

ARCHITECTURAL CREATIVITY IN COMMERCIALISED CYBERSPACE

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Abstract. This paper is written for architectural researchers, practitioners and educators who explore the potentials of networked, location-aware, rich-media computing. Augmented and networked environments open new possibilities in urban and architectural design. At the same time, their adoption by the mainstream is underpinned – and constrained – by commercial motivations. To be able to counter the consumerist interpretation of inhabitable augmented environments, the field of architecture needs to foster a critical discussion of cyberspace. In turn, architectural education needs to provide students with the knowledge necessary to adopt cyberspace for creative purposes. The purpose of this paper is to invite further discussion and experimentation in this area.

Keywords. Cyberspace, context-aware computing, locative media, ubiquitous computing, architectural creativity.

1. Introduction

This paper arose from a theoretical course on the ways in which digital technology influences architecture. This course, called *Production of Digital Space*, is taught at The University of Melbourne by one of the coauthors, Stanislav Roudavski. The paper was originally drafted by the other coauthor, Sonya Parton, as an assessed essay for the course. Subsequently, the paper has been extended through additional research by the two authors. This additional work has included discourse analysis, informal interviews with the members of the local architectural community and questionnaire-based communications with

the designers of the examples. This research has revealed well-developed literature that is simultaneously richly suggestive and – as our literature analysis confirms – unclaimed in the architectural discourse. However, the authors admit to the speculative nature of the paper and accept that it needs to be seen as a beginning of a more sustained engagement with the theme. At the same time, we propose that the paper can be useful in its present form because it introduces a new perspective by borrowing from well-substantiated knowledge in one field in order to enable the critical development of another. Such importing of knowledge, enabled by the discourse analysis and the reasoned consideration of possible implications is a well-established methodological device typical to cultural studies and critical theory – the disciplines that can elucidate social meanings of current technical developments. We reason that up to date, computer-aided design research – as represented, for example by the CAADRIA conference – has over-focused on technical concerns and hope that our paper can contribute to the discussion of what such concerns might mean as cultural phenomena.

The topic of this paper is motivated by its authors' interest in interactive and networked technologies and in their role in future architectural practice as well as in current architectural education. Stanislav Roudavski has a background in developing projects using such technologies including real-time navigable multiuser virtual environments and has participated in prototyping of speculative mobile applications and possible future-museum environments. For both authors, it is clear that such technologies will be increasingly used in architectural design. And more, that they change the very definition of architecture. In response, such environments ought to be taught to future architects. However, this challenge is nontrivial given the current scarcity of practical implementations emanating from the architectural profession and – especially – the lack of an established theoretical treatment of such technologies in architecture.

In the 1990s, the discussion on cyberspace – triggered among others by Benedikt's (1991) influential collection – was very prominent in the architectural discourse (e.g., cf. Castells, 1991; Mitchell, 1995 and many others). At that time, inhabitable cyberspace was not broadly accessible and much of the discussion focused on its possible functional performance: the effects on cognition and navigation, the ability to form places, its capacities to sustain office work, education or social activities. Our analysis of current literature demonstrates that in architectural discourse, including computer-aided design forums, the discussion on cyberspace as an overarching concept has subsided. However, much of the existing work on networked technologies in the field of architecture was completed before the emergence of broadly popular massive

multi-player games, social networks, location-aware smartphones or RFID and QR tags. Consequently, we suggest that architectural research should return to this concept and study its actual performance and implications.

To understand what such technologies might mean for architecture and – therefore – to establish how to structure the discussion about their meanings in an educational setting, this paper asks the following questions:

- What critical issues relevant to the architectural discourse can be highlighted by the historical trends in the utilization of networked technologies?
- How are ubiquitous technologies currently utilized in architecture?
- How are ubiquitous technologies currently taught to architects?

These questions set the scope of this paper and establish criteria for validity. This scope includes an overview of a historical progression used as a context to contemporary examples and as a foundation for a projection into the future. The validity of the findings can then be judged not by their quality as true statements but by their ability to provoke exploration, research, critical reappraisal and creative appropriation in educational settings.

2. From ad-hoc creativity to standardisation and trivialisation

The contents of this section are derived from the analysis of the discourse on the relationship between cyberspace and architectural creativity. A complete overview is beyond the scope of this paper. Instead, this section briefly outlines a particular area of concern that has emerged from the overarching survey. These concerns focus on the effects of commercialisation.

Early history of cyberspace can be discussed as the history of the Internet. In the early 1980s, prior to the establishment of the global system existing today, the Internet was a series of disjointed and enclosed networks, primarily used by military and academic institutions. The Internet's original creators and users aimed for a networked environment which was open-source, democratic and self-regulating (Moschovitis, 1999, ch. 4). Funding was provided by public institutions rather than private entities (Meikle, 2002, p. 13). In addition to the absence of direct governmental control, there was no commercial dependency. This situation was valued and at the time cyber-rights lobby groups called for the governments not to claim sovereignty over portions of cyberspace (Meikle, 2002, p. 33).

In 1988, the internet was opened to privately run service providers. By the early 1990s independent commercial networks began to grow. The subsequent development of the World Wide Web saw the Internet grow dramatically (Moschovitis, 1999, ch. 5). This increase in users resulted in interest

from commercial entities looking for profit.

Today's cyberspace is different from the visions of its early creators. The original democratic intentions are waning. Already in 1999, Lessig (pp. 6, 7) argued that "[c]yberspace, left to itself will not fulfil the initial promise of freedom. Left to itself, cyberspace will become the perfect tool of control." Currently, the Internet still relies on self-regulation and is lacking a general governing apparatus. The lack of governance protecting the common good led to the Internet becoming a "tool of control" in a different way – through privatisation and commercialisation (Hunter, 2003, pp. 443–446).

Cyberspace was appreciated as an environment intimately intertwined with the physical world even in the days before the recent massive advances in ubiquitous computing (Hunter, 2003). It has the capacity to modify perception and alter people's engagements with the world. Acting as a lens or a filter, it can exert control over people's access to information and over their experiences. If cyberspace is a lens, then interfaces to cyberspace act as translators of the content within. These translators have the potential to filter and direct access to this content (Shapiro, 1988).

These filters (software, hardware, server and hosting providers, UI elements, etc.) are typically designed, built and maintained by private companies motivated primarily by financial considerations. These agents can and do distort the operation of their tools for their own benefit.¹ Application of these constraints subverts the democratic nature of cyberspace (Lessig, 1999) and most of the time this subversion is not obvious. At the same time, the illusory freedom of navigation and selection is typically maintained, making educated choices and exercise of critical judgement more difficult (cf. Gleason and Friedman, 2004, pp. 306, 307).

Most of this manipulation is completely legal and frequently praised for being financially and technically innovative. For example, Google's behaviour routinely contradicts its own mission statement "to organize the world's information and make it universally accessible and useful" (as cited in Iyer and Davenport, 2008). Google succeeds by providing services that attract many users and coupling them with an effective advertising system. It seeks to spread its influence and impose perceptions and behaviours that bring it benefits. Google is involved in blogging, radio and television advertising, online payments, social networks, mobile phone operating systems, and many more information domains. It uses many tools that it did not develop but now controls: Picasa for photo management; YouTube for online videos; Double-Click for web ads; Keyhole for satellite photos (now Google Earth); Urchin for web analytics (now Google Analytics). It pays hardware manufacturers to make Google the default search engine on their new machines. It can record

users' search history and customise search results. For payment, it promotes web pages, companies and advertisements. As a result, it is able to influence the worldview and behaviour of a very large number of people (on these and other Google's tactics, see Vise, 2006). As a commercial organisation it uses this influence to gain profit. Abelson et al (2008) argue that search engines are brokers rather than providers of information. They do not "supply the undisputed truth, nor even to judge the accuracy of material that others provide. Search engines connect willing producers of information to willing consumers. [...] To stay in business, a broker just has to give most people what they want, consistently over time." Even without tempering this commercial template leads to trivialisation.

A telling example of another common phenomenon is the hugely popular social networking site Facebook. A recent review by Zadie Smith (2010) provides a convincing critique of its effects. When an individual is cast into the standardised shape such a social networking system provides, his or her personality is reduced to a set number of basic characteristics. Even apart from commercial ambitions that interpret people according to their "capacity to buy, attached to a few personal, irrelevant photos" (Smith, 2010, p. 59), the schemes that define such characteristics are often characterized by a haphazard, accidental quality because they were developed recently and locked into the current form quickly before they could mature (Lanier, 2010). Lanier argues that 2.0 environments constrain creativity by spreading commercialisation, enforcing standardization, constraining individual expression, obscuring authorship and presenting creative outcomes outside of their original contexts, dissociated from the original intentions of their authors.

To us as common users or as representatives of the architectural field these conclusions were counter-intuitive. The in-depth discussion of this material in the *Production of Digital Space* course and the informal interviews with members of the local pedagogical community confirmed that the awareness of the effects of commercialisation on cyberspace were rarely considered or discussed despite the increasing integration of networked technologies into urban and architectural environments and practices. From this we conclude that further exploration of this topic – aimed at increasing critical awareness as well as practical recommendations – will be beneficial to the architectural discourse and pedagogy.

To move the discussion from the general overview of cyberspace towards architectural concerns, the next section refers to several examples of current practice.

4. Examples of architectural design in the context of commercialised cyberspace

Until recently, cyberspace existed as an experientially distinct realm. Users took a conscious choice to access it via dedicated terminals. This has recently begun changing. The concepts of augmented reality, ubiquitous computing or locative media embed connections, content and intelligence into physical environments. These technologies allow multiple, in principle infinite, layers of information to coexist in physical locations that previously could hold a limited number of physical objects or interpretations. Such hybrid environments can be flexible and dynamic. The information they link to can be updated or even compiled on demand. Such environments can be more informative, efficient and adaptable than purely physical settings. However, this promise can only be fulfilled if the additional information and the meanings it supports are of quality and depth. In practice, this is not often the case. As an extension of the established networked practices discussed above, such environments are typically built by commercial entities and focus on consumerism at the expense of all other alternatives.

A current example of this technology is the Layar² development environments for mobile devices. Using built-in GPS and compass, the application overlays information on top of physical-world images as seen by the phone's camera. This application is able to recognise elements of physical environments and associate them with relevant content with the images that it recognises. According to the promotional literature and the existing client base, the primary target group for this environment are businesses that wish to advertise their products or services. This and multiple other similar applications are characteristic examples of technological lenses that re-interpret urban environments as predominantly commercial. Through virtual augmentation, they modify the meaning of the city and its architecture. Such applications can be built for non-commercial purposes, for example for finding and identifying historical (Liu and Lee, 2009) or unrealised³ buildings. However, even in these cases architectural designers have to rely on meaning structures, interfaces and technologies provided by others and developed with standardising, commercial purposes in mind. The need to work with architectural environments via specific structures created and maintained by others establishes new constraints for architectural design and questions architects' capability to design in direct response to local conditions. The implications are far from obvious but – again in reference to our literature survey – further study and practical experimentation, especially when educating new designers, is necessary for the development of critical awareness and suitable creative strategies.

Augmentation also begins to occur on a building scale. For example, the

N Building in Tokyo by Terradesign⁴ and Qosmo⁵ utilises a concept similar to the smartphone applications discussed above. However, in the case of the N Building a giant QR code is used as the only decoration for the façade. The N Building is a shopping mall and the QR code can serve as a link to information about the activities in the building. A user can scan the code and obtain information about the shops, gain an ability to make reservations or download coupons. Additionally, users can see other people attending the building as well as their comments made online. Each user can also contribute comments that become associated with the building and accessible to others. The use of QR code as façade decoration is not a technical necessity. As the Layar applications demonstrate, image recognition software can provide such an association without the use of standardised tags. However, it highlights a growing trend to transfer a significant portion of architectural meaning into the cyber portion of the hybrid environment. N Building authors envisage that in the future building facades might disappear to give way to flexible, dynamic content. However, if the types of content to replace the physical architecture will include nothing more but social small talk and commercial information, the environment will become impoverished. In N Building, designers took a deliberate step to pass the responsibility for meaning creation to clients and users of the building. They provided the cyber extension using standard, commercially available hardware and were constrained by its affordances. If this example is to become common practice, does it constitute the abandonment of expertise and trivialisation of an architectural endeavour? If the result of this process is a collaborative creation that involves users of the building who generate the relevant content, should the design include the mechanisms for the curation of virtual information?

Writing in 2006, Edler and Edler observe that the technology for the construction of media facades is becoming more accessible but that their utilisation to date commonly takes the form of electronic advertisement boards disconnected from the local context (Edler and Edler, 2006, p. 181). The standardised, rectilinear forms of such boards are determined by the screen manufacturers and do not respond to the site-specific needs. Similarly, the content they broadcast is typically produced as generic advertisements with no intentional relationships with the host building or the surrounding context. Frequently, when a building acquires a media façade, the architects involved in the project lose control. With this loss, the relationships within their care – for example the relationship between the interior and exterior between the building and the site – become neglected. “[A]rchitects have to start not only to tolerate media surfaces on their buildings but [...] claim them as a powerful opportunity to extend their influence and responsibility in the design process.”

(Edler and Edler, 2006, p. 182) Projects from *realitis:united*, such as BIX⁶ or SPOTS,⁷ attempt to address this problem and create designs integrating media and architecture. Among the outcomes of *realitis:united*'s experiences are the examples of design processes that can lead to the generation of quality content for media facades. For example, in their SPOT project, the practice collaborated with other interested parties to curate a balanced portfolio of such content. Their conclusion was that the conventional display of commercial messages was insufficient to satisfy the client's aspirations for self-promotion simultaneously with the public's desire for spaces that represent and support the current concerns of society. The bias towards a completely non-commercial selection in the SPOTS project was also unsuitable and the team created a pattern that divided week days between artistic exhibitions and commercial advertising. This experience is unusual in traditional architectural design and its success emphasises that architecture practice needs to develop new protocols for the designing of interactive (and networked) systems. These protocols need to take into account the technical and conceptual capabilities of such systems within the framework of architectural design. As these systems are intrinsically dynamic, their design needs to be supported by specific tools that are able to simulate their performance and make it easily adjustable. Because virtual extensions link architecture with tools and systems developed and controlled by others, these new design protocols need to consider who and how can produce appropriate, high quality and/or critical content that can be harmoniously integrated with physical structures.

Currently, such protocols, tools and methods are not readily available in the form of established workflows. Consequently, further experimentation based on a critical understanding of the contemporary situation and involving cross-disciplinary expertise is necessary for further progress.

5. Preliminary conclusions

New media and networked environments create new challenges and opportunities for architecture, city planning and urban studies. These opportunities can only be successfully explored if these disciplines succeed in developing a critical awareness of their effects. Such awareness is currently lacking. (Foth and Sanders, 2008, p. 77)

This gap in existing knowledge should be a cause for concern. Lanier (2010) suggests that "digital creativity eludes flat places" and warns about the dangers of "flat information networks that suppress local contexts in favor of global ones." The discussion presented in this paper suggests that such effects of standardisation begin penetrating the domain of architecture. Indeed, Graham (2005) reports a growing recognition that "corporations are increas-

ingly attempting to ‘package’ electronic spaces for the purposes of electronic consumption in ways that closely relate to, and increasingly actually join with, the wider commodification of urban space.” Taking into account the historical trend towards commercialisation of networked environments discussed above, will architectural and urban projects succumb to commercial saturation, commodification, standardisation and “flattening” that will by far surpass the similar processes in physical environments?

To be able to understand the performance of an augmented environment and appraise the available alternatives, architects need to understand the implicated technologies, motivations they embody and the affordances they offer for designing. Understanding and operating such technologies is a complex challenge that extends well beyond the confines of conventional architectural education. Greater collaboration with adjacent disciplines is therefore increasingly necessary. This collaboration needs to be underpinned by the relevant domain knowledge catered for by specific offerings within architectural education. The relevant educational content should constitute critical appraisal of the theory and practice of augmented environments, potentially leading to the emergence of new specialisations within the architectural profession but also informing all students about the relevant issues.

Endnotes

1. E.g., cf. recent EU’s antitrust probe into alleged Google’s self-serving manipulation of search results. <http://www.bbc.co.uk/news/technology-11876443>
2. <http://www.layar.com>
3. <http://phantomcity.org/>, <http://www.rietveldjaar.nl/>
4. <http://www.terradesign.com>
5. <http://qosmo.jp/> Information on N Building and authors’ aspirations was kindly provided by Alexander Reeder of Qosomo in a personal communication.
6. <http://realities-united.de/#PROJECT,69,1>
7. <http://www.realities-united.de/#PROJECT,81,1>

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