

# Great Planning Disasters

## *How we should tackle complexity by taming wicked problems*

Michael Batty

Bartlett Professor of Planning  
University College London (UCL)  
[m.batty@ucl.ac.uk](mailto:m.batty@ucl.ac.uk)

Friday, August 17, 2012

### Early Days

I first met Peter Hall in late 1968 in the Terrapin Buildings that housed the Geography Department in the University of Reading. I had journeyed to Reading to ‘interview’ for a job as a Research Assistant on a 3 year project that Peter had secured from the Centre for Environmental Studies, to join a team building urban land use transport models. I was at the time a Studio Assistant in Manchester University’s Department of Town and Country Planning where I had taken my degree, stayed on to do a PhD, being funded by helping to teach design studio. My job was ending but during my time at Manchester, I had re-skilled to the point where I could program computers, could read the simple mathematics of the quantitative geography of those years, and had cut my teeth on building such urban models for the North-East Lancashire and Nottinghamshire-Derbyshire sub-regions. Research Assistant sounded so much grander than Studio Assistant (which then as now implied cleaning up after students had thrown ink around, sweeping up the shavings from the incessant sharpening of 6B pencils, and helping those who couldn’t draw draw – a thankless task). I duly took the job and moved to Reading in 1969 to join one of the most stimulating academic environments I have ever had the privilege to belong to. Much was due to Peter as will become clear as I elaborate my thesis. This will largely cover the time from the late 1960s to the early 1980s by which time we were all scattering once again. It coincides however with a period when the golden years of Town and Country Planning were finally ending as commentators from many different intellectual and political persuasions were casting doubt on the planning system that had been put in place to produce more liveable cities. It began with the brave new world of the systems approach and it ended with Peter’s damning commentary on many of the highest profile schemes of those years recounted in his book *Great Planning Disasters* (Hall, 1980), a book I will use as my exemplar to illustrate his contribution to the debate during those times.

Reading was a great place during those years. The highlight of the week was the academic seminar organized by Peter who managed to persuade some of the world’s greatest scholars in planning and human geography to come to our temporary buildings

on the Whiteknights campus to talk to us at 5pm every Wednesday. I met a succession of towering figures during those years and in hindsight, notwithstanding Peter's world wide reputation and his ability to draw people to visit him, some of this must have been due to the fact that Peter lived in west London and was able to pick people up at the airport, ferry them to Reading, and back again. In those days, getting to the University from London was not that easy. No high speed trains and although the train from Paddington was frequent enough, the bus ride from the station was a good half hour. I had only been there two months and Brian Berry, one of the founders of quantitative geography visited for a couple of days giving the Norma Wilkinson Memorial Lecture. At the same time, Leslie Curry from the University of Toronto was there for a year as a Commonwealth scholar. It was quite a place in those days, as we were all still in the grips of the quantitative revolution, A new journal *Regional Studies* was edited by Peter from the department while his continual quests in writing book after book about planning and cities – those were the days when he wrote *The Containment of Urban England* – generated an atmosphere of scholarship that made us feel that this was 'the place to be'.

### How Is It We Can Get To The Moon When We Can't Get To The Airport?

To me, the crowning glory of those years was meeting Mel Webber. As a student in the early 1960s when it slowly began to dawn on us all that cities were somewhat more complicated than the designers who then dominated the planning profession liked to admit, we were introduced to avante garde thinkers from North America. Lowdon Wingo's edited collection *Cities and Space* contained a paper by Mel Webber (1963) entitled "Order in Diversity: Community Without Propinquity". But it was his joint collection of essays with colleagues from Penn and Berkeley *Explorations into Urban Structure* (Webber et al., 1964) that really set the field alight. This was a way of thinking about cities that was quite alien to the way we had been taught. The notion that there was theory out there that indicated how cities might work and that if we interfered with cities, we may make things worse not better was rather a novel and somewhat strange concept. After all we were in the midst of a great social experiment to replace the slums and to build new roads to move people around and the long boom which began after World War 2 was still in full swing. Yet there were cracks in the edifice and it appeared that what was required was something wider and deeper than the conviction that simply replacing what appeared to be worn out through a top down process of social engineering would yield the good city that we all aspired for.

Peter brought Mel to Reading several times. I remember quite distinctly sitting in Seminar Room B where we held all our departmental meetings hearing Mel begin his talk with the fabled words: "How is it we can get to the moon when we can't get to the airport?" This must have been in 1973, around the time when he had just published his paper with Horst Rittel entitled "Dilemmas in a General Theory of Planning" in which they built on Horst's idea which in turn emanated from West Churchman's (1967) thesis that many planning problems were "wicked". These were problems that when you attempted to do something about them, they often became worse because of your intervention. In a sense, this portrayed the notion that all systems are open in that their repercussions, both good and bad, are not manageable using the solutions that appear obvious. In 1973, the Apollo Moon program was still active and every 6 to 9 months a new mission was being launched but cities were in grid-lock as car ownership

mushroomed, transit systems were in decay, and as urban sprawl took hold, at least in North America. This was also against the background of a futile war in Vietnam and black power, and although in Western Europe things were a little more muted, our cities too were in turmoil due to the decline of heavy industries and a now evident debacle in the public housing programme which had rapidly become unsustainable, and the clear polarization of all that was unfair and divisive in the inner cities.

I am not sure whether Peter's book *Great Planning Disasters* was in any way influenced by the idea of wicked problems *per se* but it was certainly resonant with the dilemmas sketched by Rittel and Webber (1973) in their seminal paper, and I contrast their contributions pictorially in Figure 1<sup>†</sup>. It was consistent too with the first publicly voiced doubts about the planning system in Britain that had been established over the previous 75 or so years, and it was relevant to the academic critiques of the new scientism that had been put in place during the 1960s in the belief that cities could be understood as systems like machines, and controlled, planned, managed accordingly. In fact, Lee's (1973) famous paper entitled "Requiem for Large Scale Models" was published in the same year as the Rittel-Webber "Dilemmas" paper. The idea that planning created problems rather than solved them was definitely in the air.

*Great Planning Disasters* which was published 5 years or so after Mel and Horst Rittel articulated the idea of 'wicked problems', contained some classic examples that illustrated all the features of these dilemmas. The examples were large scale, often predicated as being 'one-off' as in the construction of mega infrastructure projects such as the Third London Airport and the Sydney Opera House, but actually on further scrutiny were often 'long standing'. They were largely inspired in and by the public sector where it was assumed that such projects could not be generated for private gain but were so extensive that a combination of private and public agencies were required in their planning and implementation. They were often conceived as being short term but one of their features is that what appeared to be manageable quickly become unmanageable in space and time as deadlines extended, costs rose, egos massaged, with entire projects becoming bogged down in changing goals over time periods where attitudes and approaches often changed fundamentally. Over the period when many of the projects reported in his book were planned and implemented, the very way in which we thought about planning problems changed and thus the original motivations for such projects were often in doubt. But before I sketch Peter's rare ability to synthesize and explain these dilemmas in his book, it is worth saying a little about the formal characteristics of wicked problems so that we can be clear how wide of the mark planning theory and practice was, both then and now, in informing our understanding.

## On Wicked Problems and Great Planning Disasters

Of course, we have known about wicked problems since prehistory for they are part of our humanity and the way we relate to each other and to the world of nature. But as society has become more complex, and it is something of a rite of passage that I consider this to mark out our age from earlier times, wicked problems have become

---

<sup>†</sup> Erika Meller of Reading University's Geography Department provided some of the images for the collage in Figure 1.

more and more significant. Piet Hein’s (1965) witty aphorism sums up our general reaction to such dilemmas when he says “Problems worthy of attack, prove their worth by fighting back”. Wicked problems look soluble at first, they appear bounded and containable, definable in that they seem easy to separate, even isolate from their wider environment. This is a canon of the systems approach of course, but in fact, quite the opposite is actually the case. Such problems are in fact hard to define or rather, they defy definition and clarity as soon as one begins to explore them. The more you worry at their solution, the stronger they seem to fight back, having a ‘life’ of their own. They have no limits, there are no stopping rules. Once it appears a solution has been found, the problem reappears often in mutated and more extreme form, like an uncontrollable disease, like a cancer sometimes in remission but which is never cured.

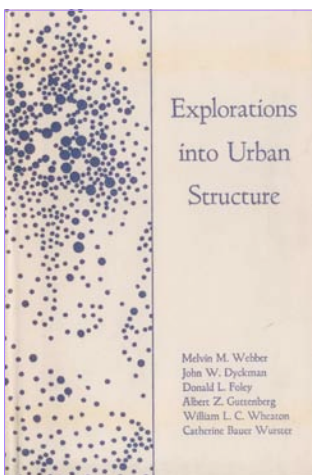
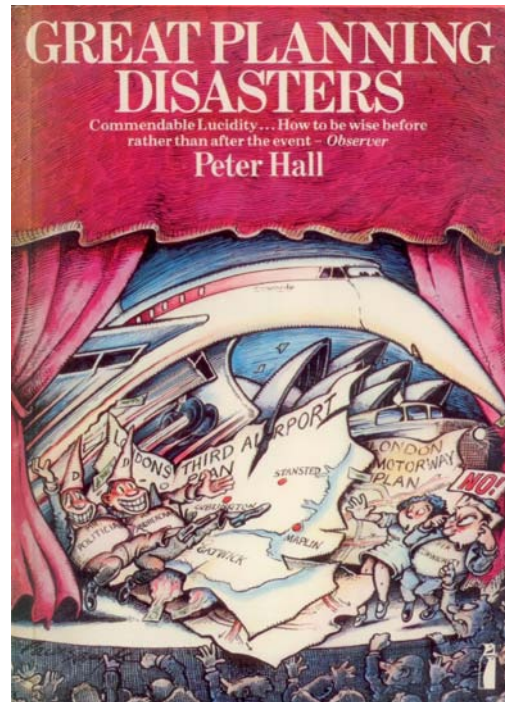


Figure 1: top left) Peter Hall in 1968 top right) the cover of the first paper back version of his 1980 book **Great Planning Disasters** (Penguin Press) bottom left) The iconic **Explorations into Urban Structure** (U Penn Press, 1964) bottom middle) Melvin M. Webber in 2005 and bottom right) the front page of the seminal Rittel and Webber **Policy Sciences** paper in 1973

In short, the repercussions of wicked problems appear infinite in that they do not die away over space and time. Many of the assumptions that we unwittingly adopt in cities and their planning, imply that the repercussions of any problems and their solution become less significant the further you are in time and space from their occurrence. This is something that is now dramatically untrue. Unlike problems in some but an increasingly small number of sciences, they cannot be bounded. The first example that Peter introduces in his book – the location of a major international airport in London – has been a source of debate for the last 50 years and shows absolutely no sign of being resolved. Moreover although the siting and construction of an airport is a well-defined mega infrastructure project, it is essentially a key hub in the global system with enormous connectivity in the world economy where its impacts have many anticipated and unanticipated effects. In short, it is hard to separate it out from everything else and to treat it as any form of closed system. This was known half a century ago but it is much more focal in present times and few would now argue that a world airport (which is what a new airport in London would be) could be planned in the same way that more local housing estates or even major shopping centre might be organized.

In fact as the world has become more complex, fewer and fewer problems can be isolated and solved in all-of-a-piece. The rise of complexity theory is symptomatic of this (Batty, 2005) and most problems that we now deal with in planning tend to be ‘wicked’. It is a cliché, I know, but if you add ‘planning’ to ‘wicked problems’, I would argue you get ‘great planning disasters’. It was this that Peter perceived when he began to fashion the examples which are contained in his book, and interestingly, the seven case studies that he presented were not of a generic type, but samples from an array of problems that could lead to such disasters if the context was poorly perceived and issues treated in an isolated and bounded manner: the Third London airport, London’s motorways, the Anglo-French supersonic aircraft Concorde, San Francisco’s Bay Area Rapid Transit (BART) system, the Sydney Opera House and two near disasters, one based on California’s Campus extension programme and the National British Library are not one type of problem. They are all very different but have in common, the fact that they are impossible to bound in conventional ways. All generate repercussions that are global in one form or another (or national in their financing), all have physical infrastructure associated with them, and all could not – at least at the time – be planned or implemented without large scale public funding.

To an extent, Peter’s book poses these dilemmas and recounts their problems in graphic detail. One of his themes is that those empowered to tackle and manage these projects did not grapple or even understand the kind of uncertainties that dominated a world where some form of consensual agreement was needed to make progress. In an earlier age, the age of steam for example, such consensus was not considered important and decisions simply got made regardless. There was still uncertainty but such uncertainty was defined away often by dictat. By the post war years, it was no longer possible to develop projects on this scale without considering a wide range of interests. Bureaucrats, consultants, professionals, politicians, and of course the wider public, those informed but many uninformed, had a stake in these projects and it proved to be impossible to assemble these interests in ways that could lead to the sort of consensus that was required to make progress. Moreover by being unable to separate these kinds of problem from their wider environment, that environment with all its volatilities and uncertainties often came to dominate.

Peter's solution which would resolve this pathology was to go in search of theory that would embrace this range of issues and he found it in the dominant positive model of social science that had evolved in North America in the 30 or so years before his book was written. This was essentially public choice theory, which in his own words, he 'pillaged' from various strands of social science and economics, from psychology, game theory, and systems theory. In so far as there was a theory that enabled us to grapple with wicked problems, this was it at the time although it was soon to be superseded in the 1980s and beyond by complexity theory. Nevertheless in the second part of his book, he made a brave attempt to use this theory, not only to explain the sequence of events characterizing his various case studies but also to imply how one might resolve them. His speculations are long on analysis but short on prescription because by his own admission, "... there is no magic formula, no all embracing model that will perform this miracle". (p.249). What, however, he does do, is to sketch the rudiments of an approach to these dilemmas. To an extent, his analysis is consistent with much of what has happened since, in our general understanding of how we might deal with wicked problems.

### An Interconnected World: From the Systems Approach to the Complexity Sciences

If we go back to the 19<sup>th</sup> century, indeed to Enlightenment and before, the sense in the west was that science could produce the answers. Even if this were qualified by the use of the term 'technology' rather than 'science', there was a deep-seated notion that the world was fundamentally explicable, and by the time quantum theory and relativity came to be established just over a century ago, there was a widespread feeling amongst scientists that we were well on the road towards complete understanding. Notwithstanding the two cultures (Snow, 1959), this momentum in science propelled us all along the path to impose this ideology on the social sciences and by the mid-20<sup>th</sup> century, there was the general recognition that social engineering in analogy to developments in science and technology was a clear possibility.

This is a long story that most reading this essay will know about. In planning, it came to be called "The Systems Approach", the subject of an influential text by McLoughlin (1969) which argued that cities should be seen as connected structures of subsystems and components, and that planning should be seen as the control mechanism to steer such systems to an optimal equilibrium. Indeed, the idea that planning might be akin to 'landing a man on the moon', the imagery invoked by Mel Webber in his 1973 Reading seminar, was entirely consistent with this notion of systems planning. It now seems somewhat incredible that this approach was taken so literally but it was. But very quickly, almost too quickly the model was found wanting. City systems were not bounded and separated from their environment, they were never in equilibrium, they were systems that generated innovation and surprise and as soon as the systems model was articulated, it began to be modified and qualified in ways that have taken it well beyond the kind of positive social science on which it was developed in the 1950s and 1960s.

The systems model however did polarize our thinking about how cities functioned but its imagery of the city as a machine and planning as the controller was deeply flawed. The idea that cities had structure which was in equilibrium tended to divert the debate

from the critical issues of cities which were about how cities destroy their implied equilibrium, albeit creatively. The fact that cities in their physical form tend to be inert in comparison to how their populations change gives an illusory quality to the notion of equilibrium while the idea that we can separate the system from its controller is the machine analogy gone mad. The notion too that history does not matter is clearly inappropriate while the idea that good cities are those that are homogeneous with all their variety and diversity ironed out – which was a key theme in British and American planning through development control and zoning – was a recipe for a disaster in itself as Jane Jacob's (1961) had and continued to argue so vociferously.

However almost as soon as the systems approach was proposed, alternative currents swept planning theory. The notion that all the key problems were structural in the sense of a political economy began to pervade the field. There was continued drift from the idea of the city beautiful and city economical to the 'good city', the city of equity, as Peter Hall (2002) argues in his history of British planning *Cities of Tomorrow*. The idea of community resurrected itself, some would say it never died, and in 1970s and 1980s Britain, planning as economic development became a key focus in its practice. And of course, the idea that planning had to deal with wicked problems began to tax not only its theory and practice of planning but also challenged the very notion that cities were understandable using analogies with past science, technologies, and with machines. These were all reactions to a world which tended to treat planning problems as closed and soluble rather than open and re-solvable, over and over again rather once-for-all which had been the model operating since planning was established as a function of the state in the early 20<sup>th</sup> century.

In the years after the 1970s when the systems approach fell into disrepute, when planning problems were acknowledged to be ill-defined, wicked, and when uncertainty not only about the future but the very model of how one should go about thinking about cities and their planning came under immense scrutiny, the world changed. In 1948 came the transistor, in 1959 the integrated circuit and then in 1971 the microprocessor was invented and this radically changed the way we could manipulate data and information using computable devices in the 1980s. Moreover computers were linked to telecommunications and by the early 1990s, the network of networks – the internet – was on its way. We now live in world where computing, software, data is all pervasive and changing the very way we interact with almost everything we touch. But for cities and planning, the message is more general and it relates to connectivity. When everything is connected to everything else, and communication is anywhere, anytime, life becomes staggering in its possible complexity. It is not surprising that as our systems of which cities are one of the prime examples, have changed to embrace this new found connectivity, our understanding of systems has also changed. The complexity sciences grew out of the systems approach but is in some senses diametrically opposed to it in terms of the way systems function – bottom up compared to top down, systems in disequilibrium or far from equilibrium as opposed to being in equilibrium, multiple connected patterns of interactions where processes far from dying away from their sources, cascade and magnify, and these are the characteristics of cities that are now clearly significant in trying to fashion an understanding of their functioning.

The idea that there are closed systems in cities and in planning has gone forever. Innovations, discontinuities, abrupt change, fast change, historical accidents, diversity,

plurality, heterogeneity – these are now the watch words of this new science. It is a science that is much more consistent with dealing with planning disasters than the science that came out of the 1950s in North America where the focus was on order rather than chaos, on closure rather than openness, and on consensus and rationality rather than conflict. I do not have time to elaborate it here but in essence, it is much more equipped to deal with the sorts of open problems that characterize planning than anything that we developed hitherto. But there is a striking message in all of this and this relates very much to what Peter was arguing in his analysis of planning disasters in his book: this is that the idea that prediction is up for grabs. Our new ways of looking at cities and their planning is changing the role of prediction quite dramatically and we will conclude by exploring how these ideas can help what Peter called in the last chapter of his book ‘anti-disaster methodology’.

### The Limits to Theory and Prediction

If you accept that there is no ‘single’ approach to the planning of cities, then this means that there are no correct theories, no correct models, and hence unified predictions are not possible. In short, in a pluralistic world, many theories compete and the only way it is possible to reconcile the inevitable inconsistencies between them is to take a pluralistic approach. In the last part of *Great Planning Disasters*, Peter presents a theoretical framework which is geared to informing the case studies that he has presented with more rational modes of action. Indeed, the theory of planning that is culled from all the various approaches that he introduces – from material as diverse as Friend and Jessop’s strategic choice to Arrow’s theorems of impossibility and Lindblom’s disjointed incrementalism – is largely a sweep through most positive social choice theory that emerged from North America from the 1950s to the 1970s. In some senses, this is a coherent set of ideas but in other ways, like all theory at any point in time, it is, in Feynman’s (1965) phrase, a set of principles together, that “... are inconsistent with each other”.(p. 155). In fact, Peter’s approach is very much rooted in those times, largely because as I have argued, we have moved away not to a world where theory no longer counts, but to a world where no one theoretical approach is legion and can never be.

In fact, Peter takes a remarkably contemporary view of using theory and models in planning in his proposals for dealing with planning disasters. His methodology is one of using the various ideas that he describes to ‘inform’ the planning debate – to inform the dialogue between bureaucrats, politicians, and the community – the three groups he considers absolutely essential to resolving and mitigating the sorts of disasters presented through his case studies. Although borne of a realization that the tools and methods he proposes are quite untried and tested, and also somewhat theoretical in focus, he argues that they must be used together to represent the three distinct viewpoints that he identifies in the bureaucracy, the polity and the community. In fact for somewhat different reasons, we would now argue that the use of tools such as these to inform the dialogue is as much due to the fact that these tools will not provide the right predictions but are essential in structuring the debate.

In summary, our current views about prediction in science and in human affairs are in turmoil, even more so than they were when Peter wrote this influential book. From complexity theory, we now know that human systems and the science embedded in



them are becoming more complex as we invent new ways of communications and manufacture. This means that the future is inherently unpredictable not just because we cannot predict as Popper (1959) demonstrated half a century ago but because our models of complex systems will always be less than adequate as such systems are continually changing. This means that policies that appeared to work yesterday will no longer work today and clearly never in the future. This is because the world is much more volatile due to innovations and disruptions than ever we thought in the past.

It used to be a canon of faith that the further we trespassed into the future, the poorer and more uncertain our predictions would be but now we know that in a completely connected world, even short term predictions are as volatile as long term and we no longer have any shred of confidence in being able to predict even the shortest term of futures. In this world which is the world of great planning disasters too, then all that can be hoped for is dialogue, ways of bringing to bear important knowledge, some of it conflicting but nevertheless representing multiple viewpoints and theories, and somehow using our rationality to make informed choices on what is an inherently uncertain future. Peter's introduction to ideas about uncertainty in his book was very far sighted at the time but in some respects, although uncertainty and risk are now at the top of our agenda in thinking about the future, uncertainty and risk itself as part of complexity itself are changing continually.

### The Book: An Evaluation

Peter's book on *Great Planning Disasters* provided and still provides a set of seven case studies that are as relevant today as they were more than thirty years ago when they were assembled and nearly 50 years ago when many of them first originated. His descriptions are timeless although his theories about how to cope with such endemic uncertainty – how to 'tame' wicked problems – have now been subsumed into the mainstream. Positive social theory of the kind coming from North America in the 1960s and 1970s now forms the substrata of much political theory and to an extent it is now being informed by much deeper notions about behaviour and the way people exercise their preferences and choices. This is a still a cutting edge but the focus has changed much more to patterns of connectivity and interaction which link these kinds of planning problems to their wider context and to the wider world.

In one sense, Peter's contribution<sup>±</sup> is not simply to have identified interesting and important case studies of the failure of planning which of course he did do but to have set these in their wider context of what kinds of planning theory might be useful in grappling with these dilemmas. His focus on rationality is laudable but more so is his sense that theory is to inform the debate. There is little doubt that the title of his book attracts readers who are interested in the state of planning and controversy and doubtless

---

<sup>±</sup> A quick search of Google Scholar reveals that *Great Planning Disasters* has almost 550 cites compared to his *Cities of Tomorrow* which has more than 3 times as many (17/8/2012). I am not set on using these citation scores to judge impact for as I have argued in this essay, his contribution in this book lies in the part which is least likely to be read. But what is important is his development of positive social science theory and its use in interpreting planning history which he establishes in the last part of the book. This is a contribution that very few scholars of planning theory or history have been able to do and it sets an example for all of us to follow with respect to how history and theory need to be continually integrated with one another.

there are less readers of this work interested in his analysis of bureaucracy and related processes that define the nature of the disasters. His prescriptions depend on having some immersion and familiarity with public choice theory and positive political science but his lasting legacy through this work is showing how planning history can be informed by theory. His work in general as recounted by many of his colleagues writing in this book is not strongly characterized by theory *per se* but this book shows an admirable grasp of theoretical ideas that resonate in the current debates about how we see planning in contemporary society.

## References

- Batty, M. (2005) *Cities and Complexity*, MIT Press, Cambridge, MA.
- Feynman, R. P. (1965, 1992) *The Character of the Physical Law*, Penguin Books, London.
- Hall, P. (1980) *Great Planning Disasters*, Penguin Books, London.
- Hall, P. (2002) *Cities of Tomorrow: An Intellectual History of Urban Planning and Design in the Twentieth Century*, 3rd Edition, Wiley-Blackwell, London
- Hein, P. (1965) *Grooks I*, Doubleday and Company, New York.
- Jacobs, J. (1961) *The Death and Life of Great American Cities*, Random House, New York.
- Lee, D. B. (1973) Requiem for Large-Scale Models', *Journal of the American Institute of Planners*, 39, 163–78.
- McLoughlin, J. B. (1969) *Urban and Regional Planning: A Systems Approach*, Faber; London.
- Popper, K. (1959) *The Logic of Scientific Discovery*, Hutchinson and Company, London
- Rittel, H. W. J. and Webber, M. M. (1973) Dilemmas in a General Theory of Planning, *Policy Sciences*, 4, 155-169.
- Snow, C.P. (1959) *The Two Cultures*, Cambridge University Press, Cambridge, UK.
- Webber, M. M. (1963) Order in Diversity: Community Without Propinquity, in L. Wingo Jr. (Editor) *Cities and Space: The Future Use of Urban Land*, Johns Hopkins University Press, Baltimore, MD, 23-54.
- Webber, M. M., Dyckman, J. W., Foley, D. L., Guttenberg, A. Z., Wheaton, W. L. C., and Wurster, C. B. (1964) *Explorations into Urban Structure*, University of Pennsylvania Press, Philadelphia, PA.