Quantum City

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Preface

I should begin with a disclaimer to physicists who might worry that the ideas introduced here have no scientific proof. This book does not make any claims as to the scientific correctness of its postulations; it merely produces a metaphor that borrows language and concepts from quantum theory – or at least from the popularized accounts of it. It creates a 'what if' scenario that wonders how the city would look if viewed through the lens of quantum concepts.

In an introduction to quantum theory basics and its implications, what is often referred to as 'quantum weirdness', for all its uncanny and counterintuitive symptoms, is essential to nudge the reader's expectations from the safe, familiar but limited language of determinism that rules our everyday life. It is also necessary to move up from the comfortable practicalism of our professional practice as urbanists.

What is more crucial in such a subject is to find the right tone of voice to express these ideas, without giving out the impression of 'New Age' rambling. Serious research has unfortunately been burdened with taboo areas, because of their over-use in so-called 'alternative' literature. In May 2001, Amazon.com listed 4096 books in reply to a search for 'quantum' titles, and many seemed to have stuck the word as an afterthought because it seemed so *à la mode*!

@pi:In my attempt at bridging two readerships – one interested in 'quantum' subjects and one interested in 'city'-related matters – I have tried to provide as much background information as possible about the development of science and worldviews, and have treated the chapters on urban history in a way that assumes most readers will have a minimum of familiarity with the subject. The book is structured in a

way that the reader who is familiar with this territory can selectively skip material up to Chapter 3. However, I strongly suggest you do not skip the introduction to the basics of quantum theory, as the concepts I emphasize might be different from those you might have read elsewhere.

Some readers will find that many issues have been only hinted at, and not developed. A filmmaker friend once told me, 'sometimes what is not on the movie screen is more important than what is; but it is what *is* on the screen that triggers your release from its boundaries'. In this sense, the many unsaid things remain 'out there', and so I hope the novice will take this information as a starting point for further research, while the expert will forgive the simplifications I have had to make to produce as many 'triggers' as possible. The bibliography at the end of the book should provide countless more.

As for many authors who have eventually written about it, my own 'discovery' of quantum theory and its philosophical implications has been a real epiphany. It included middle-of-the-night insights and weird dreams of quantum antimatter twins ... it has been a most thrilling experience, and I hope the present work will instigate the same curiosity and enthusiasm with which I researched and wrote it.

Introduction

> Some mornings I wake up with my head full of rhythms, and rhythms of rhythms, and rhythms of rhythms of rhythms. And to have to speak English is like having to put on a straitjacket.
>
> (Leroy Little Bear 'Sa'ke'j' Henderson)[1]

> The purpose of Newspeak was not only to provide a medium of expression for the world-view and mental habits proper to the devotees of Ingsoc, but to make all other modes of thought impossible.
>
> (George Orwell)[2]

I first visited Oxford in 1993, as a tourist with a camera looking for the postcard beauty of a legendary culture of education. I found it in the intriguing orderliness of the place, the gothic grandeur of its formal buildings and the romantic serenity of its landscapes.

When I returned there four years later as a master's student, I felt doubly betrayed. In spite of all the intellectual drama that played itself within the quad walls, a few months within my sojourn I was confronted with the spatial sterility of the place.

Sterility is a shocking word, I admit. We are more willing to qualify Modern functionalist settings with it than places like Oxford. But I assure you, the realization probably shocked me far more than it does you. I had come from Beirut, from all its post-war Mediterranean chaos, where I had been trained as an architect. I had been trained to think of physical order as the ultimate goal of our profession. I had come to the disciplined context of Oxford to be promoted into an urban designer. Against all my expectations, the values I carried as a template in my mind were suddenly put to the test. In order to frame

this appropriately for you, I have to take you back and forth between several settings in space and time, so that you can most accurately perceive the arc of the experience that put this book in your hands today.

1997, Oxford. As most other students went home for the semester break, I was left with nothing but the stones of the city, nothing but the physical container of that famous culture the rest of the world envied. Oxford fanatically clung to a predictable homogeneity of form. I felt this exposed her insecurity towards the complexity of her users'* backgrounds. The moment they were all gone, she seemed to recompose her artful veneer only to welcome the buses full of octogenarian American tourists with their Japanese cameras.

*The generic term 'user' will signify throughout the book all people who inhabit, use or move through the urban realm: the 'urbanauts'. This includes local citizens, but also transient students, passers-through, tourists, and so on.

I thought the order of things here would teach me how to 'fix' the chaos of my home country. However, perhaps fuelled by a certain homesickness as my host city emptied of its living users, I realized I would be more comfortable in the physical chaos of Beirut than in the extreme orderliness of this 'beautiful' town. My experience both as a user and as a designer in Beirut had showed me that chaos had a limited manageability, but the excessive blandness of Oxford seemed too sterile. I found total incompatibility, at least on the surface, between the level of stimuli in both places and its relationship to physical form. And the contradicting levels of stimuli in both environments made me doubt my beliefs that what made 'good' urban space was a simplistic vision of static order and homogeneity, and pushed me to look for a middle ground, *a more creative and more dynamic dialogue between order and chaos*.

When I tried to describe what made up the qualities of Beirut, I found it was impossible to do so in the language of my formal education. My conceptual language, the core of my professional expression, betrayed me.

Betrayal is an unforgiving sentiment. It is hard to accept that what you had been counting on would fall short of expressing your problems, let alone solving them. Oxford's stones had perhaps deceived me

personally only now, but I felt the betrayal went beyond the stones and beyond me. Every year a plethora of international students, many from non-Western countries, and from diverse cultural and disciplinary backgrounds, return home. There they discover too late the incompatibility of their just-learnt conceptual language with their cities and their lifestyles.

Indeed there were some dimensions missing from the education of urban designers, namely the social, the psychological, and other *subjective* – even *spiritual* – dimensions that one associates with concepts of territoriality, identity, memory, and *meaning* of places and spaces. The interface between social form and physical form varied tremendously from one country to another, through cultural and world-view differences. The Western world had many things to teach developing cities, but there was a lot to be learnt from those cities in return. Yet an under-dimensioned education left us with little insight regarding how to use the experience of different cultures to solve our own problems creatively.

1971–1997, Lebanon. One of the most historically celebrated examples of plural societies ... nineteen different official religious affiliations, four million people on 10 000 square kilometres of sunny coasts, snowy mountains, and green plains: an 'anomaly' in its region, a blessing in disguise. A special case in all the aspects that made up its identity. Lebanon's geography, politics, demographics, ancient and, of course, recent history have all contrived to create one of the world's most contrasted – and contradictory – social and physical environments.

My personal experience was strongly influenced by every aspect of these environments, and to phrase it in the language I will develop for you over the course of this book, you could say that it made my tolerance to the *density of diversity* probably much higher than if I had lived in the English countryside all my life. Born to a Christian father and a Muslim mother, I was exposed to 'both sides of the coin' – and of the story – as I was raised through fifteen years of civil, and less civil, wars. Moving from the city to the suburbs, to and from one or the

other of my parents' hometowns (and extended families), to Europe or to the Arabian Gulf, then back to a reconstructing Beirut again, we were constantly fleeing from localized skirmishes, periodically crossing internal and external borders. Palestinians, Israelis, Syrians, Iranians, and Lebanese Muslim Sunnis, Shiites, Druze, Christian Maronites, Fascists, Socialists, and Communists played out their differences on this tiny territory, involving in their turmoil the Americans, the French and the United Nations. Meanwhile, at school and at home we were raised on the stories of this land of mythical Phoenician ancestors, and the histories of Egyptian, Assyrian, Babylonian, Aramean, Hittite, Medean, Persian, Greek, Roman, Arab, Crusader, Ottoman, and French occupations and their cultural legacies ...

Training and practising as an architect since the end of the war in 1989 in Beirut – a city transforming at an incredible speed, but also a city in a continuous tug-of-war between old and new, between East and West, and between regionalism and globalization – has deepened my passion for my city, and for the city in general. War had created the most intense of environments: fighting and *laissez-faire* development had decentralized and re-urbanized more than 80 per cent of the country's population. Most of those displaced preserved many of their rural traditions and worldviews. Squatting in 1950s modernist buildings, they adapted both their physical environment and their lifestyle to fit each other. The layers upon layers of memories and meanings they introduced gave the city an unsettling sense of visual uncertainty, only balanced by an unexpected and buoyant optimism. From Phoenician ruins to those of five-star hotels of the pre-war golden age, Lebanon's history was literally engraved in its bullet-ridden stones, leaving behind an architectural and social landscape of surrealistic strata.

Could the vision of this 'impure', heterogeneous society that experienced and survived a full generation of chaos and uncertainty develop into an emergent urban identity based on diversity? That is the question I was originally interested in answering in my master's thesis in Oxford. But when I realized that the Urban Design *Newspeak* I had been trained in over the previous semester was incapable of such an expression, I

almost gave up. I soon found myself searching for an alternative thesis topic.

1997, Oxford. Frustration was setting in as the deadline for the thesis subject proposal came closer ... To relieve the frustration, I needed to forget about urbanism for a while and read other subjects. I took advantage of the term break to access books and resources that would be difficult to find back home.

Several years before arriving in Oxford I was walking one summer through the historical centre of Beirut, under total reconstruction after the fifteen-year war, when I came across an architect friend of mine sitting in the dust of an archeological pit. He was enjoying the sun and a book, waiting for his archeologist girlfriend to finish her work. Seeing me, he invited me to join him. Leaning his back onto a 2000-year-old rock wall, he held in his hand a small book with an intriguing title: *Einstein's Dreams*. He read a passage out loud to me, and I was immediately hooked. Alan Lightman, who teaches physics and writing at MIT, weaves in this book a series of beautiful worlds, *dreams* in the mind of the famous father of relativity and space–time, Albert Einstein. Each dream is extrapolated from strange but possible qualities of time taken to their extreme literal application in a 'real' world, mostly manifested through everyday urban life in parallel versions of Switzerland.

It has since become my fetish book. Back in Oxford, I remembered Alan Lightman and thought I'd look up his other books. The digital catalogue informed me that *Great Ideas in Physics* was available in the university library. Initially disappointed that it sounded like a textbook, I was immediately hooked again, and devoured the pages in one day. The brilliance of it was that it presented the major turning points in science through the character and personal backgrounds of the men and women who brought them about. Somehow understanding *who* the man was made Newton's optimistic determinism or Einstein's relativity theory so much more understandable and fascinating. But by far the most extraordinary story was that of quantum theory, which, unlike the former ideas, was more the work of a multitude of scientists and of

decades of interpretation. Its interpretation turned the world of science upside down and inside out, and its application was responsible for all the sophisticated technology of our everyday modern life, from television and lasers to the microchip and digital computers. The history of modern scientific discoveries played itself out like a dramatic thriller, with engaging characters and never-ending surprises and mysteries. With plot twists worthy of the best of science fiction books, the story of quantum physics seemed, in its own right, one of the most remarkable narratives of the twentieth century. As I slowly began to parse apart the worldview elaborated by this revolutionary physics, I was appalled that we had never been taught about all this at school. It was really splendid, and would have made physics classes that much more exciting.

Quantum theory said the world of the infinitely small was made up of *possibilities* and *tendencies*, not of physical certainties. In the strange world of the atom, it was not possible to determine accurately where things were and where they were going at the same time, because they presented themselves as dual-aspect entities. Neither simply *particles* nor simply *waves*, these 'building blocks' of our universe could only be described as *particle~waves*. They were not fixed, dead matter, but *responsive* units that 'decided' which aspect to show the observer at the instant he or she looked at them. Up to the moment of observation, these entities could only be described as *probability waves* and *interconnections* that dynamically linked their possible position and their possible action. What was more, not only could a subatomic entity be in different places at the same time, it also actually behaved as if it *really were* in different places. Its probability wave filled all space and time and gave it certain qualities, which other entities' waves *interfered* with to produce new *emergent* qualities, and on and on. Quantum theory reconnected the world and finally recombined *objectivity* and *subjectivity* into one model of reality, clashing with all that classical thought believed the world to be.

As the semester break was winding to a close, this might have been the end of that story. A fascinating narrative, a compelling theory, a

revolutionary way of looking at the world; marvellous entertainment, but not my discipline at all. And yet, the strangeness of that world began to unfold into reality.

Several days later, still wrestling subconsciously with my relationship to Beirut and Oxford, to my programme and to my thesis, something happened while I was sleeping. Like Newton's apple, like Einstein's flash of light, it came to me in a dream. I woke up in the middle of the night, grabbed a piece of paper and scribbled: 'Quantum UD' – Quantum Urban Design. What suddenly became clear to me was that the world of quantum theory, in all its strangeness and changeability, could in fact provide a metaphorical language applicable to urban design.

Quantum theory seemed to describe a world of *complementary dualities*, of both/and values, of uncertainty, of choices at all scales, of interactive relationships, emergent qualities and of sustainable vibrant ecologies ... a language that described best the complex artefact that is the city: the *urbs* AND the *civitas*, the stones AND the emotions*. The language needed to describe the chaos, uncertainty, complexity, heterogeneity and subjectivity of life in the city had been there all along. Scientists had been forced to create it as the only means of describing what their empirical experience at the heart of matter was showing them, but we had never been taught this language.

*Saint Isidore of Seville (c. AD 560–636) traced in his Etymologies the origins of the word city to different sources: the urbs (or stones of a city), laid for 'practical reasons of shelter, commerce and warfare'; and civitas, 'the emotions, rituals and convictions that take form in a city'.[3] Thus, the urbs and the civitas could also be defined as the physical and the cultural (or political), or, in the language of quantum theory, as the particle and the wave aspects that make up the city.

The book that you now hold in your hands is the result of several years of grappling with the ideas that emerged from this original insight. It is an attempt to borrow some conceptual formulations from quantum theory, and to use it as a background metaphor to describe the urban realm. In the search for concepts better adapted to the paradigm that has come to affect most of our production at the dawn of the millennium, I will attempt to map the city in a language that is more deeply applicable to the complexity we observe to be operating in 'vibrant' space.

What I want to share with you is the sense of excitement, the utter dumbfoundedness that occurred in that epiphanous moment when I

discovered, suddenly and to my great surprise, that an eloquent language had just opened itself up to me. It finally allowed me to express something that had always been buried intuitively in my perception of the world, and which I had been unable to articulate before. I hope you will join me in my curiosity, as we unfold and explore this alternative way of looking at the city and describing it. It is a way much closer to our intuitive thought processes, and one that will hopefully lead us to some qualitatively different conclusions.

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