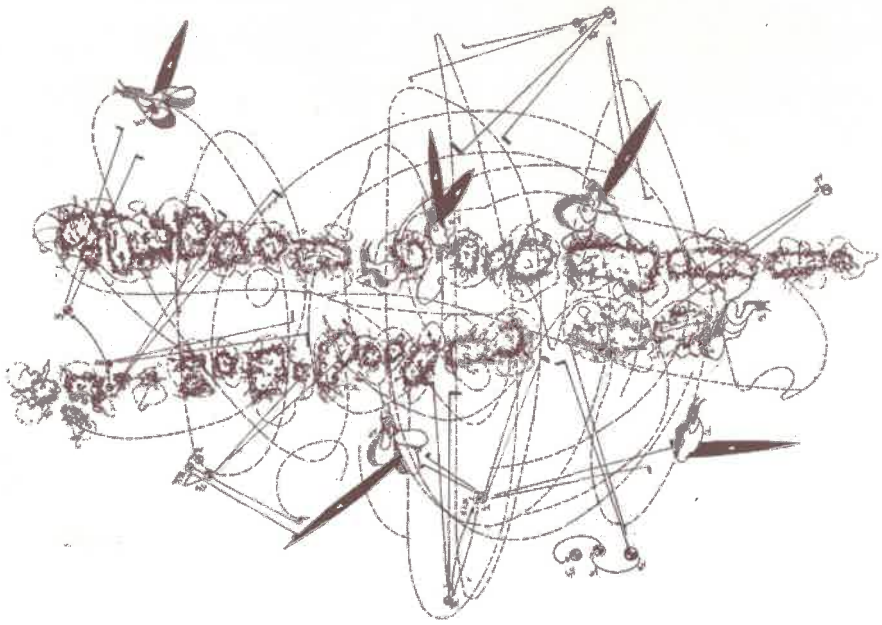


©Neil Spiller

CONTEMPORARY ARCHITECTURAL CHALLENGES 08: CONCEPTION, PRODUCTION AND PERFORMANCE / DESAFIOS ARQUITECTÓNICOS CONTEMPORÂNEOS 08: CONCEPÇÃO, PRODUÇÃO E PERFORMANCE

International Symposium about the impact of new technologies on the conception and production of architecture, and about the new conceptual challenges of complexity, emergence and sustainability. /
Simpósio Internacional sobre a presença das novas tecnologias ao nível da concepção e produção da arquitectura, e sobre os novos desafios conceptuais da complexidade, do emergente e da sustentabilidade.

Gonçalo Furtado and Rui Póvoas (Eds.)
Artur P. Alves, Jorge L. Alves, Vasco Branco, Eduardo Condorcet, Nancy Diniz, José P. Duarte, Luís P. Faria, Gonçalo Furtado, Marco Ginoulhiac, Ranulph Glanville, Luís B. Gouveia, Teresa Heitor, Ted Krueger, Mário Krüger, Pedro Leão, Carla Leitão, Neil Leach, Dirk Loyens with/com Paulo Mendonça & Ferrie van Hattum, Pedro Martins, José B. de Miranda, Josep M. Montaner, Ignàsi Solá-Morales, João P. Moura, Eugénio Oliveira, Nuno Pinheiro, Rui Póvoas, Jasia Reichardt, João Rocha, Miguel Serra, Pau Solà-Morales i Serra, Vítor Silva, Alfredo Soeiro, José P. Sousa, Neil Spiller, Joaquim Vieira, João P. Xavier

UNIVERSIDADE DO PORTO
FACULDADE DE ARQUITECTURA

CONTENTS / CONTEÚDO

CAC 08: INTRODUCTION / CAC 08: INTRODUÇÃO
Rui Póvoas e Gonçalo Furtado
CAC 08 GENERAL PROGRAM / CAC 08: PROGRAMA GERAL
CAC 08

ARQUITECTURA LÍQUIDA
Ignàsi Solá-Morales
TOWARDS AN EVOLVING ARCHITECTURAL AESTHETICS (PART A: TODAY'S TECHNO-SCIENTIFIC INTERESTS AND THE EARLIER ENABLING OF THE EMERGENT)
Gonçalo Furtado
DIGITAL MORPHOGENESIS
Neil Leach
STATEMENT
Ranulph Glanville
THAT WAS THEN, THIS IS NOW
Neil Spiller

CAC 08: PROGRAM 22 SPETEMBER / CAC 08: PROGRAMA 22 SETEMBRO
CAC 08
THE DOMAIN OF IMAGES / DOMÍNIO DAS IMAGENS
Vítor Silva
CEDRIC PRICE'S GENERATOR: THE FRAZERS' COLLECTION / O GENERTAOR DE CEDRIC PRICE: A COLEÇÂO DOS FRAZERS
Gonçalo Furtado e Rui Póvoas
IMAGE IN THE "CONCEPTION, PRODUCTION AND PERFORMANCE", REGARDING THE CHALLENGES OF CONTEMPORARY ARCHITECTURE / A IMAGEM NA "CONCEPÇÃO, PRODUÇÃO E PERFORMANCE", NOS DESAFIOS DA ARQUITECTURA CONTEMPORÃNEA
Joaquim Vieira
CCRE: DIGITAL PLATFORM FOR PUBLIC PARTICIPATION AND COLLABORATIVE LEARNING / CCRE: PLATAFORMA DIGITAL PARA A PARTICIPAÇÃO PÚBLICA E O ENSINO COLABORATIVO
Pedro Leão
A QUESTION OF GRAMMAR... / UMA QUESTÃO DE GRAMÁTICA...
João P. Xavier
NEW MEDIA, NEW TOOLS; A NEW DESIGNERS TIPOLOGY? / NOVOS MEDIA, NOVAS FERRAMENTAS, UMA NOVA TIPOLOGIA DE DESIGNERS?
Vasco Branco
FROM THE DESIGN ON TIME TO THE DESIGN OF TIME / DO PROJECTO NO TEMPO AO PROJECTO DO TEMPO
Marco Ginoulhiac
COMPLEX PROCESSES: PRACTICE / PROCESSOS COMPLEXOS: PRÁCTICA
João P. Moura
CAD AND CREATIVITY: OBSTACLE OR ENCOURAGEMENT? / CAD E CREATIVIDADE: OBSTÁCULO OU ESTÍMULO?
Nuno Pinheiro
BEYOND REPRESENTATION: A MATERIAL PERSPECTIVE ABOUT THE DIGITAL IN ARCHITECTURE / PARA ALÉM DA REPRESENTAÇÃO: UMA PERSPECTIVA MATERIAL SOBRE O DIGITAL EM ARQUITECTURA
José P. Sousa
CONTEMPORARY ARCHITECTURAL SYSTEMS: FROM THE CRISIS OF THE OBJECT TO THE DIAGRAMS / SISTEMAS ARQUITECTÓNICOS CONTEMPORÂNEOS: DE LA CRISIS DEL OBJECTO A LOS DIAGRAMAS
Josep M. Montaner

CAC 08: PROGRAM 23 SEPTEMBER / CAC 08: PROGRAMA 23 SEPTEMBER
CAC 08
PROCESS AND ARCHITECTURE / PROCESSO E ARQUITECTURA
Pau Solà-Morales i Serra
INSERTING NEW TECHNOLOGIES IN ARCHITECTURAL EDUCATION AND PRACTICE / INSERÇÃO DE NOVAS TECNOLOGIAS NO ENSINO E PRÁTICA DE ARQUITECTURA
José P. Duarte

RAPID PRODUCT DEVELOPMENT / RÁPIDO DESENVOLVIMENTO DE PRODUTO
Jorge L. Alves
DIGITAL DESIGN, OOPTIMISATION AND MANUFACTURING OF ARCHITECTURAL COMPONENTS / PROJECTO DIGITAL, OPTIMIZAÇÃO E MANUFACTURAÇÃO DE COMPONENTES ARQUITECTÓNICOS
Dirk Loyens (with Paulo Mendonça, Ferrie van Hattum)
SPACE AND KNOWLEDGE: APPLICATION OF SPACE ANALYSIS METHODS IN ARCHITECTURE / ESPAÇO E CONHECIMENTO: APLICAÇÃO DE METODOLOGIAS DE ANALISE ESPACIAL EM ARQUITECTURA
Teresa Heitor
[TO BE CONFIRMED-INFORMATION PENDING / A CONFIRMAR-INFORMAÇÃO PENDENTE]
Artur P. Alves
THE IMPORTANCE OF ARCHITECTURAL DESIGN IN PREVENTING ACCIDENTS / A IMPORTÂNCIA DOS PROJECTOS DE ARQUITECTURA NA PREVENÇÃO DE ACIDENTES
Alfredo Soeiro
[TO BE CONFIRMED-INFORMATION PENDING / A CONFIRMAR-INFORMAÇÃO PENDENTE]
Eugénio Oliveira
EXPERIMENTS IN EVOLVING SPATIAL INTERACTIONS / EXPERIÊNCIAS EM INTERAÇÕES ESPACIAIS EVOLUTIVAS
Nancy Diniz
NETWORKS AND LANGUAGE / LINGUAGEM EM-DE REDE
Carla Leitão
NEW MATERIALISM / NOVO MATERIALISMO
Neil Leach

CAC 08: PROGRAM / CAC 08: PROGRAMA 24 SETEMBRO
CAC 08
COMPUTATION, EMBODIMENT AND ARCHITECTURE / INFORMÁTICA, CORPORIZAÇÃO E ARQUITECTURA
Ted Krueger
ORIGINALITY, RELEVANCE AND DISCIPLINARITY IN ARCHITECTURAL RESEARCH: CONCEPTS AND PRE-CONCEPTS / ORIGINALIDADE, PERTINÊNCIA E DISCIPLINARIDADE NA INVESTIGAÇÃO EM ARQUITECTURA: CONCEITOS E PRÉ-CONCEITOS
Mário Krüger
DIGITAL DIALECTICS / DIALÉTICA DIGITAL
João Rocha
THE NATURAL HISTORY OF A HUMAN ALIEN: FROM BIRTH TO THE TODDLER' STAGE / UMA HISTÓRIA NATURAL DE UM ALIENIGENA HUMANO: DO NASCIMENTO AOS PRIMEIROS PASSOS DE UM BÉBÉ
Pedro Martins
ELECTRONICS AND TECTONICS / ELECTRÓNICA E TECTÓNICA
José B. de Miranda
SUBURBAN SPATIAL DINAMICS / DINÂMICAS ESPACIAIS SUBURBANAS
Miguel Serra
INTELLIGENT CITIES: FROM DIGITAL TO SOCIAL ANALOGIC / AS CIDADES INTELIGENTES: DO DIGITAL AO ANALÓGICO SOCIAL
Luís B. Gouveia
ALICE *DOES* STILL LIVE HERE: AUDIOVISUAL NARRATIVIZATION OF THE CITY / ALICE *AINDA* MORA AQUI (NAS CIDADES): NARRATIVIZAÇÃO AUDIOVISUAL NA CIDADE
Eduardo Condorcet
THE ECOLOGICAL CHALLENGE / O DESAFIO ECOLÓGICO
Luís P. Faria
'OUR DREAMS CHANGE, WE DON'T' / 'OS NOSSOS SONHOS MUDAM, NÓS NÃO'
Jasia Reichardt

TOWARDS AN EVOLVING ARCHITECTURAL AESTHETICS (PART A: TODAY'S TECHNO-SCIENTIFIC INTERESTS AND THE EARLIER ENABLING OF THE EMERGENT)[11]

Gonçalo Furtado

In the 1990s, the establishment of a new techno-cultural order - known as the Digital or Post-Post-Modern Society (and which beginnings lay far back in WWII) - occurred. Today we clearly live in it and it seems necessary to point to an advancement towards evolving architectural aesthetics which acknowledge complexity and the role of time and change.

Much of the recent architecture and its practice has been fully based on and affected by computer and communication technologies, which have enabled the virtual expansion of physical-urban space, the responsiveness of architectural buildings, and the development of new design methodologies that benefit from the multiplicity enabled by parametric-genetic design, Cad-Cams, etc. Progressively, architecture's technological interests, also led a few architects to advance its interest in new technologies, towards experimentation in such domains as the biotechnological and the nanotechnological, expanding new ways of inhabiting. (For an overview of the formers I suggest, for instance, a look at texts I produced during the last years, and of the later a focus of the work of Neil - under which supervision my most recent research was conducted in London.[12] In addition and out of curiosity, it is interesting and I also would like to highlight, how my idol - Cedric Price - pointed out that his office's interest, in the pursuit of an anticipatory design, included in 1992 smart materials, fuzzy logic and bio-electronics.[13])

To some extent, architecture's aforementioned technological interests are linked to its desire for multiplicity and a more evolving environment. It parallels the privileging of a new understanding of architecture by many contemporary professionals. Manuel Gauza, for instance, makes reference to "the new understanding of Architecture, that speaks more about processes than occurrences." [14] And, in opposition to the 'neo-rationalist schools', Gauza's "[...] way of understanding architecture is more dynamic in all respects, it's evolutionary and transformable. That is to say [...] it potentializes processes that could develop it in new ways... evolutionary ways, combinatorial, or transformable[...]. Architecture is shifting in direction to a new dynamic logic, that speaks about unstable,unending, undetermined, informal, not formally predetermined, processes."[15]

In this connection, it is also noticeable that recent Architecture has clearly fuelled a particular interest in the scientific thoughts of complexity and emergence. It may be noted that new scientific-philosophical ideas, like that of chaos, were introduced into many fields. Peat stated: "Today chaos theory along with its associated notions of fractals, strange attractors, and self-organization systems, has been applied to everything from sociology to

---

[11] This article was originally published in Portuguese; see: Arq./a, Nº Jan, 2008, pp.20-23.
This article is based in an extract from the text produced while frequenting the PhD Program of UCL. The PhD dissertation focuses on the encounters of the British professionals - Gordon Pask, Cedric Price and John Frazer - and provides a complete account of two outstanding architectural projects related to systems and computation - Generator and Japan Net. The research and PhD was supported by Fundação para a Ciência e Tecnologia (Programa de Bolsas de Doutoramento - Cofinanciamento do Programa Operacional da Ciência e Inovação 2010 e do fundo social Europeu).

[12] See my books: "Notes on the space of digital technique" (Oporto: Mimesis, 2002), "Marcos Cruz: Unpredictable bodies (Oporto: Mimesis, 2004), "Off fourm: Postglobal city and marginal design discourses" (Bogota: Pei, 2004), "Interferencias: Conformação, implementação e futuro da cultura digital" (Oporto, 2005), "The construction of the critical project" (Bogota: Pei, 2005), "Architecture: machine and body" (Oporto: FaupEditorial, 2006) .

[13] "Constant updating of information and data held by the office becomes an internal design exercise in its own right. This process helps towards maintaining the efficacy of the office's prime approach to architecture which is one of continuous Anticipatory Design. Architecture is too slow in its realisation to be a 'problem solver. Thus C.P. office sees its particular product (buildings) as the readily recognisable parts of its continuous design process[...]. Current particular interests are... smart materials, Fuzzy logic (the quantification of vagueness), Bio-electronics[...]."
Cedric Price, "Architecture and Technology" [Summary of speech given in Delft, 1992], in: Hans-Ulrich Obrist and alts (eds.), *Re:CP* , Basel: Birkhauser Verlag AG, 2003, p.136.

[14] Interview to Manuel Gauza, in: "*Arquitectura e Vida*, N.38, Lisbon, May 2003, pp.50-57.

[15] Ibid.

psychology, from business consulting to the neuro sciences." [16] According to engineer Cecil Balmond, in his thought-provoking article "New Structure and the Informal": "[...]New science offer a fresh start. Reflecting the linear and hand-me-down logic of the hierarchical thinking, new science openly embraces the complex. The non-linear is adopted. What is new is the admittance of feedback as motive. There is overlap, and the simultaneous is empowered. Incredibly, such starting points of the chaotic are seen to lead towards stabilities and coherence, driven by natural self-organizing wills. The paradigm is one of emergence[...]."[17] In this connection, one should note that Charles Jencks, the author of *Postmodern Architecture*[18], expanded the historical account in a subsequent book contemplating "[...] how complexity science is changing architectural culture."[19] In another place he associates this *New Paradigm in Architecture* to a second stage of postmodernism: "Since the mid-1980s, some Postmodernism caught on and became a global movement; like its parent modernism[...] [W]ith [...] real changes in attitudes and practice... the movement of postmodernism has reached its second main stage. This stage is termed the New Paradigm, or Complexity Two. [...] Complexity Two stems directly from the earlier work in the 1960s on systems theory, the New Paradigm grows out of the Post-Modern movement in science, so there is both a continuity and change... Complexity One and Two are committed to pluralism - that is why they are both Post-modern - but in very different ways."[20] In addition, the *Architectural Design* issue from mid-1990s, edited by the same author, constitutes another revealing document of the impact of the "New Science" on a "New Architecture".[21] In fact, an emphasis is identified in the connections between architecture and the discourses of systemic complexity (i.e. with quantum mechanics and thermodynamics along with catastrophe theory, chaos theory, fractals, non-equilibrium theory, etc). Jencks' 1997 text suggested that "complexity is the theory of how emergent organization may be achieved by interacting components pushed far from equilibrium (by increasing energy, matter or information) to the threshold between order and chaos. This important border or threshold is where the system often jumps, bifurcates or creatively interacts in a non-linear, unpredictable way (the Eureka moment) and where the new organization may be sustained through feedback and the continuous input of energy. In this process quality emerges spontaneously as self-organization, meaning, value, openness, fractal, patterns, attractors formations and (often) increasing complexity (a greater degree of freedom)."[22]

Even though it doesn't seem that we should accept the advent of this organicness as a given, it is a fact that the discipline of architecture needs to reflect upon ways of dealing with the complexity of its contemporary world. In the area of design, the influence of the new sciences can be seen in the use of computers for generative, topological and self-organizing experiments. In the area of construction, this can be seen in the investigation of evolutionary spaces, that ponders the relation between the environment and users as something dynamically interactive. In short, both intended to problematize

---

[16] The sixth chapter of Peat's account on the shift from certainty to uncertainty focuses on one of its historical steps -"The introduction of chaos into the art of sciences. See:
F. David Peat, *From Certainty to Uncertainty: The Story of Sciences and Ideas in the Twentieth Century*, Washington: Joseph Henry Press, 2002, p.115.
- It can also be noted that, in relation to this subject, one noticed that particular interests were employed operatively in architecture and urbanism, such as Chaos theory, or Fractals. See:
Michael Batty and Paul Longley, *The Fractal City*, UK: Academy Press, 1994.

[17] Cecil Balmond, "The New Structure and the Informal", in: Charles Jencks (ed): *Architectural Design* - "New Science = New Architecture", N.129, London, 1997.

[18] Charles Jencks, *The Language of Postmodern Architecture*, London: Academy Editions, 1997.

[19] One notes also that *Cedric Price Retriever* indicates that price possessed Jencks's *Postmodern Architecture* (Academy, 1975). In this connection see:
Samantha Hardingham and Eleanor Bron (eds.), *Cedric Price Retriever*, London: Institute of International Visual Arts, 2006, 2006, p.98.
- See also: Charles Jencks, *The Architecture of The Jumping Universe: A Polemic: How Complexity Sciences is Changing Architectural Culture*, Academy Editions, 1995.

[20] Charles Jencks, *The New Paradigm in Architecture*, New Haven and London: University Press, 2002.

[21] Charles Jencks (ed.), *New Science=New Architecture*, Architectural Design Profile, N.129, London: Academy Editions, 1997.

[22] Charles Jencks, "Non-linear Architecture", in Charles Jencks (ed.), *Architectural Design*, N.129. "New "Science=New Architecture", London, 1997.

the conventionally more accepted design over deterministic approaches and explore building responsiveness.

In relation to the discussion of complexity in architecture it is important to extensively refer to Chris Abel's prodigious "Visible and Invisible Complexities".[23] It consists of a conscious text where the author criticizes a tendency that arose in the 1990s for an interest in a merely superficial, visual and formal complexity; while highlighting how the Information Technologies and Complexity' Era affects architectural conception and production in a distinct level (an opinion which I share). Abel goes back precisely to computation and the organic dynamics of cybernetics and adaptative machines, and recalls early reflections of the Information Era in Architecture.[24] He then moves on to the use and impact of information technologies at diverse architectural levels.[25] Abel alludes to "Friedman's vision of a self-building community", and goes on to criticize the "pseudo-complexities" of many well-known mainstream practices, from which arose a mere formal-visual complexity. These only superficially achieve, according to Abel, their supposed aim of diluting the architect's gesture, persisting which on the exclusion of others, due to its incapacity to translate the complexity that emerged within the real world: [26] On the contrary, the Information Era's aspects previously described by Abel, act in a distinct direction. As he states: "The essence of all these innovations and developments, as of the organizational and social complexities which arose from them, is that they involve multiple human and technological agents combining with unpredictable consequences."[27] The conclusion have the explicit title "Local Space, Global Mind". Abel's account, is thus extremely relevant to mention here as it traces the rise of our Complexities Era to half a century ago, and highlights that its significance resides at a level distinct from the mere visual-formal dimensions privileged by some current architects' practices, i.e., at the level of enabling dialogue, and of the acknowledged interaction of the complexities brought about by the multiple interactions of the real world.

At this point, it should be emphasized that the still ongoing shift in post-modern architecture, to embrace issues of complexity and emergence, was impulsed by the impassiveness and nihilism in which post-modernism itself falls, after decades of engagement with the issues of language and meaning (from the structural appeal of the 1960s to the 1980s' post-structural trend of Deconstruction) in trying to challenge a stricter Modernist credo largely marked by predetermined aims, linear thought, and static principles-canons. However, it must also be seen as something parallel to the progressive establishment of a new techno-cultural order - the Digital Society - (a post-

---

[23] Chris Abel, "Visible and Invisible complexities", in: *Architectural Review*, V.199, N.1188, February 1996, pp.76-83.

[24] I.e., first, Cedric Price's contemplation of invisible parameters, Yona Friedman's design inclusion of the user, Architecture Machine Group's focus on the man-machine dialogue and Gordon Pask's vision of it as a learning system; second, the theoretical shift that acknowledged the non-deterministic sciences of systems and complexity, expressed in occurrences such as Royston Landau's 1969 and 1972 *Architectural Design* issues. See:
Ibid

[25] Including the 1980s' use of information technologies and flexible manufacturing systems (also) in the customizing of architecture; the application of computerized systems in the pursuit of intelligent buildings; the exploration of C.A.D. and production methods, including the collaborative networks, C.A.M. and V.R.; and, finally, the conformation of the global network that supports collaboration, communities and intelligent agents. See:
Ibid.

[26] Abel state: "Instead of genuine human development or dialogue, what we get is a poor substitute usually dressed up in an obscure language to resist detection."
Ibid.

[27] Abel continues: "No single designer or team of designers could possibly substitute the same order of complexity which is the natural result of so many freely interacting agents." And in the last point of his article, explicitly titled "Towards an architecture of dialogue", he states: "It is questionable how long the architectural profession can sustain the deceits and delusions of these architectural dinosaurs in the wide open, participatory world of the Internet". See:
Ibid
- It is also important to point out that, in parallel, Abel consciously makes us aware that "...Friedman's and Negroponte's radical vision of computer based, democratized architecture of non-architects offers a drastic alternative ..." and goes on to recall the existence of many talented practitioners who genuinely privileged an inclusive dialogue with users; as well as the existence of beneficial understandings about Intelligent Buildings by bio-tech designers who "...are well tuned to both the visual and invisible complexities of the Age." (This is followed by a conclusion describing architectural transactions between West and East under the explicit - and today's crucially significant - title, "Local Space, Global Mind".) See:
Ibid

post-modern moment, in which we find ourselves currently). Digital Society has evolved since the post-war period, and, in many respects (of both conceptual and technological order), has a direct connection with the earlier areas of cybernetics, systems research and computation. In regards to this, I could briefly summarize what I state in my PhD inviting those interested in more depth to take a look at the full work: "Around the mid-1990s, the architectural agenda finally began to refocus itself on the new techno-cultural order of the Information Society and on an aesthetics of complexity and emergence. [...] However, the envisioning of an more evolving character and the current architectural emphasis on a spatiality of emergence open to the diversity brought on by time, has long since matured. This process took place within the seminal exchanges between cybernetics, systems research and computation, which had crucially occurred during [the encounters of three personalities]"[28]. Those were cybernetician Gordon Pask, architect Cedric Price and architect John Frazer; and of particular significance was the occurrence of two Price's projects - the Generator project (dated 1976-1980 and later revisited) developed under the Frazers' consultancy, and the Japan Net Competion Entry (from 1986) developed with Pask. "It is no coincidence that both of these projects pertaining to Cedric Price, from which derived a [philosophical] postmodern questioning concerning architecture's role in society and the architect's status. [As it is known], Price's production also accepted up-to-date technology and was instrumental in high-tech developments and the like. However, it was never in favour of the mere uniformization and commercialisation that such an approach now permits. On the contrary it was intended simply to enable change to flow. Among Price's radical productions, the [previously mentioned] Generator and Japan Net projects represented a unique contribution to the contemporary debate about a responsive, informational and evolving design as well as potentially influencing more recent developments in technological and conceptual orientated architecture. It was Price's acknowledgement of the new ideas and technologies that enabled Frazer and Pask to push forward their research into precise architectural projects. Together - Pask, Price, and Frazer - [...] advanced design towards an evolving environment. They prepared the roots for the current dynamics, and have continued, until today, to offer seminal ground to which one should return to face urgent speculation, on a technical and conceptual level on the subject of future developments at a time when architecture is facing a post-industrial, global, uncertain, and ever-changing world. Instead of trying to reinforce predeterminations in the form of static solutions, architecture could acknowledge the permanent cultural oscillations of society, find ways to help deal with the consequent feedback; and advance towards the conception of design systems creatively open to interaction, adaptation and evolution, as the cultural productions of our civilization - from past knowledge to future technology - allows."[29]

---

[28] See: Gonçalo M. Furtado C. Lopes, "Envisioning an Evolving Environment: The Encounters of Gordon Pask, Cedric Price and John Frazer" (PhD Dissertation; Supervised by Neil Spiller and Iain Borden), Bartlett-University College of London, 2007.

- I would also like to express my gratitude to several people: to Terence Riley for the interview we titled "Mediatization and Vanguard" (published in *[W] Art*, N.1, Oporto: Mimesis, 2003, pp.97-103); to Christian Larsen for his help during my visit to MoMA's archives; to the Portuguese Ordem dos Arquitectos for their invitation to made a presentation about MoMA's (2002) *The Changing of the Avant-garde* exhibition and the Metabolists at the Serralves Museum in 2003; to Howard Schubert and Anne Marie Sigouin for their help during my visits to C.C.A. archives in 2005; to Vitor Silva for his brief commentary on my paper "Notes on Systemic and Cybernetic Thought in Architectural Representation, and the Enquiring into Notions of Authorship and Disciplinary Authority in Price…" submitted to *PSIAX* in 2004; and to Jonathan Hill for his commentaries on my presentation at Bartlett "Enabling Architecture and Technological Responsivity in Cedric Price … post-WW II architectural discourses" (2005). I am grateful to Oporto University's FAUP for their support for the realisation of the documents "Towards a Responsive Architecture: Cedric Price's Generator and Systems Research" (FAUP, March 2006) and "Envisioning an Evolving Environment: The Encounters of Gordon Pask, Cedric Price and John Frazer" (FAUP, Submitted February 2007), and to Fundação para a Ciência e Tecnologia whose scholarship fund made my research possible (Cofinanciamento do Programa Operacional da Ciência e Inovação 2010 e do fundo social Europeu).

[29] Ibid.