

### 3.8 PAST AND CONTEMPORARY TREATMENT OF RISK, UNCERTAINTY AND COMPLEXITY IN TRANSPORT, REGIONAL AND CITY PLANNING AND URBAN DEVELOPMENT: A SUMMARY AND SYNTHESIS

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#### Introduction

Working Paper #3 brings together a series of papers that deal with aspects of risk, uncertainty and complexity (RUC) as they relate to decision-making and planning in spatial and transportation planning, urban development and project management. These are selective if contributions from both academics and practitioners and are not exhaustive. More detailed comments as they relate to mega urban transport projects may be found in Working Paper #4 of this series. The topics addressed here are in a sequence that commences with macro concerns regarding the complex and dynamic evolution of cities and regions and concludes with the treatment of RUC on major property projects.

This series of papers indicates that we can learn lessons from three channels:

- from history - appraising the outcomes of both successes and failures;
- from theory - translating advances in relevant theory into practical application; and
- from practice – identifying lessons that cross disciplines, professions and sectors;

with the importance of ‘context’ stressed in all channels.

#### The historical perspective

Hall (see Section 3.5 of this Working Paper) brings a uniquely well informed historical perspective on the treatment of RUC in the planning and delivery of mega projects in the UK. Looking back more than 35 years of developments in the UK since his *Great Planning Disasters* book we are privileged to have him retrospectively consider his interpretation of success and failure of such projects in the light of today’s new circumstances and advances. The perspective offered by is essentially based on a critique of empirical observations based on events and decisions discussed in an interview conducted by the editors with questions posed that are derived from the ‘planning disasters thesis’.

Hall’s contribution reveals three important things:

- **History matters** – In many instances, the success or failure of MUTPs can *only* truly be ascertained over time. Some such projects are deemed a failure soon after their completion (given the context of the time) only to be declared a success several decades later. There are also cases where projects are *not* implemented, and in retrospect, this failure of execution is seen (at least by some) to be what may be termed ‘a negative planning disaster’; i.e. the great mistake lies in it *not* happening.

- ***Acceptance of ideas and prevailing values*** – Hall warns us that “you can never over-estimate the effect of what can be called ‘political fashion’ which is partly related to the movement of ideas as exaggerated by key individuals.” This relates to Gladwell’s thesis about tipping points (of big ideas) and the ‘stickiness’ of ideas over time and geography and resonates with the contribution from Dimitriou and Thompson in this same Working Paper. Hall argues that the early work by Friend and Jessop (1969) on the treatment of RUC in the 1970s got completely buried by ideology: by the Marxist onslaught on planning theory at the time and neo-liberal economics which dismissed the relevance of strategic planning. The lessons of the *Planning Disasters* thesis, Hall suggests, came out at the wrong time; “it was published at the onset of the Reagan /Thatcher era when there was a tremendous attack on the whole concept of strategic planning”.
- ***Project champions are important*** - Citing the intervention of Heseltine in the CTRL Project, Hall argues that one “cannot overestimate the importance of a single individual.” He goes on to claim “... had (Heseltine) never arrived at the Department of Environment in the autumn of 1990, the ‘Arup Route’ would have *never* gone through, and maybe no line would have been approved; you would then have had a negative planning disaster”. Strong leadership, a guiding vision and *sustained* political support are all therefore essential to successful MUTPs.
- ***Events matter*** – Critical forces of change mould contexts and priorities. This can (and does) lead to major changes that *soon or later* have to be accepted or adapted to by government and industry. The critical forces of change associated with climate change challenges, global energy shortages, world food production failures, global credit fluidity problems etc. will then inevitably force policy-makers and industry to alter their values and decision-making behaviour to adapt and survive. In the course of doing this they will also adapt the criteria employed to judge the success or failure of all projects, including MUTPs. Hall points out, however, that notwithstanding these likely mega policy shifts, “economic development is widely seen by politicians and others (world-wide) as *key* to everything else”. He argues there “is no substitute for economic development. If you don’t have it, almost everyone remains poor or rather a few people remain sort of rich by their standards, although, not really rich by the standards we accept”.

The contribution from Adams (see Section 3.4 of this Working Paper) presents us the consequences of our recent history of path dependency in the global search for ever-increasing mobility (which he refers to as *hypermobility*). He presents this as ‘the world’s biggest mega transport project’ that subsumes all others. Adams sees this global hyper-mobility – reflected in rapid motorisation, dramatic increases in aviation movement and incredible growth in sea freight movement and all associated infrastructure - proceeding at a record-breaking pace and creating problems of unprecedented complexity, risk and uncertainty.

Adams, a specialist on risk, offers us some thought-provoking insights made all the more pertinent given the trilogy of global calamities currently confronting the world regarding its: energy shortages, climate change and emission concerns, food production and distribution challenges, and global credit limitations. Here we summarise a selection of Adams’ observations that have a bearing on how we might treat RUC in planning our future mobility:

- ***Changing visions and realities about mobility*** – Globalisation has among other things spawned *hypermobility* – indeed some would argue it is *central* to the very

concept of globalisation. Adams explains that all significant participants in the project are now global enterprises. Road traffic, in almost all countries is at record levels and still growing, even in the most highly motorised countries; and projects to provide the infrastructure to carry this increased traffic are still being planned, programmed and executed. Growing still faster, he reminds us, is the aviation industry, generating mega projects for plane and airport builders. And railways are being revitalised by mega high-speed projects. The result is a rapidly emergent *hypermobile society*. It is a vision that has greatly speeded-up in the late twentieth century and the first decade of the twenty-first, *but* with signs that these trends *cannot* continue as very serious global resource, environmental and climatic challenges pose major constraints today more than ever before.

- ***Intended and unintended outcomes*** – An underlying question that Adams poses in his thesis is whether we are ultimately aware of the outcomes of our current path in our search for ever-increasing mobility, and all the risks and uncertainties that this vision imply? The negatives he foresees include:
  - *An ever-increasing pace of suburban sprawl* – this he argues will rise at unprecedented rates (spurred by motorisation), with all the increased travel, energy and land use consumption implications it entails.
  - *Increasingly more polarised societies* - with the increased travel statistics concealing a growing gap between the mobility-rich and immobile poor.
  - *Increased accidents and more dangers* - Adams contests that hypermobility will bring with it increased accidents, especially for those not in cars. He also predicts the accentuated retreat of pedestrians and cyclists of all ages from the road if current motorisation levels are accommodated.
  - *A motorised society that is more hostile to children* – He envisages children’s freedoms will be further curtailed by parental fears of road accidents and abduction, and the social catalyst of children playing in the street will disappear.
  - *A fatter and less fit society* - As functional walking and cycling for both children and adults disappear, we will have less exercise built into our daily routines.
  - *Less culturally varied communities* – With the increased march of McCulture and with an increasing tendency of loss of local identity through increased global franchises and monolithic forms of architecture and infrastructure, Adams foresees dramatic erosion on local identity.
  - *An increasingly anonymous, less trusting and paranoid society* – These are outcomes which Adam’s predicts as neighbours become less important and gated communities attempt to recreate some of what used to happen naturally.
  - *A more inequitous society* - As the poor become increasingly confined by their lack of mobility to places and transport systems they can afford Adams foresees a society where the poor become increasingly marginalised at a time when housing and transport are increasingly treated as commodities rather than needs.
  - *A more crime-ridden society* - The strained relations between ‘the haves’ and ‘have-nots’, Adams predicts, will generate more crime and fear of crime. People, especially women, he foresees, will retreat from the areas where they feel threatened, especially the streets and public transport, while growing numbers of motorists will travel with their doors locked.
  - *Society will be less democratic* - This Adams sees as a result of individuals having increasingly less influence over the decisions that govern their lives, as

political authority migrates up the hierarchy from Town Hall to central government and international agencies such as the EU, and ultimately to completely unaccountable institutions like the World Bank and World Trade Organisation.

- **Governance and leadership** - Adams presents us with an intriguing and critically important question. He points out that the mega projects subsumed by the Hypermobility Project all have directors, commonly with the rank of President, Prime Minister, CEO etc. The Hypermobility Project itself, *by contrast*, has no one in effective command, no supreme manager of all the risks that it entails. He goes on to explain that while the centre of gravity of the debate about transport futures looks to be shifting toward one more concerned about more environmental and energy sensitive concerns, the question ‘who is in charge?’ remains very pertinent.
- **Individualistic and community drivers of mobility visions** - For most of the past century, Adams explains, the principal drivers of the growth in mobility have been individualists. The freedom offered by the car, affordable air travel and latterly the Internet have all liberated individuals from the constraints of old-fashioned geographical communities and allowed them today to lead their lives in a spatial “communities of interest.” This individualistic appetite was energetically catered for by leaders of big business. While legislators, regulators and planning authorities paved the way, sometimes literally, for the twentieth century growth of mobility, Adams suggests that egalitarian concerns about the “side effects” of this growth were largely brushed aside. With the dramatic increase in anxieties about global warming, energy shortages and pollution outcomes receiving greater political exposure these matters now appear to be posing significant resistance to historic trends hypermobility with the jury still out on how these developments may pan out.

### **The theoretical perspective**

Batty (see Section 3.2 of this Working Paper) brings a very different perspective to the discussion. His contribution incorporates a critique of contemporary understandings of the ways in which the growth of cities and regions are perceived to develop, evolve and operate, and the value of Complexity Theory developing these perceptions. He makes reference to the history of the practice and failure of land use planning, and highlights the employment of past flawed models used to simulate the process of settlement changes. Batty laments the failure of such models to better understand the complexities involved. He concludes by presenting the case that cities and regions, and their spatial and physical configurations, operate as Complex Adaptive System (CAS) akin to ecological and organic entities which warrant a fundamental change in the nature of city planning processes.

Batty highlights three fundamentally important points:

- **Contemporary approaches to Complexity Theory** - Classical science, through its reductionist strategy, Batty argues, “simply fails us when we try to understand such complexity”. Citing, Anderson (1972) he argues that in order to understand the dynamics of city growth one must realise that “the whole ... (is) ... not only more but very different from the sum of the parts”. Systems thinking (so integral to understanding Complexity Theory and urban planning), he advises, can usefully be divided into: problems of simplicity, problems of disorganized complexity, and

problems of organized complexity (after Weaver, 1948). It is, however, Batty argues, the systems associated with them as *evolving* from the bottom up “that represented the all important quest”.

- **Theories on change** – Here Batty asks us to consider city growth in terms of its: continuity (which contrasts with discontinuity and bifurcation), transformation (where forms and functions evolve from one pattern to another), and emergence (which concerns the way qualitatively new and novel structures arise). These dynamics, he emphasises, “imply processes operating at different temporal rates and spatial scales..” with the result that spatial order (disorder) is never what it seems for the same kinds of pattern can emerge from very different processes. These perspectives resonate with the notion of emergence and concepts of emergent order described by Holland (1998) and Snowden, respectively, and raise orders of uncertainty.
- **Urban growth and decline** – The premise Batty invites us to consider here is that urban growth “is intrinsically different from that of urban decline, in that growth at some point involves the transformation of land from non-urban to urban, whereas, decline does *not* necessarily imply any such reversibility”. He explains that urban “change can be slow or fast, gradual or abrupt... (and that) ... the change in spatial pattern appears slow and gradual, notwithstanding the fact that growth of absolute volumes of activity may be proceeding exponentially”. The important question Batty raises here is whether there are ‘inbuilt’ risks and uncertainties in city (and infrastructure) planning approaches premised on growth dimensions applied declining circumstances, if our planning expertise is primarily founded on growth paradigms?
- **Cities are never what they seem** - Batty argues that if we “dig below the surface, and examine the processes of (urban)” growth and the activities that occupy these forms, ..... (the) image of an implied stability changes quite radically.” There is, in other words, he claims, no equilibrium in reality to which the city system returns. Settlements experience, instead, a form of subtle bifurcation which you cannot detect in the city’s spatial pattern but bifurcation there has surely been as anyone who knew Las Vegas in 1945, again in 1970 and thence today would easily attest”.
- **Cities and the influence of technological change** – The premise introduced here by Batty (and others) is that “cities evolve to a self-organised level and persist at this level until some radical change in technology pushes such systems into another regime”. Citing historical examples from London, he argues waves of transport technological change introduced different eras of urban development into the capital “based on the evolution of resilient systems” that have brought radical changes that push “the city system beyond the threshold and takes it to a new level of criticality in which the processes at work then self-organise to another critical level”.

### **Perspectives from practice**

Dimitriou and Thompson (see Section 3.3 of this Working Paper), an academic and a planning practitioner, respectively, bring together various approaches to managing risk, uncertainty and complexity in the context of regional and spatial planning. They especially draw on experiences and illustrations of strategic planning on London and South East England. The ambitions for the London Plan (prepared by Thomson for the London mayor) show a clear recognition of the degrees of control that such a plan

can realistically expect to exert within the metropolis, in line with the warnings offered by Hall and Batty.

Dimitriou and Thompson bring five important observations to the discussion:

- ***Recognition of the importance of strategy*** – There are three important points to report here: Firstly, that the treatment of RUC in *any* context requires strategic thinking (this was highlighted in Section 1.3 of Working Paper # 1). Secondly, assuming, as do Dimitriou and Thompson, that a strategy helps ‘join-up’ major goals, policies and actions into a cohesive entity *as well* as “marshal and allocate an organisation’s resources into a unique and viable posture, then strategies are required to manage change *both* within *and* between contexts. Thirdly, it is *imperative* for strategic planning to have regard to three facets of change management: the origins of change, the transitional responses to change and the development of new strategies for change responsiveness (after Basil and Cook, 1974).
- ***Capacity to accommodate ‘transitional responses’ to change*** - According to Dimitriou and Thompson who cite Basil and Cook (1974) this concerns how (and how well) institutions *and* individuals have developed a capacity for ‘change responsiveness’, including measures to introduce decentralization and developments that engender greater co-ordination and transparency. This entails the identification of ‘strategic gaps’ that have developed in industry and government “as a result of organizational inflexibility, ignorance of complexity and open systems effects” that contribute to the misallocation and waste of key resources, and produce an urgent need for proactive action on many critical fronts.
- ***Problems of ‘organised’ complexity*** – Echoing points made by Snowden (in Section 2.10 of Working Paper #2) and Batty (in this Working Paper), Dimitriou and Thompson suggest that organized complexity can become a major obstacle to problem resolution, because while there is a range of decision-making and planning techniques available for taming simple problems, there is only a few methodologies for tackling complex ones. Problems of organized complexity are referred to by Rittel and Webber (1973).
- ***Wicked problems and connected systems*** - Given, as Dimitriou and Thompson remind us, that the solution to one problem can *also* be related to the solution of another (or others), a major issue with connected systems in complex environments is that deviations in one element can be transmitted to others. This outcome, they warn, can be that policies developed to resolve one problem spawn others and generate many unintended impacts. These are referred to as ‘wicked problems’ (Rittel and Webber, 1973). They are ‘wicked’, Mason and Mitroff (1981) claim, because the more one attempts to tackle them the more complicated they become. Dimitriou and Thomson explain such problems have *no* definitive formulation and that every formulation of a wicked problem corresponds to a statement of solution and vice versa. They furthermore offer no single criteria system or rule that determines whether the solution to such problems is correct or not. Each wicked problem may be seen as a symptom of another that has no identifiable root. Furthermore, once a solution is attempted to wicked problems, one can *never* undo what has been done.
- ***Having a healthy respect for ‘doubt*** - Offering us another of Mason and Mitroff (1981) recommendations, Dimitriou and Thompson highlight in their contribution the need to incorporate a healthy respect for ‘doubt’ in complex decision-making and planning exercises – and the need for a method of identifying *and* assessing it.

They see the systematizing of the analysis of doubt as a critical part of the strategic planning process and thus the treatment of RUC. This requires: the making of information about plans, programmes and models clear and their underlying assumptions explicit; raising questions and issues toward which different positions can be taken; gathering evidence and building arguments for and against each position; and arriving at some final conclusion.

Kelsey (in Section 3.7 of this Working Paper) offers an insight into the treatment of RUC at the more grass roots level - in project management in the construction industry. He presents project management (practice) as an 'economically complex product' in the sense that it has a complex relationship with the rest of the economy, a direct relationship with movements of the general economy and the demand for constructed assets. This he explains is due to the nature of the life span of buildings which tend to be the longest of all produced goods and which, depreciate.

Of the numerous observations made by Kelsey in his contribution, we offer the following for further consideration:

- **Downside risk** –Despite the recent length of the economic boom, Kelsey explains that most construction businesses have grown with a highly volatile market in mind. This he claims to be a good thing as it has tended to focus the mind of firm managers on the *avoidance* of downside risk which he explains is managed in the following ways:
  - By minimising fixed or overhead costs so that a firm can shed labour relatively quickly in a recession. The lower a firm's overhead, the less vulnerable it is to recession-induced insolvency.
  - By minimising the scope and variety of activities carried out by a firm. In one sense, low-overhead specialisation increases the risk that a firm will have to be terminated in a recession however it also facilitates the ability to do so quickly with the minimal amount of financial pain.
  - By joining a construction firm with some other firm with a more stable demand for its output. A good example in the UK would be the firm Balfour Beatty which was part of the BICC group.
  - By having interlocking relationships both with other firms possessing a relatively stable output demand *and* financial institutions which will support the construction firm during a recession.
- **Winners and losers** - In property crashes, the downside risk often ends up with the providers of finance. Kelsey points out that while the developers may become insolvent they *can* re-appear in other guises at a more favourable date. Not a few directors of UK developers who experienced insolvency in the 1970s re-appeared as directors of new development companies in the 1980's. The problem is that for individual decision makers, the downside risk is effectively capped by the limited liability status of a corporation whereas the upside opportunity is not so capped. So here is a potentially risky area where the production of new buildings may actually be a by-product of speculation in land prices.
- **Modes of finance become important** - Kelsey explains that lenders, typically, are willing to lend high proportions of value in the case of many properties because they are considered as a relatively safe security in case of default by the borrower. So high risk behaviour by the borrower is *not* perceived as such a high risk to the lender (until the general level of values is compromised such as in the recent US sub-prime crisis). Here, Kelsey claims that circumstances are similar to margin

trading in stock markets which carries similar risks and plays a significant role in market volatility.

- ***Complex technical and socio-technical outputs and complex organisations*** - Kelsey cites Bonke (2000) to illustrate the complexities of incorporating socio-technical outputs in project management. He explains two principal processes employed in the Great Belt Fixed Link project (between Denmark-Sweden):
  - The first process is the ‘social construction of the fixed link’ where it was recognised that the proposal of a very large infrastructure artefact such as the Fixed Link will have major social consequences and that the view of the project from *all* stakeholder viewpoints needs to be understood through what was referred to as ‘the social construction of technology’. Here the choice of technology is *not* understood as an engineering decision but as a political and social one with the expertise of engineers but one of the inputs.
  - Once project approval is obtained in principal, the second process comes into play. Here, there is a process of competition among rival firms with a possibility of using different technologies. In explaining the process, Bonke describes the need for the competitors to form consortia in order to have privileged access to a wide range of expertise to mount a bid which was ultimately risky in the complexity (and variety) of technologies as well as the tender process.
- ***How complex projects are perceived:*** Kelsey quotes a civil engineer who once declared to him that "engineers solve complex problems by breaking them down into a simple one". Concerned at about this simplistic but common perception Kelsey reminds us that while this conforms with the perceptions of many engineers, especially in project implementation, and accords to the ‘closed systems’ mentality referred to earlier in the more theoretical discussions of this Working Paper, Kelsey points out that what this engineer did *not* say was that these ‘simple solutions’ require re-assembly and integration into a complex product.
- ***Innovation and rigid application of traditional project management controls*** - Citing Keegan and Turner (2002), Kelsey claims that traditional project management controls can actually inhibit innovation in project-based firms. They go on to claim that such management practices actually work against the many other features of project-based organisations which are conducive to innovation. This incidentally resonates with experiences of the corporate world as indicated by Sparrow and Snowden (in Sections 2.9 and 2.10, respectively, of Working Paper #2). Kelsey goes on to support the thesis that innovation needs a certain degree of slack and additional resources but that the availability of these resources can be inconsistent with traditional management practices or indeed non-existent. Again citing Keegan and Turner, he concludes by pointing out that it is also often unfortunately the case that a problematic attitude exists toward innovation – particularly where it does not show short-term gains in profits and/or market share. Here innovation is seen as an additional source of risk.

The contribution by Perry (see Section 3.6 if this Working Paper) offers an invaluable insight into the world(s) of the property developer and the property investor with major projects, operating as they do within the planning framework, which has an increasingly strong environmental agenda. Perry explains how these



two key players operate in the same biotic relationship, with each aware of how the treatment of risk plays a large part in their decision-making.

Perry offers the following important observations and conclusions:

- **Major projects and the traditional market approach** – Perry acknowledges that major projects do create specific issues that the traditional market approach is *not* always appropriate to resolve. There is, however, currently widespread acceptance in government that the private sector should be brought into mega-sized schemes at an early stage. This is in contrast to the government-led approach prior to the 1990s. Perry points out that unlike PFI, where a very defined contractual approach evolved to determine what is best undertaken (or what risks are retained) by government and what is best undertaken by the private sector, no such common understanding yet exists for these types of projects.
- **Methods to handle risk** - Risk and uncertainty to the property industry is usually measured in direct financial terms, more specifically the returns that the investor or developer will receive. With a number of planning applications facing strong local opposition, listed property companies will also seek to assess the ‘reputation risk’ of undertaking certain projects. Perry explains that the developer must deal with a range of conventional primary risks, as well as a host of secondary risks that may come into play to deflect or delay the development process. The developer’s room for manoeuvre, however is rather limited by virtue of the fact that he only has a limited portfolio of methods at his disposal to handle risk, added to which his horizons tend to be relatively short-term, certainly when compared to those of the investor. Greater prospects exist, however, for the investor to handle risk for while his focus is naturally also on financial return this return is typically viewed with a longer term perspective than the developer.
- **Political issues** – Perry also points out that major projects in the property sector will inevitably be enveloped by political issues, at local, regional, and even the national level. As a result one is obliged to take on board the broader perspectives of economic development issues, social capital and environmental impacts concerns as part of larger canvas. This is a new challenge for the property industry which in the past has been more used to playing out issues at a local or neighbourhood level.
- **Lengthy times to deliver** - Major projects, Perry emphasises, take significant time to deliver. A major mixed use or regeneration scheme is likely to take 20 years or longer. Such projects are typically highly complex in terms of the number of statutory processes that will need to be followed (planning law, public highways, design and construction activity, operational compliance etc.) and the number of stakeholders to be consulted with, and agreements to be documented.
- **Planning** - For major projects planning approval is *the* major hurdle to overcome, not least because the processes demanded in order to allow consultation locally (and even nationally) requires time and considerable design and project development work. Perry explains that the laying out of the net benefit case and the total cost thereof is often left as the obligation of the developer with varying levels of support from local, regional and national government. It would seem that prior generic debate on these issues, when setting regional or local plans, could significantly improve this position. Local political concerns also arise at that point, and this is when local opinion is better gauged. The developer can then be left arguing the merits of development *per se* rather than the more specific impacts of their proposed scheme compared to other option.

## Lessons for decision-making in spatial and infrastructure planning and planning of the built environment

Hall highlights the ‘dead hand’ of the Treasury in the UK government which has halted and/or delayed a number of mega projects over the years. Bureaucracy (competing government departments not always singing from the same hymn book), he explains, has ways of doing things that with the Treasury always pursuing conventional economic rationalism as a form of risk aversion. We speculate that this firm control of the purse strings has increasingly penetrated the mentality and thus direction(s) of other UK government departments, especially those responsible for transport, planning and the environment, which in turn has prevented the French equivalent of *le grand* project to emerge.

Hall also posits the view that for successful projects there is often a favourable alignment of conditions and players, coming together at a point in time, the combined force of which pushes through a ‘better’ or sometimes ‘the critical decision’ decision from which all else flows. As an example, he cites the Ove Arup Consultants coming up with an alternative east London alignment to the British Railways southern route for part of the CTRL at the same time that UK government Minister Michael Heseltine was appointed to the Department of the Environment. Without the two events fusing, he claims, “the CTR rail as we now see it would probably not exist”. This we argue is another illustration of the wider significance of context and the need to better understand the forces that mould it when both planning and evaluating MUTPs.

Batty raises two points as to lessons from history. He firstly draws our attention to the wisdom of Jane Jacobs who nearly 50 years ago observed the failures of blueprint city planning in the USA. He secondly reminds us that she also promoted the notion that cities should be treated as problems of organised complexity. For the most part her ideas were ignored, rejected and indeed misunderstood - for 30 years or more. Reflecting on this, Batty laments the fact that urban planning, institutionalised now for over 100 years, has been thus far so unsuccessful at readily adopting innovative ideas. He asserts that like all control-based professions (the military, auditors, the police and other enforcement agency professions) the planning profession has taken an exceedingly long time to acknowledge the change within cities which originates from bottom-up and the need to both recognise and embrace this wherever possible.

Like Hall, Batty maintains that history shows us the failures of planning. He acknowledges Dimitriou’s observation that “time does not age the truth”. Batty attributes this in large part to a severe shortfall in understanding the domain(s) (i.e. contexts) in which it is operating and seeking to control. He finds convincing explanations in Complexity Theory and Complex Adaptive Systems in particular (a position also shared by Snowden and Dimitriou in their contributions). The power of theory is that it explains *why* things do not work and also can point to the generic changes that need to take place to have conventional wisdom amended to bring about new, more efficient and effective procedures, whilst being realistic about the planning system’s own capabilities. This discussion about innovation is addressed by Sparrow, Curral and Snowden in their respective contributions (see Working Paper #2).

Whilst empiricism tells Hall that one should *always* take the long view, Batty and Snowden directs us to the theoretical justification to Complexity Theory which tells us that causality *cannot* be predicted and that instead we need to recognise in our

analysis of contexts and proposal-making the concept of ‘emergent order’, this being a process of adjustment by which the host system environment of the project and the disturbance created by the introduction of the new foreign body (e.g. the mega project) will lead one to adjust to the other's presence over time and place.

Returning to the tensions between long and short term perspectives in planning, while also taking on-board the ‘emergent order’ concept, Dimitriou like Hall sees the threat and undermining powers of short-termism and expediency (only a couple of the conventional wisdom biases against the rational of planning) as lethal to strategic planning and thus the effective treatment of RUC in the planning of mega projects. Dimitriou cites the work of Baghai *et al* (1999) who researched the prerequisites of sustained profitable growth and the turn-around of failing businesses in today’s climates of increased deregulation, competition and globalization. Baghai *et al*’s main conclusions include: (1) executives must discuss as much about future aspired horizons as where they have been; (2) very few companies sustain above-average growth for their industry year after year; and (3) sustained economic growth can *only* be achieved by the pursuit of ‘three horizons’ of growth simultaneously. These conclusions we uphold are of immense significance for MUTP planning.

This value of this strategy resonates very much with some of the perspectives and many of the challenges discussed by Perry and Kelsey in their respective papers that deal with project management practice in property development, property investment and construction. Perry describes and compares the approaches taken by the property developer and the investor to risk uncertainty and complexity. He emphasises the point that in the business world decisions and risk are intricately linked, and in each case what is at risk is measured directly in financial terms. Property investment is an activity fraught with potential risks and as such the business model is predicated on a strategy of minimising risk in an inherently uncertain environment.

Perry points to the investor’s typical tactic of employing diversification strategies to reduce risk. This is done by compiling a portfolio of investments in different property sectors on the assumption that if one sector experiences a downturn or slowdown the other may not. The premise here is that a portfolio based on a single sector could be a financial disaster in the event of particular market conditions occurring. In another context, that of global banking, Hall argues that an extension of this diversification philosophy has in fact led to much of the global financial turmoil we are currently experiencing. Here the complexity and inaccuracy of many financial models have moved risk to the centre of transactions rather than their periphery resulting in a loss of trust in lending between financial parties, principally the banks. For major projects and the property sector these developments do not bode well for the future.

The issue of trust (see Currall in Section 2.8 of Working Paper #2) is central to joint venture and consortia arrangements in the property and construction industries, as it is indeed in the banking fraternity. Perry explains that setting-up investment consortium is a popular tactic for parties not to be overly exposed to the performance of a dominant investment or single individual investor. Property investments themselves are categorised according to the perceived level of risk (low, medium and high) with a mix of these seen to offer an element of diversification. There are, however, other broader macro level influences that can impinge on the developer’s ability to achieve his financial targets. Such factors include consumer trends, technological changes, regulatory frameworks and infrastructure dependency. These are matters over which the developer has no control but which is potentially directly

affected. These are risks of the context(s) of the project to which Friend and Jessop (1969) and Hall make much of in the planning disasters thesis.

Kelsey's examination of the treatment of risk in decision-making in the construction industry suggests construction companies, certainly in the UK, are averse to risk, where risk means the inability to deliver a contract on time and at budget or deliver the expected quality for deviations from the contract typically invoke financial penalties which translates in reduced profits at best and insolvency at worst. The expertise and culture of the construction industry, unlike that of the planning professions, are therefore understandably directed towards the avoidance of risk. The downside of this according to Kelsey is that construction companies typically mitigate risk by avoiding technical innovation because that means heightened risk. The threshold for risk and coping with uncertainty is thus rather low with all the implications that follow.

Kelsey offers a very clear illustration of the importance of context to the attitude and treatment of risk with reference to the UK construction industry. Attempts to introduce new techniques (such as CCM and Last Planner) for dealing with schedule risk have been compromised by the risk-averse UK context. Both these methods require changes in corporative behaviour and explicit recognition of task duration of variability within it and a no blame culture. The legal structure in the UK is, however, one of adversarial contractual relations. This means that as far as the law is concerned variability of task duration does not exist. If a contractor undertakes to deliver a particular product within a specified period then that is what has to be done. Today some of large contractors have more enlightened dealings with their sub-contractors than has been the norm, however, there are still many more that pursue the adversarial route. This adversarial culture between client, contractor, and sub-contractor has long been recognized as damaging to the industry, the wider community and indeed planning as well.

## **Conclusions**

This group of papers point to a number of potential new directions in which the treatment of RUC in decision-making in planning might develop and assist MUTPs. Certain contributors are prescriptive by implication or by virtue of their statements in relation to the planning process. Hall bases his views on a historical perspective. His approach can perhaps be best summed up as 'taking the long view' both in the staging of planning and the delivery of projects, even in their assessment. Dimitriou and Thompson's in a similar vein see the case for an anticipatory mixed-scanning approach to planning incorporating long-term scenarios at the same time as recognising the importance of short term priorities and medium term concerns, but being less precise in the timing which would depend on economic conditions. Batty's recognition that urban and regional planning operates in the realm of complex adaptive systems poses very legitimate demands for change to the planning process and how we see and plan cities and their infrastructure. This progress is from an understanding that built form in cities may be enduring but what goes on within that form is subject to quite rapid change. He presents to us by implication the notion that infrastructure systems are organic rather than closed fixed mechanised systems as seen by many in the engineering fraternity. He maintains that the introduction of new planning systems that better deal with RUC must reflect an understanding of cities and regions from the bottom up. He sees the need for the emphasis to move from product to process, from form to function, and from space to place. Dimitriou and

Thomson illustrate this in their account of strategic planning in London and the Southeast of England. They state that any strategic plan should be predicated on an understanding of the drivers of change, and that a strategy should seek to manage the spatial impacts of those drivers.

We have here, in conclusion, a number of papers drawn from a broad field. It is a small sample that in *no way* can be described as random. We must, therefore, be cautious in the interpretations of the findings presented and the degree to which they can be described as generic. We do not, in other words, have all the pieces of the technical jigsaw in our possession, let alone in place; neither do we have a full representation of the use of RUC in decision-making and planning that may impact MUTPs. What the content of this Working Paper as a whole suggests is that the treatment of RUC in some quarters is explicit, and occasionally highly sophisticated. This applies, for example, amongst leading developers, investors and construction firms. Strategic decision-making in urban and regional planning, on the other hand, emerges as quite naïve, faltering, piecemeal and resistant to any prominent factoring of risk and uncertainty. There is, furthermore, a painfully slow and grudging acceptance by policy makers and planners dealing with major projects that the contexts of such projects are highly complex systems that demand a different approach. Both the sophisticates and the naïve here are furthermore finding that globalisation and its drivers of change are imposing a system of emerging complex forces that make an understanding of adaptive complex systems essential at both the global and local scale.

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