OWARDS AN EVOLVING ARCHITECTURAL AESTHETICS (PART A: ODAY'S TECHNO-SCIENTIFIC INTERESTS AND THE EARLIER NABLING OF THE EMERGENT)[11]

onçalo Furtado

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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

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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

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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-

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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]

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[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 *RSIAX* 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)
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- 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]

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[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.

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[29] Ibid.