Great Planning Disasters?

or how we should tackle complexity
by taming wicked problems

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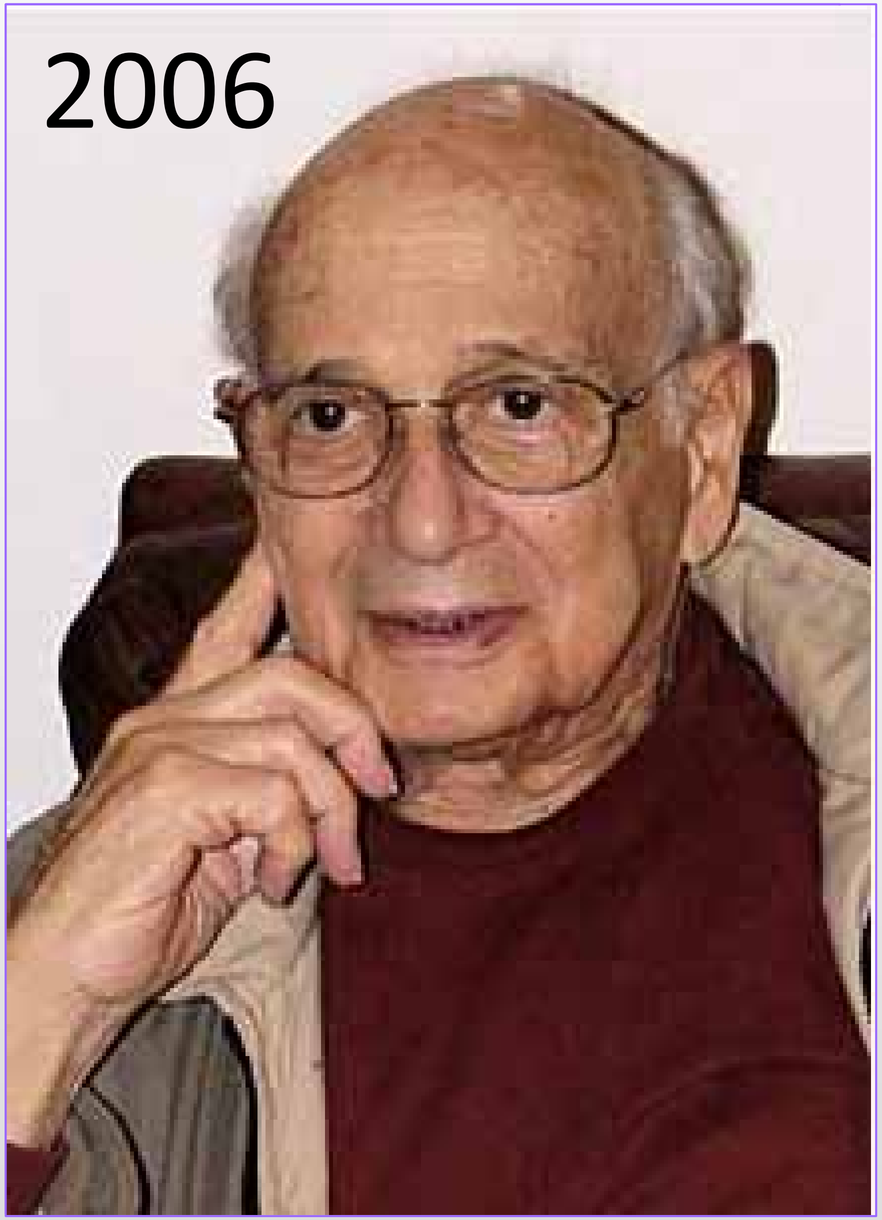
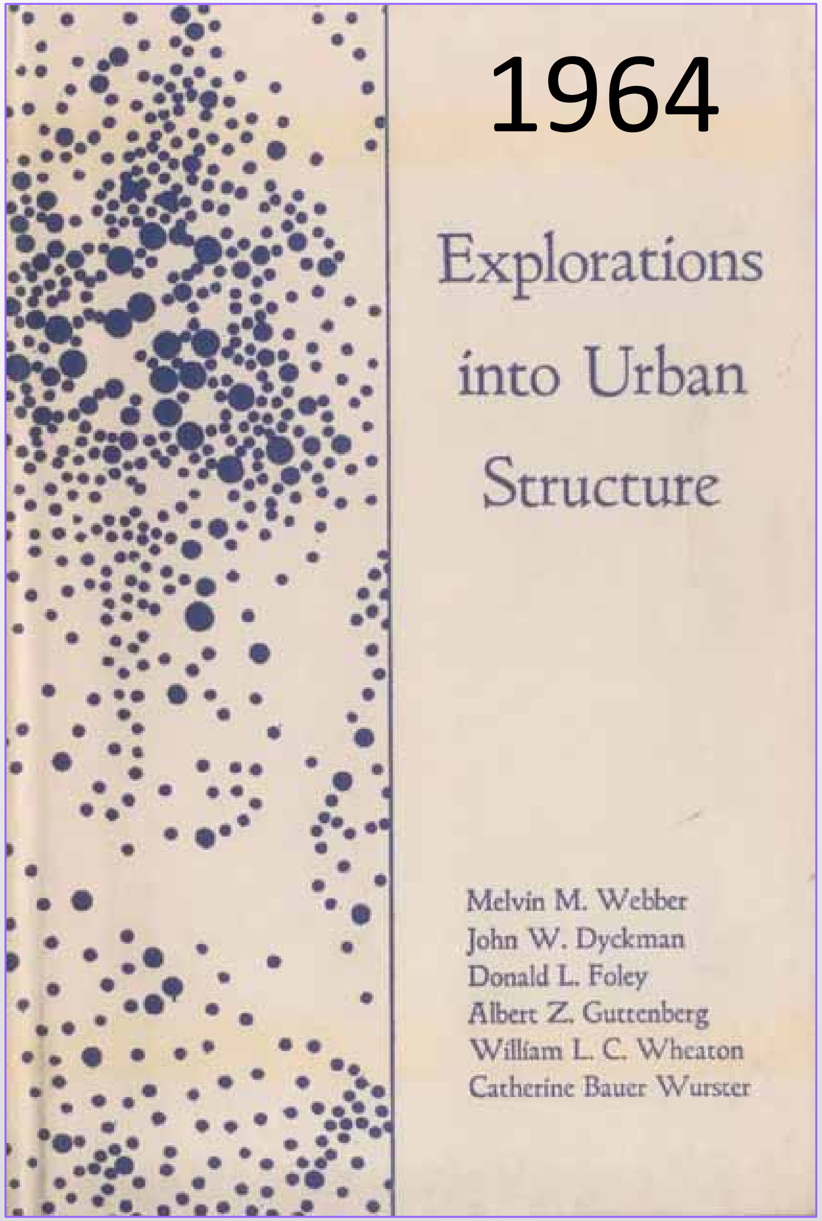

2006


1964
Explorations into Urban Structure
Melvin M. Webber
John W. Dyckman
Donald L. Foley
Albert Z. Guttenberg
William L. C. Wheaton
Catherine Bauer Wurster

An Outline

- Wicked Problems: Mel Webber's Classic Phrase
- Interconnections: The Systems Approach
- Complexity as Far as the Eye Can See
- The Limits to Models
- The Limits to Prediction
- Constructing a Science of Cities
- Using this Science in Planning

Wicked Problems: Mel Webber's Classic Phrase

Mel said in 1973 in Reading and doubtless elsewhere

How is that we can get to the moon, when we can't get to the airport?"

He articulated this in his ideas of wicked problems, building on West Churchman's phrase in 1967 and elaborated with Horst Rittel in the paper in **Policy Sciences** in 1973 called "Dilemmas in a general theory of planning"

Of course, wicked problems have been known about from prehistory – they are part of our humanity – but as society has become more complex – and this is an right of passage in my book, they have become more and more significant.

In fact, it is worth repeating Piet Hein's witty aphorism which sums this whole area up

"Problems worthy of attack
prove their worth by fighting back."

Piet Hein, ***Grooks 1*** , 1965

Wicked problems are those that look soluble at first sight but then when you tackle them they tend to bite back – in fact the more you worry at their solution, the stronger they fight back.

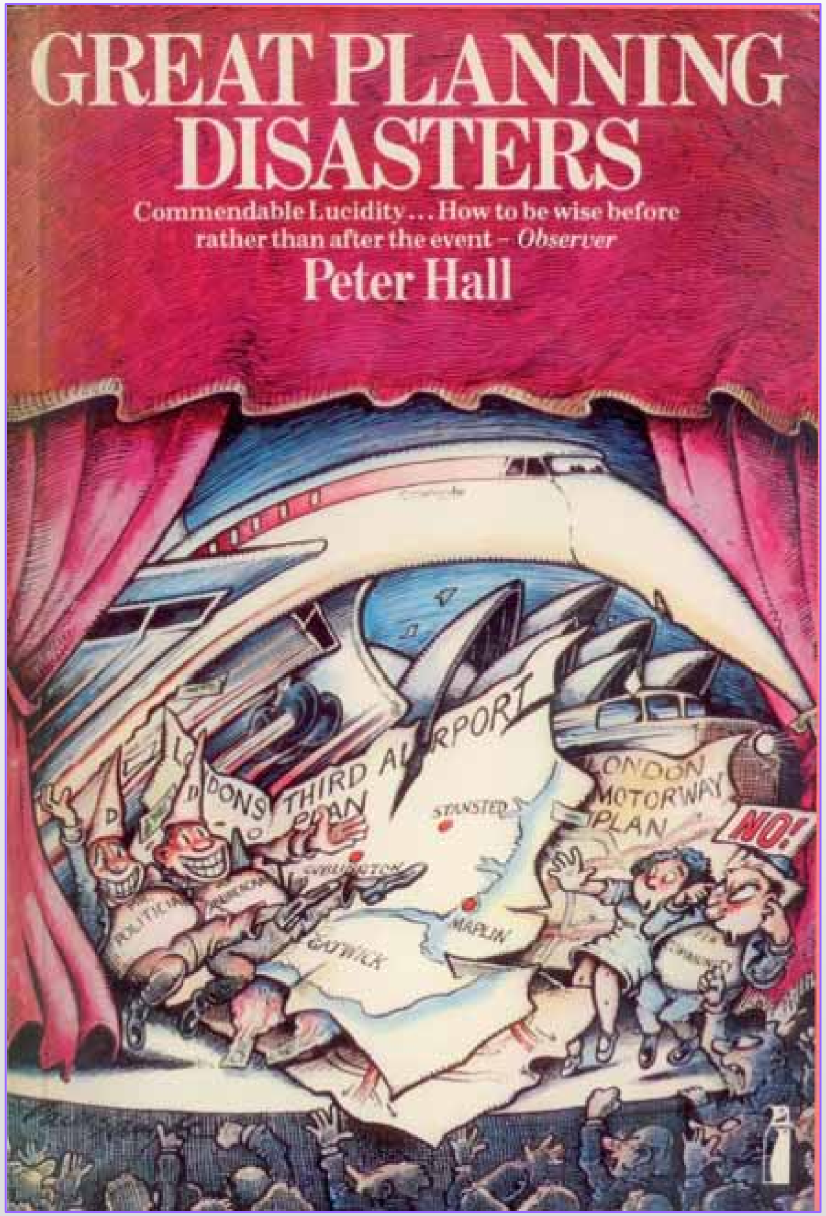
Wicked problems are hard to define – they seem to have no limits, they have no stopping rules because you don't know when they are solved; and when they appear to be, they have a nasty habit of recurring yet again, in fact over and over again.

Their repercussions seem infinite – they don't die out over space and time – in short unlike some problems in science, they cannot be bounded.

In fact most problems that we tend to deal with our 'wicked'

Certainly if you take 'wicked problems' and add them to 'planning', you get

Wicked Problems + Planning = Great Planning Disasters



Peter did not say this in his book – I have used my licence to view the various case studies that he outlined – the Third London airport, London's motorways, the BART system, the Sydney Opera House … as containing elements of wicked problems.

Why did we ever think that planning problems could be solved? What kind of art and science presupposes that such ill-defined and collective dilemmas that we face in planning can lead to solutions?

It now seems easy to say this after 50 or 100 years of trying and failing but to understand the dilemmas we must trace the origins.

Interconnections: The Systems Approach

If we go back to the 19th century – indeed to the Enlightenment, even before, the sense in the west was that science could produce answers. Even if this were slightly qualified, then the technology that could be understood through science produced answers.

Throughout the 18th and 19th centuries, this mood gathered pace to the point in the early 20th century when there came concerted moves to impose this model on what came to be called the social sciences.

This is a long story that most of us know and it led in the post war years to a scientism that in planning came to be called the "Systems Approach". Mel Webber's hallowed phrase about seeing planning as akin to landing a man on the moon, was very definitely the model of planning as social engineering and policy science that came from these developments in the 1950s and 1960s.

It now seems incredible that this notion was taken seriously but it was. At least by some. Very quickly of course the model was found wanting in practice – and diverse alternatives were proposed and suggested.

Political economy where the focus was on very big social questions, not on tinkering with the status quo, corporatism, economic development, planning as negotiation, communication, argumentation – a host of other approaches have been proposed which add to the plurality that is planning

But the systems models is very deeply ingrained in our psyche – and it is worth noting its features as this is key to the notion of the wicked problems.

The system is the city and the planner the controller, with this interface being:

Well-defined – closed from the outside world or at least having a benign environment

Interactions between the parts – the subsystems – being tractable and measurable and functioning

In equilibrium: the dynamics dies away, converges to a well-behaved state. Schelling’s model is an example

The system responds well to the controller

History does not really matter

I could go on with more and more features but systems of this kind do not exist – even in science they only exist on paper or in highly controlled (lab) situations

Complexity as Far as the Eye Can See

This is a very important point – systems as we define them in this kind of closed world of theory do not exist.

This does not discount their value which is pedagogic of course, but it makes them impossible to apply directly.

And of course the history of planning is littered with examples of the fact we assume the world is tractable in these terms

Planning disasters are the result.

In his book, Peter tried a valiant redefinition of the way one could go about tackling these kinds of problems.

He talked about different types of uncertainty – in short he tried to classify 'wicked problems' using this typology.

He set this into a welfare approach, using economic ideas – which alluded to the kind of positive political science that came out of North America in the 1960s and 1970s: Lindblom, Dahl, Arrow and so on

I do not think – although I might have done then – that this sort of thinking would save the program

Much as I think that characterising human problems in terms of uncertainty – and now risk and related concepts – can be quite illuminating – I do not think that it can restore the closed systems science model to its assumed glory.

In fact the world has taken a very different direction since those days and in short, it has turned almost full circle.

We now do not assume we can have an all embracing understanding – the new model involves us in living with uncertainty, in defining the world as infinitely complex – and living with this complexity.

I could give you an entire lecture on complexity but I won't – Suffice it to say that complex system are built from millions of components – in fact for all countable purposes – an infinity of components. They act organically from the bottom up and pattern and order emerges from them

History matters. Where we start and how we innovate makes a difference. In fact the very best example we have was talked about by the man who lived in a house on this very site in 1837 – Charles Darwin – evolution – organic development – the best examples are ourselves, cities, society, the economy are some of our best exemplars.

Indeed we nearly got there without the intervening 100 years from the writings of another man who worked for a year not so very far away across the quad in Burnett Sanderson's physiology lab

Cities as complex systems and a science of cities in evolutionary terms was the product of Patrick Geddes thinking in the early 20th century. But he held back. Nevertheless all the rudiments were there but the equilibrium model held sway and the classical model became dominant.

In fact there is now a sea change in how we are beginning to think about systems using complexity.

Let me list some features

Systems are never in equilibrium – they are in disequilibrium of course but they are far from equilibrium – dynamics ifs all important

Innovation, discontinuity, abrupt change, slow change, fast change, are key

Patterns emerge from the bottom up, how systems evolve depends on their history, history matters,

Heterogeneity not homogeneity, diversity, plurality are the watch words.

Systems are always open to their environment

This means that there is no such thing as a closed system. Moreover as systems are infinitely complex, we cannot expect to track everything

We need to redefine how we relate to such systems and this will change the nature of prediction

There are infinite numbers of alternatives and the search for the best is futile, at least in the abstract

This of course changes the nature of our models of such systems and what we might expect from them, and it also changes the way we might think about prediction. Let me turn to these issues as I begin to conclude.

The Limits to Models

Of course models are in any case abstractions – they abstract the crucial issues in hand and in so doing, focus on what is assumed to be the nub of the problem.

It follows when one is faced with complexity, many models are likely to be more 'useful' than one

But models are useless unless used in context. No longer can we think of them as predictive – they are probably tools on which to build frameworks for dialogue. Brave words I know. No easy answers.

The Limits to Prediction

There is no such thing as prediction if we take the complexity message to heart. But this does not mean we do not need to invent the future. We do.

There is an old notion that short term predictions are more accurate than long term – based on the notion that the further out you go, the more randomness that is introduced.

Complexity theory discounts this because fast change in the short term can be as volatile as slower in the long term.

A related problem is that our systems are becoming more complex – as we invent newer and newer technologies and more of them

In this sense, their predictability is ever more uncertain, notwithstanding the limits to prediction posed by the indeterminism of our systems and our actions.

Of course Popper said much of this 50 or more years ago. Only can one predict in closed systems and to all intents and purposes there are none.

Science is just beginning to find this out too, so it is not just the human domain where these issues prevail.

Constructing a Science of Cities

Now I should not indulge myself on Peter's behalf because this is his day not ours. But he has been a great supporter of better theory and models about cities and about planning.

We are making more progress in the former than the latter and I refer you to a recent summary in **Cities** by myself, and also to a little article in the **Economist** this past week, which sketches major changes taking place in the way our city systems are functioning and the profound changes taking place in this in terms of data.

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Building a science of cities

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A R T I C L E I N F O

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A B S T R A C T

Our understanding of cities is being transforme
2005). Here we review progress, sketching the
treated systems as being organised from the t
treated as evolving from the bottom up. The s
sition from thinking of 'cities as machines' to
dynamics of cities where the notion of equilibr
types such as chaos, catastrophes, and bifurcat
to morphologies that illustrate fractal pattern
works and interactions that sustain cities thro
of movement and mobility can give rise to the
all these developments, ideas about scaling tha
and we thus sketch three scaling laws based
our synthesis of how spatial processes give r
about how these ideas are being embedded int

22/06/2012

The Economist

Urban research

The laws of the city

A deluge of data makes cities laboratories for those seeking to run them better

Jun 23rd 2012 | from the print edition

NO FACE looks alike, but human bodies and their genetic make-up are almost identical. Cities too have distinctive charms—but are surprisingly alike behind their façades. Regardless of size, their populations grow at the same average rate everywhere in the world. A city twice as large as its neighbour is likely to be 15% richer. The mix of green space and built-up areas tends to be equal everywhere.

Using this Science in Planning

This of course in the great challenge. What does complexity theory do for our articulation of planning, for planning theory?

There is very little so far. The book by Judith Innes and David Boohmer called **Planning with Complexity** is a start, and there are some tentative suggests in communicative planning by Patsy Healey. And there is loads of stuff in management but a lot is rhetoric.

To me the real issues are what this means for our tools and what is means for prediction, hence design

towards the end of this year the Departments of Geography and Geology will be housed in buildings of their own which will be both watertight and suitable for

not

Thanks to Erika Meller at Reading University Geography Department who did a great job on getting me some of these images

I will have posted this powerpoint on my blog

http://www.complexcity.info/