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EPIMETHEAN ARCHIVES:

A Stieglerian approach to socio-spatial memory exteriorization in Hillier and Portugali

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Abstract

This article explores the overlapping but irreducible approaches to the urban problematic found in the works of Bill Hillier and Juval Portugali. Central to this exploration is the notion of the city as an entity in which concurrent processes of morphogenesis and societal memory exteriorisation unfold. The article is broken into three parts. In a first movement, the work of Portugali is presented and discussed; the focus will be on Portugali's concept of Synergetic Inter-Representational Networks (SIRN) and the related notions of the order parametre and the principle of enslavement. A second movement sees the Hillerian theory of space syntax presented and discussed; a particular focus is given, here, to his notions of abstract materialism, morphic language and description retrieval/embodiment. An intermezzo discusses the notions of "artefact" and "archive", before the article provides -in a third and final movement - a Stieglerian perspective on the spatial problematics of Hillier and Portugali. In facilitating a dialogue between the two theoretical approaches to the city, the article aims to open up new avenues of thinking in the emergent field of urban materialism.

Keywords: *Space syntax; Synergetic Inter-Representational Networks (SIRN); the artefact; the archive*

Theme: *Spatial Analysis and Architectural Theory*

Introduction: complexity and the question of the city

The question of complexity has become increasingly important in the discussion of urban social processes and urban form. A seemingly logical continuation of an epistemological endeavour that traces successful lineages in computing (Turing 1950), biology (Turing 1952; Kaufmann 1993; Waddington 1968-72), theoretical physics (Simondon 1964; Wolfram 2002) and architecture (Venturi 1966; Kwinter 2001; Alexander 2003; Kwinter 2008), the notion of complexity and the concepts found in its vicinity - far-from equilibrium conditions, emergence, nonlinearity, phase change, fractal patterning to name but a few- has found a considerable audience in the realm of urban studies and human geography (see Schelling 1971; Allen & Sanglier 1981; Allen et al 1985; Dendrios & Sonis 1990; Batty & Longley 1994; Batty & Xie 1994; Frankhauser 1994; Benguigui 1995; Allen 1997; Batty & Xie 1999; Thrift 1999; Benguigui, Czamanski & Marinoc 2000; Batty 2005; Chen 2009a; Chen 2009b; Chen 2009c). The embrace of complexity - its more or less direct transposition from the arena of atoms, of mathematical figures and of biological processes- is not, however, without its problems. A key objection is that it obscures the importance of human agency as well as the role of discursivity in sociological processes (Portugali 2011): the pattern of the leopard's coat may well be organised by complex, emergent signalling processes, but to what extent may these processes be applied to problematics in which discursive/reflexive behaviour may reasonably be expected to exert an influence? With regards to the urban question, one may ask whether the events of the city - such as settlement patterns, or even further still: urban morphogenesis - are reducible to phenomena emerging purely from material vibrations? Or if, rather, they unfold at an even more complex place, where matter intersects with reflexivity or thought? Such questions enquire not just into the relationship between mind and matter. On a more profound level, they enquire into the relationship between social behaviour as this is perpetuated by the actions of the human body - e.g. the ritual and the speech act - and social behaviour as this is relayed to the extra-somatic world of man-made objects, that is: to the realm of artifacts.

Present article will explore two academic trajectories that have grappled - each in its own way - with the problem of the city *qua* artefact. Both present a perspective that deftly navigates the territory defined between on the one hand complexity, and on the other the city as "representation" of socio-economic processes (in many ways, the *leitmotif* in human geography before the rise of the complexity paradigm). First will be presented the work of Portugali on complexity, cognition and the city. Following this, the work of Hillier and his notion of space syntax will be discussed. While not completely isomorphic, one finds in both *oeuvres* a commitment to unfold the complex processes in which objects or artefacts are created and the equally complex processes which surround Man's interaction with them. As the article will argue, such an artificial approach to the city has two implications. Firstly, it implies a dual complexity in morphogenetic processes initiated by man the artificer. Secondly, it implies a profound but equally complex relationship between specific social cultures and the objects that may be seen to participate in the perpetuation of such cultures through time and space. Having summarised the findings of Portugali and Hillier, the article will dwell on the nature of morphogenesis and memory exteriorisation in a brief intermezzo that revolves around the notions of "the artefact" and "the archive". Before concluding, the article will discuss ways in which the theorisation of the city may benefit from being situated in a wider discussion of artifactual autopoiesis and archival memory exteriorisation.

Portugali: dual complexity of the city and the question of synergetic inter-representational networks

Portugali's enquiry is into the relationship between embodied cognition and the complex, extra-somatic processes that occur in cities. He takes as his point of departure a discussion of the drawbacks of a complete and unreflected adaptation of complexity in the study of the urban object and the processes occurring within it. That is not to say that he disavows complexity. In his work, one finds a keen eye for the power of complexity but also for its limitations when discussed vis-a-vis the city. Portugali therefore takes great care to draw attention to the similarities and the differences between the systemic behaviour of social and nonsocial systems:

> "[S]imilarly to many complex natural systems, the artifacts cities are complex self-organizing systems too. Similarly to natural complex systems they come into being by the process of emergence out of the interaction between the many parts of the system, and similarly to many natural complex systems, they are far from equilibrium systems typified by phenomena such as fractals, self-organized criticality, chaos, and nonlinearity. [...] indeed, there are significant resemblances between natural complex systems and cities, but beyond the similarities there are also significant differences that cannot be ignored. Firstly, cities are dual complex systems in the sense that each of their elementary parts - the urban agents (the individual, households, firms, or public agencies)- is a complex system, too. Secondly, and related to the above, cities are artifacts, that is to say, the product of humans' intentions, aims, politics, learning, and hopes (Portugali 2011, 14)."

One finds here, in this short extract, the two main propositions that Portugali puts forth: i) Cities are dual complex systems inasmuch as the components or agents that are found within them are complex themselves. This is a cognitive correction to the physicalist voices of the complex cities discussion. And ii) certain city-processes are situated in an artifactual environment that, whilst integral to human behaviour, is exterior to the human body. This is a materialist point, but "materialist" in the tradition of Spinoza - dissecting the influence of bodies on bodies - more so than Marx, in whom the notion denotes the material reification of economic substructure. Between these two positions - that of cognition and that of materialism - Portugali constructs a highly original approach to the (complex) city. Weaving together concepts from complexity science, socio-spatial theory and cognitive science, said philosophy revolves around the notion of Synergetic Inter-Representation Networks (SIRN), a concept Portugali develops alongside Haken. Haken's notion of "synergetics" (Haken 1983) theorises the spontaneous emergence of order out of chaos by way of an "enslavement principle", the former leading to the establishment of a so-called "order parameter" that brings otherwise disparate parts together in an increasingly holistic resolution of an initial (local) problem. One may think of the principle of enslavement as an emergent principle which, following an initial perturbation, leads to the creation of systemic order within an otherwise chaotic state; it is the batesonian "difference which makes a difference" (Bateson 1966), the contrapuntal motion that leads to the eruption of harmony from otherwise disparate melodic lines.

The object of Portugali's interest is the eruption of *representation*-as-order-parametre, that is: representation as guiding or directional principle. This eruption is theorised to occur at the boundary of human cognition and human expression (two faculties that are difficult to separate in Portugali) and the order parametre is, in turn, conjectured to precipitate a wide range of socio-spatial events, all of which are enslaved by it. These include the emergence and solidification of cognitive maps as they are conjectured to arise in an open-ended dialogue between mind and city; but they also comprise socio-spatial phenomena such as emergent

patterns of urban adornment (Portugali mentions the sudden popularity of a particular type of balcony in Tel Aviv), and settlement fluctuations, conjectured to emerge from a conflict between internal and external representation (with reference to Festinger, Riecken & Schachter (1956), Portugali calls this phenomenon: "spatial cognitive dissonance" (Portugali 2011, 319)). In all instances, the central element in Portugali's argument is the notion of SIRN. In his reading, SIRN are networks of socio-cultural knowledge which draw as much on the mind of the individual as they do on the affordance of the urban environment:

> "The essence of the SIRN process [...] is a circular causality between two-scaled self-organizing systems, forming a single network of internal an external representations: the individual free agents determine the city which can thus be seen as the external representation of their actions and behaviour; and the city in its turn determines the internal representation (e.g. cognitive maps) of individuals and through these their action and behaviour in the city, in a circular causality [...] What we try to achieve by this new kind of modelling is to be able to examine, simultaneously, self-organization at the local level of the individual, and self-organization at the global level of the city: to see how the city dynamics might create a self-organization process at the individual level, and how the latter might entail self-organization at the city level (Portugali 2011, 90)."

In summary, Portugali's *propos* is to introduce to the discussion of complex urban processes the equally complex processes of cognition. This is explored, convincingly, with respect to the dyad of representation as this is dialectically constructed in the SIRN reality of the city-artifact with respect to cognitive mapping/wayfinding and the emergent development of neighbourhood characteristics (the balconies in Tel Aviv). However, one also finds in Portugali less convincing and somewhat mystifying attempts at grounding the process of urban morphogenesis - the production of urban form - in the otherwise promising discussion of synergetics. His point that "[...] each urban agent is a planner at a certain scale (Portugali 2011, 234; and again 287; and 288)", is a claim that is not further qualified and that ultimately remains unconvincing. When Portugali is at his best, he therefore constructs a novel, dialectical perspective on the Lynchian question of “the image of the city” (Lynch 1960), as this "[...] evolves as a play between internal representations that are 'subevents' constructed by the mind, and external representations that are events constructed in the world. Such a play gives rise to an inter-representation network that in a process of feedback or "circular causality" constructs the world outside and inside (Portugali 2011, 126)". Conversely, he is at his most speculative when attempting to transpose this logic to the question of urban planning.

Hillier: the dual nature of of morphic languages and the abstract materialism that supports it

One finds in Hillier an enquiry that shares with Portugali the programmatic ambition of returning to the city-as-artefact. As was the case with Portugali, Hillier's exploration of urban processes goes beyond the "economising" approach to space found in Marxist geography at the same time as it exceeds the facile transposition of mathematical pattern-creating models as these are otherwise deployed in the exploration of physical, biological and computational phenomena. Calling for the elaboration of what he refers to as "the sciences of the artificial (Hillier et al 1976, 147)", Hillier asserts that the boundaries of mathematical modelling are reached when theorising the processes inherent to the construction of urban form. "Even if nature does work mathematically", he writes," this does not imply that man the artificer also does. To believe in a mathematical order inherent in complex artificial objects requires us to

believe that man creates more mathematically than he knows (Hillier et al 1976, 148)."

This raises the question of what group of languages - if not those associated with mathematics - artifactual production may be said to participate in. Hillier's explication of this problem revolves around the notion of "syntax", a concept he extracts from linguistics and deploys in the exploration of socio-spatial phenomena. The problem of syntax - understood, here, as relationships between individual elements, and the global configurational patterns that these local relationships give rise to - lies at the foundation of what Hillier calls "morphic languages" (Hillier et al 1976; Hanson & Hillier 1984). These are languages that have neither the properties of natural languages (large lexica of highly individuated units (words); relatively short grammar), nor those of mathematical languages (small lexica; large syntaxes). Morphic languages are different from these faculties of human communication and understanding, even if they appropriate - as Hillier points out - key elements from the latter. He writes:

> "From mathematical languages, morphic languages take the small lexicon (that is the homogeneity of its primary morphic units), the primacy of syntactic structure over semantic representation, the property of being built up from a minimal initial system, and the property of not meaning anything except its own structure (that is to say, it does not exist to represent other things, but to constitute patterns which are their own meaning). From natural languages, morphic languages take the property of being realised in the experiential world, of being creatively used for social purposes (or permitting a 'rule-governed creativity'), and of being constitutive rather than representative of the social (Hillier et al 1976, 152)."

The notion of morphic languages is of particular interest to an enquiry into the processes constitutive of the city-artefact inasmuch as it defines a principle that accounts for urban morphogenesis in an object-centred, non-representational way; "the minimal initial system", referred to by Hillier, effectively denotes the process in which an otherwise completely random aggregation of architectural objects -when subjected to a few initial rules at the local level - manifests itself in an increasingly stabilised global structure. The notion of morphic languages furthermore provides a unique perspective on the sociological affects conjectured to arise within the city-artefact. Morphic languages, Hillier contends, assert themselves in the *constitution* - rather than the *representation* - of social patterns by literally sequencing human movement and interaction. Not reducible to a schema of representation - in which urban processes would be the mere reification of other, deeper-lying, principles - the notion of morphic languages thus straddles on the one hand the processes driving urban morphogenesis, and on the other: the relation of the urban object to social morphogenesis. This makes it a concept of great power and elegance.

If the notion of morphic language is central to the Hillerian enquiry, it is as part of a group of concepts that also include the dyad "description retrieval/description embodiment". Together, these concepts make up what Hillier and Hanson refer to as an "abstract materialism" (Hillier & Hanson 1984, 215). The latter is a form of materialism that governs the dialectical but irreducible relationship between the otherwise sterile realm of abstract social relations conjectured to subsist in all societies, and their always imperfect embodiment in the real world. Description retrieval and description embodiment describe the processes whereby morphic languages - including spatial patterns and socio-relational patterns - are created and perpetuated through time; they are the means through which morphic languages become realised in the experiential world. It is in this sense that abstract materialism may be said to govern two processes -urban morphogenesis and social morphogenesis - that are coincidental even if they are anisomorphic. Applied to the problem of urban morphogenesis, abstract materialism describes the processes presiding over the formation and perpetuation of spatial

patterns (or "configurations") at different scales: from the particular distribution of space found in vernacular building cultures (known as "architectural genotypes" (Hanson & Hillier 1984)), via compound and settlements patterns, up to the level of cities and megacities. Conversely, when applied to the problem of social morphogenesis - that is: the creation and perpetuation of social relationships - it describes the way in which artifactual entities - situated outside of the human body - may influence and indeed sequence the movements of the human body, even if these sequences operate probabilistically and thus according to a stochastic rather than deterministic principle.

Intermezzo: the artefact and the archive

If the notion of artefacticity is key in the investigations of Portugali and Hillier it is because it enables them to explore the urban problematics somewhere between the pure physicalism of certain complexity theoreticians and the socio-economical position of Marxist geographers. However, evoking the notion of the artefact in what is effectively a sociological enquiry is not without its problems. Traditionally, the artefact has been found on the fringes of the social sciences: the docile incarnation of an anterior (and active) vernacular culture; the material reification of a social before. A school of post-Marxist thinkers (Leroi-Gourhan 1993, Simondon 1958; and Gille 1978), has, however, tried to reappropriate and radicalise the question of the artefact; in many ways, their work may be seen to precede that of Portugali and Hillier. In their reading, the artefact is infused with vitality by evoking the biological concept of lineages. As in biology, technological lineages are conjectured to carve out evolutionary trajectories for themselves in a preindividual field filled with potential[1]. Accordingly, the formation of a lineage is thus a product of an autopoietic process - the spontaneous and self-initiated creation of an entity - before it is a question of human ingenuity. To put it simply: the given artefact follows a trajectory defined as much by potentials inherent to itself and its lineage as it does one defined by the human that “invents” it. Now, if a biologically informed approach to the question of the artefact is not just feasible but even fruitful to the discussion of the city, it is because it addresses some of the complexities of the city-artefact just discussed. A vitalist artifactual approach effectively divides itself into two enquiries: what is the lineage of the city-artefact; and how does this artefact affect social behaviour? While the former is a question of genesis – “in what epigenetic landscape is the trajectory of the lineage defined”?- the latter is a question of "affordance" in the sense discussed by Gibson (1977). Hillier describes in great detail the material processes inherent to the production of the urban artefact, but Portugali arguably goes further in discussing the question of urban affordance. In his terminology, the city is a repository for cognitive and socio-cultural information: a "common reservoir" (Portugali 2011, 163) which acts as an "external memory storage" (Portugali 2011, 258). The terminology he introduces here is of great importance. It betrays a shift - subtle but crucial - in the approach to the problem of the city: from dealing with the genesis of the city proper, to dealing with the genesis that it gives rise to in other material entities (individuals, social groups). By approaching the urban question as a problem of memory exteriorisation, Portugali effectively transforms it from a problem of the artefact to a problem of the archive.

Approaching the problem of urban memory exteriorisation by way of the concept of the archive may well be useful; if nothing else, because it inscribes the urban problematic in a rich theoretical tradition. If the notion of "Spirit" haunted the nineteenth century, then the concept of the "archive" suffused late twentieth century thinking. One finds it explored in at least three overlapping readings: the first is Derrida's reading of Freud (Derrida 1995); the second is

[1] See Waddington's (1953) concept of the "epigenetic landscape" -a preindividual or virtual landscape in which the evolutionary pathway of the individual is shaped - for a comparable biological concept.

Deleuze's reading of Foucault (Deleuze 1988); and the third is Stiegler's reading of Gille, Leroi-Gourhan and Simondon (Stiegler 1998). In Derrida's reading, the archive is that technical substrate in which a truth is at once instigated and preserved. Understood as such, the archive is *nomological* -it names that which is within the archive - at the same time as it is *economical*: seeking to preserve that which is counted-as-one in the nomological event. One thus finds in Derrida's elaboration of the notion of the archive a clear link to the rest of his work on *différance*; a concept found at the intersection of that which "differs" (i.e. "changes", "ruptures") and that which "defers" (that is: postpones, puts in storage, anticipates). To Derrida, the archival truth is an exteriorisation of the productive capacity of the human body; it is a formative power relayed *to* and preserved *in* a (technical) substrate. In Platonic terms, the Derridaean archive participates in a truth that is *hypomnesic* (truth grounded in public record or archive) rather than *mnesic* (truth grounded in individual memory) or *anamnesic* (truth grounded in a transcendental realm reachable -exclusively- by the human mind). However, if Derrida's discussion of the relationship between the archive and the subjective truth that it adheres to is original and insightful, he nevertheless fails to develop a theory of the archive in itself. His archive always relies on a subject; it is the inactive keeper of that which the subject grounds and preserves. That the hypomnesic archive may take on a life of its own - that it may become, somehow, self-moving- remains an impossibility in the Derridaean analysis.

This question - the question of the archive as self-movement - is explored in a more satisfactory manner in Deleuze's reading of Foucault. Here, the notion of the archive is explicated with respect to two interrelated but irreducible multiplicities. These multiplicities - known as "statements" and "visibilities" - are best described as formations of what may be said (the statement), and what may be seen (the visibility) in a given historical situation. Taken together, the statement-archive and the visibility-archive incarnate the power relations particular to a given epoch. In this capacity, they lend themselves to the archaeological analysis championed by Foucault[2]. Now, if the archive as theorised by Foucault/Deleuze is convincing, it is to the extent that it posits an archival subject that is constructed between two irreducible *multiplicities*. These are expressions of the same thing - "the anonymous murmur" of Power (Deleuze 1988, 47) - but they are not isomorphic. The statement-archive is the global curve that constitutes itself in the vicinity of a multiplicity of enunciations (e.g. penal codes, medical journals, management literature), while the visibility-archive is the global curve constituted in the vicinity of a multiplicity of visibilities (the architecture particular to a given epoch: e.g. the prison, the clinic, the factory, the work house, the (open) office). As such, they make clear the complex nature of the subject that grounds the archive - halfway between words and things- that is only insinuated in Derrida. Where Foucault/Deleuze are less convincing is in their description of the relationship between the two archives; a relationship which, paradoxically, is said to be irreducible at the same time as it is effectively presented as hierarchical. The statement, it is asserted, has "primacy" (Deleuze 1988, 43) over the visual archive. In this sense, the latter must always react to instabilities in the former even if it is said to follow its own laws. Accordingly, it is only when "madness" has been established as an enunciative fact that the "clinic" - with its spatio-visual properties - may be constructed. Now, to order, in this way, the relationship between the archive of the enunciable and the archive of the visible may be a reasonable approach when discussing vernacular architecture; indeed: other theoreticians have examined the relationship between power, language and space in a similar way (e.g. Evans 1995). Yet, it appears unsatisfactory when discussing the city-artefact. The latter is a material entity whose evolution unfolds on a different temporal scale from that of vernacular architecture. Its artifactual trajectory, it may be argued, therefore obeys principles that are not identical to those

2 Most famous is perhaps Foucault's discussion of the emergence of the disciplinarian society, in which he uncovers an archive whose *statement* presides over a novel assemblage of concepts old and new (e.g. "the delinquent", "the prison"), and whose *visibility* is isomorphic to the principle that today is known as panoptism.

associated with architecture theory and the anthropocentric conception of power conjectured to buttress it. In foregrounding the linguistic archive - the multiplicity of statements; *episteme* - Foucault/Deleuze therefore posit an archival model that ultimately fails to capture the autopoietic tendency inherent to the city-artefact; its self-movement.

One finds the perhaps most useful discussion of the artefact/archive - as this may be appropriated in addressing the question of the city - in the work of Bernhard Stiegler. Drawing on Derrida as well as Leroi-Gourhan, Simondon and Gille, Stiegler explores the complex relationship between "technics" - the name he gives for the whole of the technical field as this is found in a given historical setting - and the "anthropos". Technics, in Stiegler's reading, is not reducible to human ingenuity. Rather, it is a form of "organised, inorganic matter", created according to principles that are autopoietic and immanent. In this sense, technics is first and foremost its own creation, even if it is enveloped in a complex relationship with humanity: it creates its own lineages - the manifestations of technical individuation rather than human ingenuity - but these lineages require anthropic selection in order to be sustained. At the same time, Stiegler's technics is also an archive in the sense discussed by Derrida: instigating, preserving, putting in store. As such, Stiegler's problematics enquires into the metastable relationship between two self-moving multiplicities - social facts and artefacts; *episteme* and *tekhne* - at the same time as it addresses two irreducible phenomena: autopoietic technogenesis and socio-cultural memory exteriorisation. It is in Stiegler's refusal to foreground either of these that his contribution to the urban problematic lies.

In the final analysis, technics - the self-moving multiplicity churning out technological lineages - is integral to the human condition, directing it just as much as it is directed by it. One thus finds a shift, here; a radicalisation of the Deleuze/Foucault position. There are indeed two archives and they are irreducible, but they stand in a complex, that is: non-hierarchical relation to each other. Furthermore, it is not a question of a linguistic and a visual archive as much as it is a question of an anthropological and a technical archive, swerving around each other. Using Derrida's terminology, Man may put something in store in the artefact *qua* archive (deferral), but that does not make him the master of the evolution of said artefact (differentiation). The human condition, to Stiegler, is therefore constructed at the intersection of two multiplicities: that which pertains to the social (*episteme*, "the who") and that pertains to technics (*tekhne,* "the what"). Stiegler calls upon Epimetheus - twin brother of Prometheus - in illustrating the relationship between these multiplicities. Having been given the task of distributing abilities to the creatures of the world, Epimetheus famously forgets to bestow any on Man. His forgetfulness is what prompts Prometheus to steal fire (and thus: technical ability) from the Gods, thereby precipitating the dual process of anthropogenesis and technogenesis discussed by Stiegler. Counter to a Promethean archive - which would conjure up images of technical mastery and anamnesic (i.e. transcendental) beginnings - the notion of the Epimethean archive describes a complex relationship between the epistemic and technical multiplicities, at the same time as the truth of the archive's constitutive moment is forever deferred. In this respect, the Epimethean archive is situated at the forever vanishing intersection of the artefact *qua* self-movement and the archive *qua* memory exteriorisation.

Between self-movement and exteriorisation: approximating the logic of the urban system

What does it mean for the city to be situated at the intersection of the artefact and the archive? Between the concurrent processes of technical self-movement and societal memory exteriorisation? This is the question that frames the enquiries of Portugali and Hillier. Portugali

takes a broader, more inclusive approach than Hillier. He does not discriminate between the various artefacts found in the city just as he does not discriminate between the emergent events that SIRN may lead to. Whether it is the style of balconies, the cognitive map of a tourist in a city he has not been to before, or the distribution of land use patterns in a given neighbourhood, it is always a question of artifactual events as these are conjectured to unfold at the boundary of internal and external representation. Portugali's city-artefact is therefore rife with other artefacts, all of which are caught on the edge of metastability, folding into each other, negotiating nonlinear artifactual pathways. Monads working within monads, this is a Leibnizian city of involution, implication, invagination. Once more, however, it is necessary to approach Portugali's theoretical construct with caution, inasmuch as his basic proposition revolves around the notion of cognition; a focus which brings him close to a model forged in the image of representation. The synergetic process that gives rise to memory exteriorisation is inconceivable without the intervention of an Inter-Representation Network, which again is inconceivable without the embodied mind. Portugali goes as far as to assert that the city be regarded as a "single cognitive system" (Portugali 2011, 212); a conjecture which surely is one step too far. It leaves two possible interpretations: either everything exists only in its relation to a cognising ego (an almost Fichtean kind of reasoning) or else everything is cognition (a position which, in turn, would be closer to Hegel). In either case, it is problematic: his cognitive approach leaves little room for elements of urban autopoiesis to be independent of human mastery. In this respect, Portugali fails to deliver what his enquiry otherwise promises: a conception of the city *qua* artefact; of a stand-alone artifactual reality which, although imbricated with Man, harbours principles that are not reducible to human ingenuity.

Compared to Portugali, Hillier's is a more restrained approach. If there is a societal memory exteriorisation at stake here, it is embedded *in* and exerted *by* the relational object which is morphological "configuration". One sees here the structuralist heritage of his work, driven, as it is, by a search for first principles and the emergent spatial scenarios in which the latter may combine. If the discovery of the phoneme in early linguistics engendered a process that led to the explication of structures in language and later society, then it finds in Hillier at once its continuation and its radicalisation: his notion of morphic language posits structures that exceed the logic of natural languages, pointing towards a group of languages that are - it is asserted -as fundamental to human social existence as they are exterior to it. This assertion of factors exterior to the human body does not prevent Hillier from conjecturing a series of emergent urban processes, of which there are at least three. A first emergence occurs at the level of the morphological artefact. The latter is constituted at the point where embodied human existence (bipedality, forward vision, “ground-boundedness”) intersects with a cognitive propensity (the ability to retrieve and embody "descriptions") and a set of combinatorial principles or "spatial laws" (Hillier 1996, chapters 8 & 9) which effectively govern urban morphogenesis in a bottom-up way. A second emergence occurs at the level of aggregate movement patterns. Obeying a stochastic logic rather than a deterministic one - a crucial point that is overlooked by some of Hillier's critics - global movement patterns are conjectured to emerge at the intersection of the free will of the mover and the probabilistic necessity of the artefact. The structuring of global patterns of movement is what - in a third and final emergence - leads to the ordered distribution of land-use, manifested in patterns of retail, habitation and crime.

There are at least two things to point out here. First and foremost, the complex logic of the urban artefact/archive cascades from a point which originates at the intersection of the capacities of the human body and an extra-human combinatorial necessity. Hillier's city-artefact thus relies on properties that are situated outside of Man - the combinatorial laws which Man cannot change, merely harness - as much as it relies on properties associated with Man. Barring certain "ideal cities" (Hillier 1996, chapter 5), the genetic process guiding the construction of the

city-artefact is therefore never isomorphic to a representational loop - as this is discussed by Portugali - between cognition and stand-alone objects. It is rather a question of an artefact constructed at the intersection of embodied human existence (the anthropos) and a deep technical tendency (technics). The city - or rather: the so-called "organic city" (Hillier 1996, chapter 5)- thus participates in a artifactual or technical lineage that follows its own evolutionary pathway, at the same as it is deeply involved in an archival ordering of urban social processes. This leads to the second point. Inasmuch as there is a real overlap between the evolutionary pathway of the city *qua* artefact and the exteriorising tendencies of the city *qua* archive, the question of the origin of this archive must always be suspended - or deferred- in the sense discussed by Derrida. Suspended between the what and the who, between technical self-movement and societal memory exteriorisation, it becomes meaningless to reduce the problem of the city to a schema of Representation.

Conclusion

This article has explored the work of Hillier and Portugali. It has attempted to position the enquiries of the two *oeuvres* - similar in many ways - as a credible alternative to the discourse on urban complexity which currently enjoys a considerable popularity. In doing so, the article has suggested that the urban problematic be viewed through the lens of the notions of artefact/archive; an approach that draws on the work of Stiegler on the relationship between technics and the anthropos. Such an approach, it was argued, makes it possible to keep some of the useful concepts from complexity theory, whilst at the same time being mindful of the dual - if complex -nature of the city-artefact.

Taking a step back, Hillier and Portugali's most profound contribution is to move the discourse of the archive -previously discussed with respect to language, visibility and technical artefacts- into the realm of the city: arguably the biggest and most complex stand-alone artefact produced by Man. In doing so, they not only go beyond the paradigm of complexity and (for Hillier) the paradigm of representation; they radicalise these problematics, opening up a line of enquiry that examines the processes involved in the production of socio-cultural patterns which at once conspire *in* and cascade *from* the urban artefact. This is not to say that the processes of the city-artefact/city-archive unfold in a power vacuum. There is power, to be sure, but it is not the kind of power that may seamlessly be wielded in the war between economic classes, as the cruder voices of Marxist geography would have it. Rather, it is a power that everywhere brings together artefact and archive; material necessity and societal affects; what and who. Portugali theorises the event of the city through the enslavement principle; he talks of it in terms of *kybernetes,* the Greek word for the agent who directs: the steersman. Hillier, for his part, talks of the city as a morphological resolution to an initial paradox or problem (Hillier 1996, 265 & 268); the realisation of a virtual potential (Hillier 1996, 269). Both terminologies are in accordance with the principles of the artefact/archive. However, given the strange nature of the city, perhaps the most accurate word for the realisation of the urban potential is not *kybernetes* but "sense", which - in French and in Middle English - denotes at once "meaning" and "direction". To say that a there is a sense of the city is thus to say, on the one hand, that the latter follows a trajectory that belongs to itself but that, on the other, this movement of the city-artefact may be harnessed - if not controlled - by Man in a way that is socially meaningful. If the problem of the city-as-artefact comes with a challenge, it is thus to approximate the sense of the city from an epimethean angle, suspended, as it must be, between technical tendency, societal memory exteriorisation and the forgetfulness that grounds both.

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