow. There is much to do onwards.

Irreductions offers us another way, fruitful enough to be built upon, of dealing with systematics and of dealing with Philosophy overall, opening the possibility of its irreduction in a similar process to that of the Sciences the book apparently focuses on. In fact, it is an irreduction of knowing and of how such irreducting of knowing opens grounds for a different take on Ontology building, which makes it appliable to the full spectrum of existing. By systematics we mean the articulation and association of seemingly unrelated fields of experience and thought in workable paths towards approaching Ontology and towards diving in an Ontology, given that whatever we do or are engaged with we are already and always engaging in Ontology. As well as a different way of working out the abysses established between such fields of experience as they are being done in practice and in actuality by forces. At the same time it allows us to do away, as Actor-Network Theory did, with prior framings which might constrain, to express it metaphorically, a freer ride of the ontological wagon.

This is done from an original discontinuity of materials and of entities, by themselves non-reductive to each other if choosing the strategy called for, singularities, a discontinuity which however does not govern, in the footsteps of both principles dealt with, of irreduction and of relativity. Again: *It is materials that divide us, not what we do with them. If you tell me what you feel when you wrestle with them, I will recognize you as an alter ego even if your interests are totally foreign to me* (Latour, 1988: 155). This discontinuity is mitigated and/or forced away, not resolved, with a continuity of the processes by which such irreducible may ally and align with one another in order to govern and instaur material possibilities. Only if by the work (network) of others, by others, in translating them, mediating them, intermediating them, becoming beings as chimeras. Again: *1.1.4 Everything may be made to be the measure of everything else* (Latour, 1988: 157). And, as well, again: *1.1.14 Nothing is by itself ordered or disordered, unique or multiple, homogeneous or heterogeneous, fluid or inert, human or inhuman, useful or useless. Never by itself, but always by others* (Latour, 1988: 161).

Systematics, in this sense, is to be distinguished from completed systems, done for good, immutable, abstract, ideal, those aiming at explanations far from the here and now of keeping to provide them in action. Philosophical systems are otherwise said to be the end result of a systematic process which then collects and conforms what it is to contain according to its inner guidelines, thus acting upon what they intend to explain and give account of, calibrating the intelligibility of Ontology through routes that are not to be changed further ahead. As for the view hereby put forth this forcefully happens, it cannot not happen and, still, must be resisted by constant irreduction if any systematicy is the end goal. Systems resist dissolution mostly by inner logical coherence in the board where they were created and maintained, enclosed it could be said, hereby it is said that associating and connecting is the key, things following other things. We are to do away with systems, then, but not to do away with the systematicity pull, which is the challenge left unsolved for an eventual irreduction of Philosophy to be.

Systematicity, first destroyed as the application or build up of a system, is to be regained by making it equivalent, all things considered, to the translation-betrayal work of Philosophy itself, as an activity with no particular domain thus able to free and be freed, irreduced, while nearer to how Ontology is made to resist. Mostly by associating and strengthening associations materially in the guise of the new materialism which bears no counterpart or antithesis in any sort of idealism. Thus irreduced and irreducing a "real philosophy" and "real sistemacity" would gain ground as the main activity able to make things play as they are not playing now, an aspiration towards. Or, to be ambitious, as they have never played. Producing material possibilities which may turn this surprise into reality. Neither is it to primarily produce formal truth then, neither is it to primarily limit itself to plain inteligibility, both working only "in theory". Neither is it to have limits in scope, tools or materials. Not as much to transform the world, then, but to make it new trail by trail, trial by trial, test by test, by a work of clashing heads on with the materials such world is woven resistently on. For what happens only once and at only one place to be recognized and cherished as such. No matter the cost to be payed as, according to the thesis, everything is already so, once at one place. While at the same time avoiding the costs of philosophical bankrupcy, a task for the future:

> *1.5.1.1 Talk of possibilities is the illusion of actors that move while forgetting the cost of transport.*

• Producing possibilities is as costly, local, and down to earth as making special steels or lasers. Possibilities are bought and sold like everything else. They are not different by nature. They are not, for example, "unreal." There is no such thing as a free possibility. The files of consultants are expensive - ask those who went bankrupt because they produced too many possibilities but did not sell enough. (Latour, 1988: 174)

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