Understandıng the New Urban Theory: Dıalogues on the Urban questıon, Cyborg Urbanısm and Cyborg Urbanızatıon

[1]Ezennia, I. S., [2]Nzewi, N. U., [2]Iruoke, V., and [2]Odoanyanwu, N.

Abstract
The fıeld of urban theory ın recent tımes ıs undergoıng consıderable turbulence as scholars struggle to decıpher the ongoıng process of urban restructurıng and emergıng forms of urbanızatıons around the world, as well as ınherıted frameworks and ınterpretatıons, ınvestıgatıons and mappıngs are beıng called ınto questıon and reınvented. Thıs study explores the works of major urban thınkers about the concerns that anımate theır work and about the challenges of developıng a new form of urban theory and practıce that are adequate to early 21st century condıtıons. Thıs research would help many ındıvıduals who are concerned to understand, represent or ınfluence the shape of contemporary urbanızatıon, ıncludıng students and practıtıoners ın the desıgn dıscıplınes, the urban humanıtıes and the urban socıal scıences. The conceptual starting point for this study will be a critical exploration of the newly emerging concept of cyborg urbanization and cyborg urbanısm.

Keywords: *Urban areas, Cyborg, Urbanization.*

Introductıon
The “cyborg” is now a representative feature of academic discourse and popular culture that is concerned with the relationship between the human body and technology. More recently, the cyborg concept has been drafted into architecture, cities and urban technological networks. The current arguments and discussions ranges from the technological modification or advancement of individual urban cities — a dimension most usually encountered in the technophile and more futurist literature — to a broader engagement with the whole cities or metropolitan regions as multifaceted networks or assemblages of culture and nature that support urban life. The application of the cyborg concept to an urban context hence extends from the individual body-technology nexus of architectural or medical discourse to analytical outlines that consider the whole populations in relation to their technologically modified environments.

A cyborg ıs a cybernetıc organısm, a hybrıd of organısm and machıne, a creature of socıal realıty as well as a creature of fıctıon (Haraway, 1991). Nothıng can be understood or even talked about ındependently of the relatıons ıt has wıth other thıngs. For ınstance, resources can be defıned only ın relatıon to the mode of productıon whıch seeks to make use of them and whıch simultaneously produces them through both physıcal and mental actıvıty of the users. There ıs, therefore no such thıng as a resource ın abstract or a resource whıch exısts as a thıng ın ıtself (Harvey, 1980).

New concepts of urbanization are being

[1]Department of Archıtecture, Faculty of Archıtecture, Eastern Medıterranean Unıversıty, Famagusta North, Cyprus vıa mersın 10, Turkey.
[2]Department of Archıtecture, Faculty of Environmental Sciences, Nnamdi Azikiwe Unıversıty, Awka, Anambra State, Nigeria

developed in various parts of the world that challenge inherited conceptions of the urban as a bounded, fixed and universally generalizable settlement type. Furthermore, the debates on the urban question continue to intensify and proliferate within the social sciences, the design and planning disciplines, and in day to day political struggles (Brenner, 2015). Sımılarly, Gandy, (2016) asserts that the urban environmental themes are now the focus of vibrant international debates ranging across a whole spectrum of disciplines from architecture and civil engineering to sociology and human geography.

The word 'cyborg' is generally credited to the NASA scientists Nathan S. Kline and Manfred E. Clynes who in 1960 used the term to describe a series of experiments that explored the technological enhancement of human body in order to allow space travel. The etymological origins of the word 'cyborg' can be traced to the eighteenth-century word 'organism' (derived from the French organisme) and the more recently 'cybernetics' introduced by the mathematician Norbert Wiener in the 1940s to describe the study of complex systems of communications and control in machines and animals.

The emphasis of the cyborg on the material interface between the body and the city is however most amazingly manifested in the physical infrastructure that associates the human body to vast technological networks. If we understand the cyborg as a hybrid of machine and organism, as a cybernetic creation, perhaps urban infrastructures can be conceptualized as a series of interconnecting life-support systems (Swyngedouw, 1996; Gandy, 2002; Mitchell, 2003). For example, the modern home has become a complex exoskeleton for the human body with its provision of warmth, light, water and other vital needs. The home can be conceived as 'prophylactic and prosthesis' in which modernist distinctions between the organic and the inorganic; and between nature and culture, become blurred (Vidler, 1990).

Hence this paper tries to explore socio-ecological processes that enable framing questions of the environment, and in particular, of the urban environment, in ways that are radically political. As well as underscore the work of Haraway (1991) to view the modern city as a process of fusing the natural and the social together to produce a distinct 'cyborg' or 'hybrid' urbanization. Cyborg metaphors have been generally used to understand human–machine relations but there are also other applications in urban studies.

In an attempt to explore elucidate the scenario above; the following questions may be looked at: How does the idea of the cyborg intersect with spatial theory? In what ways does the cyborg reinforce or contradict other emerging strands of urban thought that also emphasize urban complexity and hybridity? Has the epistemological subtlety and political prescience of the cyborg, as originally formulated in the 1980s, been realized in practice or simply been diffused through the term's widening usage?

Old and New **Ideologies Of Urban theory**

A few decades ago, it was argued that not only is a new understanding of the urban required, but that the urban in itself was becoming the episteme of our time, the condition of possibility for understanding major aspects of contemporary global economic, political and social life. (Lefebvre ([1970] 2003). Lefebvre suggested that the reconceptualization of the urban was fast becoming a vital epistemological and political precondition for understanding the nature of society in its entirety. Today, this proposition appears more apt than ever. Whether in the public sphere or in academic discourse, the urban has become a privileged lens through which to map, to interpret and, indeed, to attempt to influence contemporary economic, social, environmental and political trends. Paradoxically, however, rather than directly confronting the radically transformed conditions for urban theory and research,

the mainstream of contemporary discourses on global urbanism has embraced a strong, even triumphalist, reassertion of a traditional, universal, totalizing and largely empiricist concept of 'the city'. Within this mainstream framework, the nature of contemporary urban restructuring is narrated simply as an increasing importance of cities to worldwide social, political, economic and ecological processes. The question of what 'cities' and the 'urban' are, and how their constitutive properties and geographies may be changing in qualitative terms, is thereby effectively 'black-boxed'. The most influential contemporary metanarrative of the global urban condition is surely the notion of an 'urban age', which was first introduced several decades ago by United Nations (UN) demographers, and which has more recently been popularized in public and scholarly discourses on the growth of urban settlements and associated social, regulatory and environmental hazards (Davis 2006; Burdett and Sudjic 2006). According to this city-centric perspective, for the first time in human history, more than half the world's population now lives within cities. With the putative crossing of this 'threshold' or 'milestone' in 2007, the city is said to have been generalized into the universal form of human settlement; it is now thought to represent the most elemental spatial unit for humanity's future. Across otherwise diverse discursive, ideological and institutional contexts, the urban age thesis has become a form of doxic common sense framing contemporary discussions of the global urban condition. It is repeated incessantly, mantra like, in scholarly papers, research reports and grant proposals, as well as in the public sphere of urban, environmental and architectural journalism. In effect, the assertion that we have crossed the 'fifty per cent urban threshold' has become the most quoted, but therefore also among the most banal, formulations in contemporary urban studies. As has been noted by many researchers, the demographic data on which the urban age hypothesis hinges are deeply inadequate; they are derived from nationally specific census agencies which define the city and the urban using a myriad of inconsistent, unreliable and incompatible indicators (Satterthwaite 2010). Moreover, within the major strands of urban age discourse, the city is defined with reference to an arbitrarily fixed population size, density threshold or administrative classification, which is in turn taken as the main indicator demarcating the presumed boundary between urban and non-urban areas. Even when these indicators are further elaborated, for instance, with reference to commuting patterns, catchment areas and economic activities, the notion of cityness used within this discourse is still fundamentally empiricist. It presupposes that the city can be defined through (some combination of) statistically measurable variables describing conditions (coded as either 'urban' or 'non-urban') within a bounded administrative zone. With a few exceptions (i.e. Angel 2011), the coherent bounding of the zone in question is simply presupposed based upon extant administrative jurisdictions; the diverse economic, political and environmental processes that are reworking the 'structured coherence' (Harvey 1989) of inherited urban formations are not acknowledged or analyzed (Brenner and Katsikis 2014). Additionally, through its contention that 'the city' has become the universally dominant, endlessly replicable form of global human settlement, urban age discourse drastically homogenizes the variegated patterns and pathways of urbanization that have been emerging in recent decades across the world economy (Schmid [2012] 2014). Just as problematically, by equating the urban exclusively with large and/or dense population centers, urban age discourse renders invisible the intimate, wide-ranging and dynamically evolving connections between contemporary shifts in city-building processes and the equally far-reaching transformations of putatively non-urban landscapes and spatial divisions of labor alluded to above. Several parallel or derivative metanarratives of the

contemporary global urban condition have been popularized in close connection to the overarching ideology of the urban age (for a critical overview, see Gleeson 2014). These variations on urban age discourse involve a variety of normative, methodological, strategic and substantive concerns; they include, among others, the following main streams:

Urban triumphalism

Several recent and popular books have presented cities as the engines of innovation, civilization, prosperity and democracy, across historical and regional contexts (Brugmann 2010; Glaeser 2011). According to these triumphalist perspectives, contemporary cities represent the latest expressions of a time-tested sociospatial formula that has enabled the progressive historical development of human society, technology and governance. This set of arguments represents an important extension of urban age discourse because it connects the UN's basic demographic propositions to broader, qualitatively elaborated arguments concerning the role of cities in unleashing humanity's economic, social and cultural potentials.

Technoscientific urbanism

There has also recently been an outpouring of influential new approaches that mobilize the tools of natural science, mathematics and 'big data' analysis to analyze, and often to predict, inter- and intra-urban spatial arrangements (Bettencourt & West 2010; Batty 2013). Such neo-positivist, neo-naturalist approaches represent a revival of important strands of postwar systems thinking in geography, planning and design discourse, which had been closely aligned with national state projects of urban social engineering and territorial control. Contemporary discussions of 'smart cities' represent an important parallel strand of technoscientific urbanism, in which information technology corporations are aggressively marketing new modes of spatial monitoring, information processing and data visualization to embattled municipal and metropolitan governments around the world as a technical 'fix' for intractable governance problems (Greenfield 2013; Townsend 2013). In the current context, technoscientific aspirations to reveal law-like regularities within and among the world's major cities often serve to naturalize the forms of sociospatial disorder, enclosure and displacement that have been induced through the last several decades of neoliberal regulatory restructuring and recurrent geoeconomic crisis (Gleeson 2014). Despite their more elaborate methodological apparatus and their capacity to process huge data assemblages, these technoscientific urbanisms replicate, and indeed reinforce, the basic urban age understanding of cities as universally replicable, coherently bounded settlement units. The law-bound understanding of urbanization it embraces is used not only for epistemological purposes, to justify a universalizing, naturalistic research agenda, but as part of a broader technoscientific ideology that aims to depoliticize urban life and thus 'to assist the cause of sound management' (Gleeson 2014).

Haraway's Cyborgs

The term 'cyborg' was not coined by Haraway. It was first used in a 1960 article by two NASA engineering researchers, Clynes and Kline, writing about the concept of the cybernetic organism in the context of adapting to space travel (Haraway 1995). Kline and Clynes described the cyborg as 'self-regulating man-machine systems' (Haraway 1995). This definition included the idea that the cyborg as human deliberately incorporates exogenous components surpassing the self-regulatory control function of the organism in a way to adjust it to new environments' and that these components may include 'suitable physiological, biochemical, and electronic modifications' (Appleby 2002). Haraway adopted the term 'cyborg' in her writing to mean what she originally termed 'a cybernetic organism, a hybrid of organism and machine, a creature of fiction as well as a creature of social reality. However, as

pointed out below, this conceptualisation has changed in more recent writings.

Haraway argues in her 'cyborg manifesto' essay, that there are two kinds of cyborg that function at different ontological levels. The cyborg is represented both as a metaphorical and a literal configuration of human bodies and new technologies; or as she puts it, the cyborg is 'a creature of social reality as well as a creature of fiction' (Haraway 1991b). One type of cyborg is the material cyborg that is configured via the military-industrial-entertainment complex: the cyborg of science fiction films, the warrior macho human-machine, the medicalised body that is normalised by technologies and earns profits for pharmaceutical and medical device companies. The second type is the metaphorical cyborg or the 'creature of fiction': the figure that challenges assumptions and binaries, that is politically disruptive, progressive and oppositional in its hybridity and liminality.

When Haraway asserted in her oft-quoted phrase that 'we are all chimeras, theorized and fabricated hybrids of machine and organism; in short, we are cyborgs. The cyborg is our ontology; its gives us our politics' (Haraway 1991), she is trying to express the idea that no human bodies/selves are stable or natural. Rather, we are multiple bodies and multiple selves, depending on the context in which we find ourselves and the other bodies and nonhuman entities with which we interact. Haraway contends that human bodies cannot easily be categorised as one thing or another in a static binary opposition. Nor can technologies be singled out as separate entities from the human. Each contributes to the other: we understand our bodies/selves through technologies and our bodies/selves give meaning and configure technologies through the enactments of everyday life.

Haraway's concept of the cyborg brings the body and its permutations, differences and ambiguities, its performative configurations, into focus as an object for political critique and action. She argues for a view of the subject/body that is inevitably split and contradictory, providing for ambivalence and ambiguity, and she sees this approach as important for feminist and technoscientific critique (Haraway 1991a; 1991b). As she notes; 'If the cyborg is anything at all, it is self-difference'. Haraway goes on to defend a position whereby 'people are not afraid of their joint kinship with animals and machines, not afraid of permanently partial identities and contradictory standpoints'.

Haraway is not anti-technology or anti-science (her doctoral thesis was in biology). She acknowledges that she has an ambivalent attitude to technoscience (or a 'simultaneity of love and rage', as she puts it) (Haraway in Williams 2009: 139). However she views technoscience as participating in a culture in which science is viewed as offering salvation for the messiness, suffering and disease to which humanity is exposed. While the cyborg is the product of technoscience, its transgressive liminality also poses a challenge to the myths of technoscience in its project to establish the perfect, whole body and to reproduce cultural binary oppositions as if they are essential and natural (Haraway 1991b). Her work on the cyborg, therefore, offers a way of valorising the monstrous, hybrid, disabled, mutated or otherwise 'imperfect' or 'unwhole' body (Betcher 2001).

Many scholars interested in the social and cultural analysis of health and medicines have found Haraway's cyborg theorising to be a fruitful and intriguing approach. Her writings have been taken up by other writers to analyse a diverse range of biotechnologies, medical issues and health conditions, including Prozac (Lewis 2003), disability (Betcher 2001), menopause (Leng 1996), female reproduction (Handlarski 2010), human embryos (Franklin 2006), foetal surgery (Casper 1995) and stem cells (Marks 2012). However, as with any other

cultural theorist, Haraway also has her critics. Her writings can be difficult to penetrate at times, in her love of the poetic turn of phrase and the metaphor. Some critics have challenged Haraway's model of the disruptive, transgressive cyborg by suggesting that it has not been used to effect political change or to support difference, and that instead the figure of the cyborg has continued to be used as a symbol for the escape from the body and as representing aggressive masculinised technophilia (Jensen 2008, Squires 2000). The novelty Haraway's concept of the cyborg in cultural theory has also been called into question (Jensen 2008). Other critics have contended that stating that 'we are all cyborgs' is in itself the kind of essentialism that Haraway is attempting to avoid, and find her definition of the cyborg confused (Soper 1999).

Many of the critiques above focus on the material rather than the metaphorical interpretation of the cyborg. Haraway herself has expressed her concern about how her cyborg theorising has been simplified in some approaches to hardly more than 'blissed out techno-bunny babbling' and that its radical political project has been lost (Haraway in Schneider 2005: 118). This paper contends that Haraway's writings on the cyborg have much to offer a continuing critique of essentialism and dualism as it is expressed in relation to the body. They also constitute a major contribution to contemporary theorising about the bodily assemblage and its configuration of human flesh and technology.

The concept of the assemblage has been used increasingly in sociotechnical theory to encapsulate the idea that human bodies are viewed as complex and dynamic configurations of flesh, others' bodies, discourses, practices, ideas and material objects. This perspective is also found in Haraway's work, particularly her more recent formulations of the cyborg. In an article published in 2012, Haraway notes that she no longer views cyborgs as machine-organism hybrids 'or indeed hybrids at all', but rather as 'imploded entities, dense material semiotic "things"' – articulated string figures of ontologically heterogeneous, historically situated, materially rich, virally proliferating relatings of particular sorts' (Haraway 2012: 301). Haraway's reference to 'string figures' relates to the cat's cradle game, played using string manipulated on the hands to produce complicated patterns and which can be swapped from one pair of hands to another as part of sharing the creation. She employs this metaphor in her later work as a means of emphasising the intertwinings, complicated patternings, knottings, webbings and collaborations of techno science and the bodily assemblages its configures (for example, Haraway 1994, 2008, Haraway and Goodeve 2000). This paper argues that in bringing together the concept of the assemblage with that of the cyborg, the term 'cyborg assemblage' may usefully be adopted to highlight the sociomaterial theoretical underpinnings and the constantly changing character of this phenomenon.

Natures (Hybrid) and Cities (Cyborg)

When mobilizing the twin vehicles of 'metabolism' and 'circulation' from a historical materialist epistemological perspective, the binary construction of 'nature' and 'society' that characterized much of the modern scientific and cultural tradition radically disappear. Metabolic circulation, then, is the socially mediated process of environmental—including technological—transformation and trans-configuration, through which all manner of 'agents' are mobilized, attached, collectivized, and networked. The heterogeneous assemblages that emerge, as moments in the accelerating and intensifying circuitry of metabolic vehicles, are central to a historical-geographical materialist ontology and imagination. A dialectical approach recognizes both the radical heterogeneity of humans and non-humans enrolled in socio-metabolic processes within an assemblage while recognizing the social, cultural, and political

power relations embodied relationally in these socio-natural or techno-natural imbroglios. The production of (entangled) things through metabolic circulation is necessarily a process of fusion, of the making of 'heterogeneous assemblages', of constructing longer or shorter networks.

These assemblages of humans and non-humans, of dead labour and inert materials, are nevertheless reminiscent of the 'hybrids' and the 'cyborgs' of, respectively, Bruno Latour and Donna Haraway. However, there are some qualifications that need to be made in the use of these concepts. Firstly, the notions of 'hybridity' or 'cyborg' are misleading if not radically reproducing the underlying binary representation of the world. Hence, the bracketing of 'hybrid' and 'cyborg' in the title of this section refers to the 'excess of meaning' inscribed in coding the city as either 'hybrid' or 'cyborg'. While intuitively attractive, they nevertheless still suggest a process of 'dirty' mixing, an ambiguous fusion of things that can be ontologically separated and 'purified'. Natures and cities are always already heterogeneously constituted, the product of actants in metabolic circulatory processes. Secondly, while Haraway asks penetrating questions as to why 'cyborgs' are produced the way they are and the relations of power inscribed in these imbroglios, this question remains silent in Latour's work. While Latour argues for a new socio-natural constitution, for a 'reassembling of the social' in a way that recognizes the social acting of non-human things in ways apparently similar to Haraway, he not only ignores the question of power, but dismisses it radically as a fruitful entry into the excavation of socio-natural imbroglios (like e-waste, potable water, or nuclear energy). For him, the key issue centers on transforming the 'constitutional' arrangements through which human and non-human actants become mobilized or enrolled (Latour, 2004).

In sum, while Latour defends a democratic republic of heterogeneous associations, Haraway maintains a perspective that emerges from a radically different ontological position. In other words, a deep ontological divide opens here. As Benedikte Zitouni (2004) convincingly argues:

Haraway views any entity as an embodiment of relations, an implosion, the threads of which should be teased apart in order to understand it. Whereas Latour views any entity as a piece of matter that is continuously affected and that contracts links with a larger network that allows it to live, to be. On the one hand, the entity crystallizes the network; on the other hand the entity is supported by the network. Haraway studies the network in order to define the entity; Latour studies that same network in order to define the entity's consistency and persistence…Dialectics, congealment, crystals, prisms, representations are not possible tools any longer for urban studies but instead we view pieces of matter, of any kind, that act, react and interact with one another, that gain there consistency, persistence and existence or lose them through the affects and links to other agents. Power differences and inequality can no longer be stated as such, as a departure point into the city but have to be explained through the many actions and relations between objects, humans and non-humans. There is nothing behind any space or agent, only attachments aside of it that make it stronger or weaker, allow it to exist or lead it to perish (Zitouni, 2004).

It is in this latter sense that we wish to see the city as a metabolic circulatory process that materializes as an implosion of socio-natural and socio-technical relations organized through socially articulated networks and conduits whose origin, movement, and position is articulated through complex political, social, economic, and cultural relations. These relations are invariably infused with myriad configurations of power that saturate material practices, symbolic ordering, and imaginary (or imagined) visions. Yet, little attention has been paid so far to the urban as a flow or a process of socio-ecological change. Or in other words, the view that a

city is a process of environmental production, sustained by particular sets of socio-metabolic interactions that shape the urban in distinct, historically contingent ways—a socio-environmental process that is deeply caught up with socio-metabolic processes operating elsewhere and producing profoundly uneven socio-ecological conditions—rarely grabs the headlines. It is this mode of thinking about the city that we turn to next.

Conclusion

This paper has argued that Haraway's theorising of human and non-human relations offers a unique and intriguing perspective that can be employed to analyse the social and cultural meanings of contemporary digital urban realities and technologies; or what we dubbed as the digital cyborg assemblage. Haraway's approach to the cyborg body offers a way both to acknowledge the potentialities of these new technologies and their limitations, to express ambivalence towards them without feeling the need to indulge either in technophobia or technophilia, itself the kind of dualism against which Haraway warns.

References

Appleby, J. (2002). Planned obsolescence: flying into the future with Stelarc. *The cyborg experiments: the extensions of the body in the media age. Continuum, London et al*, 101-113.

Brenner, N., & Schmid, C. (2015). Towards a new epistemology of the urban?. *City*, *19*(2-3), 151-182.

Brenner, N., & Schmid, C. (2015). Towards a new epistemology of the urban?. *City*, *19*(2-3), 151-182.

Bryman, A., (2008). Social Research Methods, 2nd ed. Oxford University Press, New York.

Burdett, R. Deyan Sudjic, eds. 2006. *The endless city: The Urban Age Project by the London School of Economics and Deutsche Bank's Alfred Herrhausen Society*.

Castells, M. (1979 [1972]). The Urban Question: A Marxist Approach, trans. A. Sheridan. Cambridge, MA: MIT Press.

Davis, M. (2006). *City of Quartz: Excavating the Future in Los Angeles (New Edition)*. Verso Books.

Gandy, Matthew (2016). *Cyborg urbanization, theorizing water and urban infrastructure: Photographs.* [Data Collection]. Colchester, Essex: UK Data Archive. 10.5255/UKDA-SN-852266

Gandy, O. (2002). The real digital divide: Citizens versus consumers. *The handbook of new media*, 448-460.

Haraway, D. (1991). Sımıans, Cyborgs and Women – The Reınventıon of nature. London free associatıon books,. P.149

Haraway, D. (1991). Simians, cyborgs, and women.

Haraway, D. (1991b). Cyborg Manifesto: Science, Technology, and Socialist-Feminism in the Late Twentieeth Century. *Simians, Cyborgs and women: The reinvention of nature*, 149-181.

Haraway, D. (1995). Cyborgs and symbionts: Living together in the new world order. *The cyborg handbook*, 101-118.

Harvey, D. (1976) Social Justice and the City. Baltimore: Johns Hopkins University Press.

Harvey, D. (1980). Lımıts to Capıtal. Oxford; Blackwell. P 212

Harvey, W. R. (1980). Water and ions in the gut. *Insect biology in the future" VBW*, *80*, 105-119.

Jensen, C. B. (2008). Developing/development cyborgs. *Phenomenology and the Cognitive Sciences*, *7*(3), 375-385.

Lefebvre, H. (2003 [1970]). The Urban Revolution, trans. R. Bononno. Minneapolis: University of Minnesota Press.

Lefebvre, H. (2003). The Urban Revolution. 1970. *Trans. Robert Bononno. Minneapolis: U of Minnesota P*.

Macdonald, K., (2006). Using Documents. In: Gilbert, N. (Ed.) Researching Social Life. London, UK: Sage Publication

Mitchell, D. (2003). *The right to the city: Social justice and the fight for public space*. Guilford Press.

Soper, K. (1999). Of OncoMice and female/men: Donna Haraway on cyborg ontology. *Capitalism Nature Socialism*, *10*(3), 73-80.

Swyngedouw, E. (1996). The city as a hybrid: on nature, society and cyborg urbanization. *Capitalism Nature Socialism*, *7*(2), 65-80.

Mogalakwe, M., (2006). Research report: the use of documentary research methods in social research. J. Afr. Sociol. Rev. 10 (1), 221–230.

Scott, J., 1990. A Matter of Record. Polity Press, Cambridge.

Thrift, N. (1993). 'An urban impasse?', Theory, Culture & Society 10(2), pp. 229–238.

Vidler, A. (1990). The building in pain: The body and architecture in post-modern culture. *AA Files*, (19), 3-10.