

ADAPTATION AND THE CONSTRUCTED ENVIRONMENT

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Summary

Adaptation in response to climate issues will become a necessity for cities in the near future. But how should one adapt and what needs adapting? The subject is not usually discussed enough within the profession of planning, architecture and design. We continue to build new, adding to the problems of existing heat islanding, unstable structures and buildings that are difficult to be modified. By doing so we are creating conditions of unsustainability. To respond to challenges of dramatic and disruptive climate change, the concept of metrofitting (retrofitting at an urban scale) needs to be given more attention. Existing structures need modifying to meet comfort and safety standards, unsafe structures need identifying and materials recovery programs need to be designed and implemented for dealing with material waste. In addition, other forms of human habitation need exploring which would fundamentally change the agenda of architecture and design and their professions. The process of adaptation is not based on how planning, architecture and design responds but rather the process of adaptation begins with transforming practice.

Keywords: Retrofitting, Metrofitting, Design, Adaptation, Re-directive Practice

1 Introduction

According to the United Nations Population Fund about 3.6 billion people live in urban areas today. That accounts for approximately 50 % of the world population. It is predicted that this number will increase by 2030 to about 70 %. This means that there will be many cities in excess of 30million people by 2030. [1] While the majority of large urban centres comprise of a manly existing building stock with new construction only accounting for 1 % each year and demolition of existing buildings is less that 0.1 % each year, the figures for new construction will rise dramatically according to these predictions.

Rapid urbanisation means the situation needs to be addressed on multiple levels. While new construction will undoubtedly continue, the majority of buildings that will be used in 2050 have already been built. Retrofitting existing urban centres is making a fundamental impact to systems of building structures and sometimes the structure itself by modifying or remodelling existing buildings to respond to the challenges and issues of unsustainability. In addition, an even more holistic notion is the concept of merofitting, which has the ability to bring an existing city to a condition capable to continue to be viable in the future. It begins with transforming education for and the practice of planning and design. This program could include for example transforming existing buildings to be able to withstand the coming climate impacts, undertaking specific risk mapping, incorporating urban food production, modifying current work fashion and the working hours, designing a way to combat heat islanding, coding buildings to signal emergency shelter etc. [2]

Climate change and the effects of it will have significant impacts on the built fabric of our cities. While most climate problems like rising sea levels will arrive slowly, extreme weather events have become more common over the last few years and are likely to become more and more intense in the future. [3] For cities the impact of climate change will be experienced in a variety of ways. A gradual increase in air temperatures will create an increase of the thermal mass of many buildings and structures, making working in the city difficult. Cyclonic winds, storm surges and floods will question the integrity of many existing structures. Many existing structures will simply not be able to withstand the coming climate change and current development strategies are plainly not adequately addressing these issues.

1.1 A call for interdisciplinary and collaborative strategy

Aware of the opportunities to inform and influence several stakeholders such as government authorities, industry and individual households on the future of cities, the Design Futures Master program at the Queensland College of Art, Griffith University in Brisbane, Australia prompted debate and discussions in a hothouse event in 2008 about the current state of our cities in the face of unprecedented change. This event named 'Brisbane 2048' focussed on the idea of metrofitting. The event examined appropriate responses to coming problems and the implications of the coming impacts of a changing climate upon the city and called for an interdisciplinary approach. It proposed that to be successful, the many varied disciplines involved in metrofitting cities need to work together to be effective. The right approach needs to be preventative, adaptive, economic, social, technical and cultural. [4]

What follows is a position paper which came out of 'Brisbane 2048'

2 The concept of metrofitting

The practice of metrofitting can be characterised as retrofitting on an urban scale, by modifying or remodelling existing structures, communities, neighbourhoods, cities and urban cultures, to respond to the challenges and issues of unsustainability. It recognises that the structures of cities are always formal in response to the physical, natural, economic, political, social and cultural. Dealing with all these elements relationally is what distinguishes metrofitting from retrofitting. It acknowledges that a city is always circumscribed by a complex mix of relational determinates: its topography, climate, demographics, infrastructure, by-laws and ordinance and so on. No matter how well designed a city may seem it will always be a mixture of the functional and the dysfunctional. Cities are a diverse and dense web of economic, political, social and cultural structures. According to the socio-economic circumstances of its population and environment, the city delivers positive and negative ways of life. Almost everywhere, as urban population grows, and problems of the unsustainable deepens, inherent problems of the city increase. Problems associated with transport infrastructure, disconnected suburbs, energy supply, homelessness, poverty, a lack of affordable housing, unemployment, crime and violence all fold into each other. The architectural landscape is often incoherent; a historical sense of place is erased and not replaced by the new. The amount of exposed thermal mass in so many CBD's make them feel unpleasantly hot in summer and icy cold in winter.

Fundamentally, the practice of metrofitting recognises that we mostly don't need to add to this urban chaos by adding more material fabric. Rather it asserts the priority of

dealing with existing elements, especially by modifying their structure, operation and use so they are able to contribute to the advance of conditions of sustainment. It is based on the proposition that to make the city a better place environmentally, economically, socially and culturally to live and work it is necessary to deal with what is already there, in every respect.

3 The changing role of planners, architects and designers

Currently architects, planners and designers are not educated to do this. As professionals they are trained to function and to exist in a social bubble. Often they only consult with each other within limited and instrumental contexts –which are to say that they do not learn to view and engage the city as a relational complexity. They see the city technically. In terms of affirmative change, the division of knowledge of their particular disciplines intellectually disables them. In this respect, metrofitting requires a new kind of architecture, design and planning education liberated from past priorities and preoccupations. It equally needs a design agenda and practice beyond service provision. Hence, metrofitting is a domain of designer leadership. It requires a level of activism currently absent in design practice and culture.

While able to be viewed as the politicisation of design it also needs to be seen as a domain of economic opportunity and as a context in which all the design practices can realise a great potential. A limited preoccupation with style can be transcended, social responsibility can be fully exercised and the project of making design practice powerful drivers of sustainment realised. In contrast to star rating systems and green buildings, what is being identified here is a comprehensive approach that engages absolutely every area of urban structure, form, socio-cultural fabric, economy and use.

In contrast to existing ways of designing that only address symptoms of unsustainability, and thereby so often act to sustain the status quo, metrofitting approaches change based on ‘futuring the city’ in terms of what it will have to cope with in coming decades. However, the starting point is not with the city itself but with those practices that bring it into being and animate it. For the city to change, these practices need changing. Re-directive practice is not disconnected from established design practices but is a turning towards a focus on designing sustainment with other areas of practice. So while changing a city through metrofitting seems and is an extremely complex and enormous task, the following questions thus arises: who are the practitioners willing to rise to the challenge? Who is going to get involved? Who will lead? Who will be the catalytic leaders of the change community?

4 Conclusion

What is proposed would be totally unrealistic if it were not for two things: The problems of unsustainability already intrinsic to most cities and, more significantly, the inevitable crisis heading their way. As the history of the architecture of the modern movement affirms, urban dreams so quickly can (and have) become nightmares. In the face of the situation metrofitting and re-directive practice make one clear and powerful statement: act now rather than waiting for the nightmares to begin. As I am writing this article, South East Queensland, including Brisbane, is currently under flood threat yet again. The devastating 2011 flood left a trail of absolute devastation. People are just beginning to recover both economically, physically and mentally and yet what was named a one in a one hundred

years incident is threatening the livelihood of Queensland residents yet again, almost two years to the day. What is certain is that climate change is real. The weather is becoming more unpredictable and severe weather events are occurring more frequently. Short term, we need to design environments that are able to be retrofitted. Long term, the question is not how design needs to respond to the increasing dramatic changes but that the nature of architecture and urban planning needs to change.

References

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