Urban planning and the 'pulsar effect': Coping with peaks, troughs and repeats in the demand cycle
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Coping with 'pulsar effects' in the context of sustainable urban development: Towards a conceptual framework

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The paper aims to conceptualize a broad range of special "events", and options for dealing with them, on both demand and supply sides of urban development. In a wider perspective, innovations in urban development largely result from the 'pulsar effects' of unique or periodic special events. The conceptual framework proposed would help the city management with the difficult decisions that it needs to make in coping with 'pulsar effects'.

1. Introduction

The ISOCARP congress deals with the 'pulsar effect' as it relates to the provision of urban services, facilities and infrastructure, referred to as "one of the most demanding challenges facing *contemporary* urban planners and managers". This may be true as the number of large special events seems to rise as more and more cities compete for the economic opportunities that supposedly come with such events. However, throughout the history of urban development, there have been special events coming with their – positive and negative - 'pulsar effects', and the city planners and managers would have responded in one way or another.

Although the aim of this paper is to work on concepts, it may be useful to begin with a random selection of 'special events' in urban development, across history – with different settings, different forms of effects and different scales of management:

- Temporary measures to cope with the immediate effects of a temporary special event with a limited pulsar effect: During a global meeting of the International Monetary Fund and the World Bank in Bangkok a few years ago, school children were given a special break of five days, and businesses were asked to close for three days. This was the most effective means of reducing the notorious traffic jams, a great part of which is caused by school-related trips. The full impact of the special event was thus effectively contained by unconventional management methods, but there was no longer-term effect of any kind, neither of the global meeting, nor of the management measures taken, except for gains in management ability.
- Permanent urban restructuring triggered by a major event: The preparations for the Olympic Games in Beijing (2008) include a resettlement programme for nearly 350,000 people in order to clear the areas needed for gigantic new sports facilities and for the extension of the rapid transit system (*Far Eastern Economic Review*). It is expected that the 'push' of this special event will shape the city of Beijing more than the massive urban renewal programmes since 1980. This case might develop into an example of urban innovation caused by a mega-event.
- Innovation in urban planning as the result of disaster: The large-scale destruction caused by the Great Fire in London (1666) necessitated immediate action and gave rise to Christopher Wren's famous plan for re-building the city. Although the plan was not implemented it had a signal effect on urban planning. Therefore, the event marked the beginning of a new era.
- The ultimate disaster, unprepared and un-manageable: The eruption of the Vesuvius (AD 79) was a completely unexpected 'special event' that did not leave any time for

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preparation, not even for escaping from the catastrophe. So the event brought the sudden end of a thriving town.

No doubt, all four of these examples are some kind of 'big-bang' events, but do they have anything in common? What are their temporal and spatial dimensions, the associated cause-and-effect chains, and the options for management response that had been open to the decision-makers? Is it possible to splice such aspects together into a conceptual framework?

Key questions (according to the congress brochure) include the following (left side of the box below), but may be complemented by other points (as outlined on the right side):

▪ How should planners cope with "pulse" events? ▪ Does our traditional focus on spatial planning adequately equip us to respond successfully to peak and recurrent demand in a context where the time dimension is uncertain, unexpected and unpredictable? ▪ How should we deal with the post-event situation – the 'hand-over' syndrome – when the city has to return to normality?	▪ Who are the other players in coping with pulsar effects? ▪ If that traditional focus is inadequate, which are the important skills to be utilized or developed? ▪ Whatever is defined as 'normality', do we not need a method for distinguishing routine events from more special and truly unique events? And ▪ Must we not consider the preparatory phases as much as the 'hand-over' or 'aftercare' aspects?

These are just some of the questions to be addressed. The main objective of the paper is not to describe actual experiences with selected special events and their management, but to outline a conceptual framework that may be used for linking case study material to theory. Wherever possible, references to specific cases will be made, but the papers presented at the congress may yield further empirical material that could be utilized, later on, for a revised final version of the concept paper.

2. Definitions and dimensions

As a point of departure, it should be possible to categorize special events according to criteria such as magnitude (quantified in various ways – population coming together, monetary value, prestige, trigger effects, for example). It should also be possible to try some grouping of events in terms of predictability, or time available for preparation, or political expectations associated with the event. If such characteristics of the event were combined with the properties of the place where the event takes place (such as the host city's population size, resource base, previous experience with big events, or adaptive institutional structure), we may be able to outline scenarios for the above mentioned key questions on coping with 'pulsar effects'.

On that basis, there would be some scope for reducing the uncertainty that is associated with any planning action, but even more so with big events and their 'pulsar effects'. In this way it should be possible to focus on realistic management options.

The four initial examples intentionally include disasters, because they are largely unpredictable big events with mainly negative impacts, where the positive impact might only be derived as an expensive lesson long after the event. We would have to consider a whole range of events that are large and special enough not to be mere routine tasks of urban management, but we would also have to draw a conceptual line between routine jobs and recurrent special events, based on criteria of their size, periodicity, predictability and risk. Table 1 provides a preliminary assessment of the initial four examples, with a view to the general characteristics of 'pulsar effects' and management options.

Table 1: Generalizing on the basis of four random examples of 'big events'

Example	Magnitude of impact	Predictability of the event	Ability to cope: Factors contributing to adequate management	Generalization	
				Type of event	Management options
International meeting, Bangkok	Short but heavy impact	Fully under control, close to routine events	Big city, therefore experience with similar events, experience in improvising	Predictable peaks of activity (population concentration and traffic flows)	Periodical challenge , stepwise approach, learning from mistakes
Beijing Olympic Games	Large positive and negative potentials	Fully under control, enough time for preparation	High-level political preparedness, willingness to pool large resources	Very large and uniquely prestigious event with considerable spin-off potential	Real challenge, possibility for making wise decisions and big mistakes
London Fire	Destructive, but important trigger function	Time of the event unpredictable, though general probability of fire high	Need for remedial action, but time available for finding resources after the event	Large fires in historical cities (similar: war damages) as triggers for innovation	Real challenge and real chance for innovations (or big mistakes)
Vesuvius eruption	Total destruction	Probably very low, but was it totally unpredictable (?)	Zero	Deadly natural disaster – but predictable to some extent	Risk analysis, and disaster preparedness, including early warning

This would then enable us to define our core problem, as follows:

> Special events always require special management measures, including non-routine investments of public resources, in order to cope with the special events that are usually short-term as such but may have potential for longer- term benefits. The conditions of 'pulsar effects' may lead to serious imbalances between public and private investments and their efficient and equitable use for certain periods of time and in certain areas. The challenge is to avoid such imbalances or, once they occur, to manage them in the best possible way. There is enough evidence that this can be done, but it requires very capable management.

To some extent, this definition should also include a framework for assessing the criteria for the desirability of special events, in view of the capacity of the host city. In other words, if the expected imbalances would be out of proportion, the city council should vote against hosting the special event. This has happened – several cities have voted against submitting their applications for hosting Olympic Games or similar events, on the grounds of expected negative impacts and prohibitive costs.

In fact the one-off events like the Olympic Games, with their ever-increasing requirements, may be the most difficult ones to cope with. However, history teaches us that major periodic events, such as annual trade fairs, have a great potential as city-economy building elements, in conjunction with effects on the host city's managerial ability. Most cities would agree that these are highly desirable events with stimulating pulsar effects. Inversely, special challenges, such as disasters and wars, have often also led to innovations and new developments in the cities affected by this type of initially undesirable 'pulse'. However, in order to maintain our focus, such undesirable and largely unavoidable events, are excluded from further discussion here, along with the important subject area of disaster

preparedness and disaster mitigation.

3. Dealing with special events – a brief review of selected examples

In history, there have always been 'big-bang' events, unique or periodically organized, using more permanent or more temporary measures. The four examples in this section range from a huge traditional event that seems to be managed in a completely ad-hoc manner, to a post-modern example with very heavy and permanent preparations for events that may (or may not) happen in future.

3.1 Traditional arrangements – The Kumbh Mela

India has seven sacred cities that receive millions of faithful Hindu pilgrims each year. The Kumbh Mela in one of the cities, Haridwar in Uttar Pradesh, seems to set the absolute record in numbers of visitors in a traditional pilgrimage event. Although the city of Haridwar (200,000 inhabitants) receives some pilgrims throughout the year, the Kumbh Mela only takes place every few years. In 1992, there were 5.5 million pilgrims in the four months of the pilgrimage season, but on the traditional peak day (14 April), there were 2.6 million visitors in Haridwar, in order to bathe in the sacred Ganga river (Sravant, 1997). The record numbers for the special year of 1998 (estimates – to be confirmed) were 10 million in four months, and 4.6 million (!) on the main day, 14 April. Although the city has some fixed infrastructure and guest houses to cope with the normal 'low tide' of visitors, almost the entire infrastructure for the big event consists of temporary and ad-hoc arrangements – accommodation, sanitation, food, transport, and the scheduling around the ritual bathing 'ghats' by the river. For each of the Kumbh Mela years, this implies standards that are barely at the survival level of a refugee camp, and great risks like the epidemics, fires, and stampedes where hundreds of people may die.

3.2 Traditional arrangements with modern logistics - The Haj

Each year, about two million Muslim from all over the world congregate in Mecca – two million visitors within a few weeks, and hundreds of thousands of pilgrims during the peak period of two or three days. Managing the Haj has become a highly organized business for Saudi Arabia as well as for the many airlines that put on charter flights for the increasing number of pilgrims from abroad. The holy cities of Mecca and Medina are able to accommodate millions of pilgrims by means of a refined infrastructure and logistics system including a huge city of tents. There have been serious accidents and fires in the past, but the investments, safety and management have reportedly risen well above the level of serious risks.

3.3 Exhibitions turned into improved city structure – the German 'Garden Shows'

The periodically organized 'Garden Shows' in Germany have a tradition of more than hundred years. This is a particularly relevant example where a once temporary exhibition has been gradually transformed into a greatly successful instrument for creating open space systems that are sustainable both ecologically and financially. There are garden exhibitions at the federal level, at the state (*Land)* and regional levels, with different levels of expectation and funding. The host cities are able to combine their own inputs, primarily land, their own budget and staff, with federal and state budgets. Based on decades of experience in previous host cities, there is a body of professional planning and management know-how that is utilized to maximize the long-term public benefit. A city with a recent *BUGA* (short for *Bundesgartenschau*, federal 'garden show') usually gains considerably not only by the asset of great landscaping but by taking on a new dimension in amenity as a soft location factor, which has real marketing value. While former 'garden shows' tended to be laid out in a single large area, sometimes at a distance away from the city core, the contemporary ones are fully integrated into the city structure, consisting of strings of open spaces and combining landscaped and built-up areas with both artistic and use value. The 'pulsar effect' of the one year when the exhibition proper is held (with a

peak season in the summer) comes with improved transport infrastructure (permanent and temporary combined), considerable commercial gains in the commercial sector, and the image of an innovative city landscape.

3.4 Global competition for expected 'big-bang events' – Asia

Compared with traditional pilgrimage or trade show events with highly improvised infrastructure, the last example amounts to a completely reversed scenario, where the infrastructure comes first, and the event may (or may not) happen, because of the facilities available. The global competition of cities for market shares in industries and services, including large trade exhibitions, conventions and sports shows has led to frantic efforts and huge investments of aspiring 'world class' cities. East and Southeast Asia has several examples of cities competing for the economic gains and prestige that seem to come with the 'world class' label. The Tokyo-Osaka megalopolis, Shanghai, the Pearl River Delta (Hong Kong and Guangzhou), Bangkok, Singapore and Kuala Lumpur (with its super satellites of Cyber Jaya and Putra Jaya) see themselves in the same league and monitor their scores in the head-on competition. In all of these cities, there is now an over-capacity in under-utilized convention centres, exhibition halls, airports, and other facilities that have been built in the hope of attracting events that may actually never materialize. It is doubtful when the fierce competition with its rather unsustainable patterns of investment and indebtedness will turn into a climate of cooperation for livable cities as envisaged by Mike Douglass (2002).

In a broad review of 'world city' transformation and innovation, Paris would offer a lesson in historical political-economy studies of innovation. Napoleon III and Haussmann were able to achieve a complete transformation in an extraordinarily short period of time, using unprecedented public finance mechanisms. Celebrated and criticized, the transformation of Paris (1852-1869) stands out as a unique example of heavy pulsar events creating long-term sustainability and a very special city image.

4. Towards a conceptual framework

The conceptual framework is proposed to be based on four main points, (1) a pragmatic definition of sustainable development, (2) thresholds in infrastructure systems that require careful supply-side management, and (3) principles of demand-side management. All three aspects are then combined in (4) the framework itself, viewing the pulsar effect in a perspective of innovation in urban development.

4.1 Sustainable urban development

So much has been written about sustainable urban development that it is difficult to add anything to it. In a way, 'sustainable development' has become the buzzword of the 1990s and it appears to stay in a prominent place for the near future. Triggered by the Brundtland Report (*Our Common Future*, 1987), the term environmental management and its various meanings have been established and sharpened, especially after the Rio Summit of 1992, and a few years later, the Habitat II congress (Istanbul, 1996) which put the focus on the urban agenda. Nowadays, sustainable planning and management seems to mean very different things to different interest groups, ranging

- from "deep green" ecological fundamentalism,
- to energy conservation issues,
- to serious principles of social equity (inter-, intra-generational, and gender),
- to environmental economics,
- to superficial supposedly "green" marketing, and finally,
- to an exceedingly modest definition of economic sustainability, i.e. reasonably long amortization periods of major public and private investments.

In our context here, 'sustainable development' may be used in a pragmatic manner – to

mean seriously 'green' to some extent, socially equitable (at present and with regard to the near future), and economically prudent – especially as far as the management of those 'pulsar effects' is concerned. The emphasis is on economic value added, employment effects and 'city image'.

4.2 Thresholds in infrastructure systems

In the late 1960s, some researchers in the UK experimented with a concept that they called threshold theory or threshold analysis (Koszlowski et al., 1972). The guiding idea is that infrastructure systems consist of "lumpy" components that are expensive in terms of investment and maintenance costs as well as demanding in management. For example, in public transport, there is no continuous transgression from a simple bus system to a tram system or, at higher levels, to light-rail or finally heavy-rail mass rapid transit. Similarly, in wastewater treatment or solid waste recycling, there is no continuous progress from simple to technically and economically more demanding systems. Each of these systems constitutes a *threshold* below which the system does not operate properly, i.e. recovering its costs (investment and recurrent costs) and being managed competently.

Therefore, the user community has to consider very carefully whether and when it will reach the required levels of demand as well as managerial ability. The graphic in Figure 1 shows the thresholds as defined by the economic and technical characteristics of the infrastructure system, i.e. the supply side, while the demand-side is moving more continuously from lower to higher levels of population size, and/or wealth and management ability.

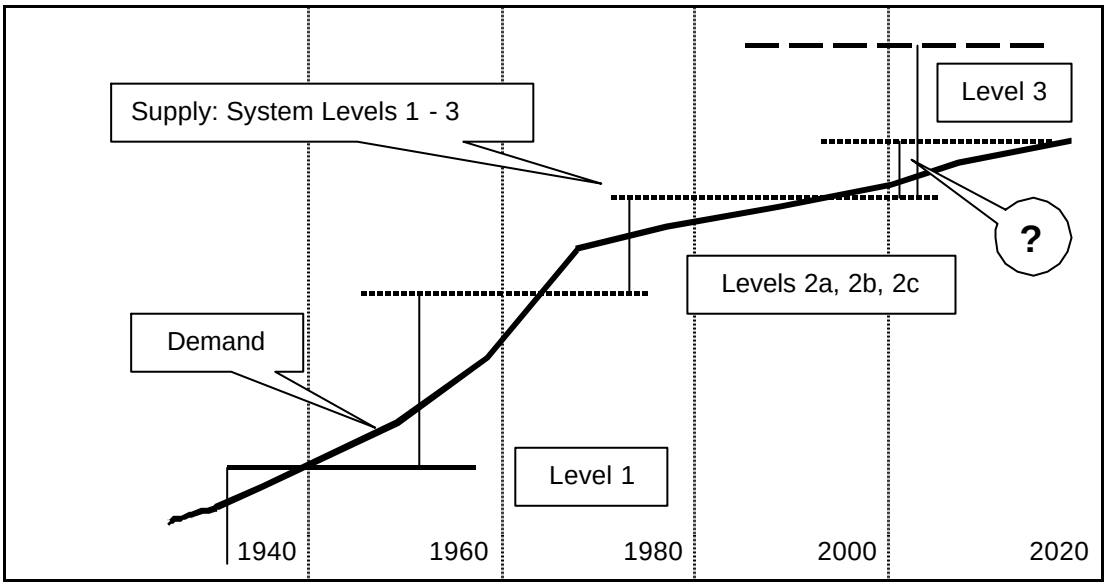

Figure 1: Thresholds in a schematic infrastructure upgrading process, 1940 – 2000: In this example, thresholds have been overcome twice already – to Level 1 in the 1930s, and then to Level 2(a) in 1950 and 2(b) in 1975. At present, the decision-making has to focus on the question whether the demand projection justifies going to Level 3 at this point in time, because another upgrading within the existing Level 2, to a possible Stage 2(c), might be sufficient and more cost effective.

Based on the same logic, new technologies may shift the thresholds up or down. For example, an innovative compact wastewater treatment plant would operate efficiently in conjunction with sludge cartage at a relatively small catchment population size where a conventional sewerage system with a fully developed sewage treatment plant would be inappropriate. Similar examples would exist in transport systems – for example, in a

medium-sized city, a light-rail system (partly underground) may be able to provide adequate services at a fraction of the costs of a heavy-rail underground system.

The schematic example in Figure 1 suggests that the city currently has two principal options for coping with its demand for infrastructure – the low-cost (but perhaps also lower-standard) option to go for Level 2 (c), or to decide for the advanced Level 3 system, which may then jeopardize the city's financing for a number of years. If a special event, like an international fair or sports competition, were on the horizon, the city would most certainly decide to go for Level 3.

4.3 Demand-side management

Temporary or periodic supply-demand imbalances are very common in most infrastructure systems. For example, energy production, water supply, and transport services have daily, weekly, and seasonal peaks and valleys in the demand that is carefully monitored to provide a decision basis for good management. System planning for such services includes long-term demand projections, as well as options and solutions for providing the necessary supply during the critical peak periods. Examples of supply-side management are: different levels of electricity production during day and night shifts; water storage tanks being filled during the low-demand time of the night for release during the morning peak; and switching lanes for the morning and afternoon peaks of automobile traffic.

Demand-side management (DSM) methods are perhaps a little less well known among urban planners, although there is some rich literature on DSM especially on energy consumption, production and load management (for example Gellings and Chamberlin, 1988). Better known by planners, there is also a body of literature and many examples of DSM procedures in transportation as well as in the context of environmental management. All DSM methods use market mechanisms and patterns of human behaviour to be successful in achieving a better balance of demand and supply functions.

Figure 2 illustrates the general principles of demand-side management that would apply to energy supply and demand as much as they do with regard to recurrent major events and their 'pulsar effects', i.e. trough filling, peak cutting and peak shifting. Trough filling in energy management implies shifting some portions of the peak loads into the troughs

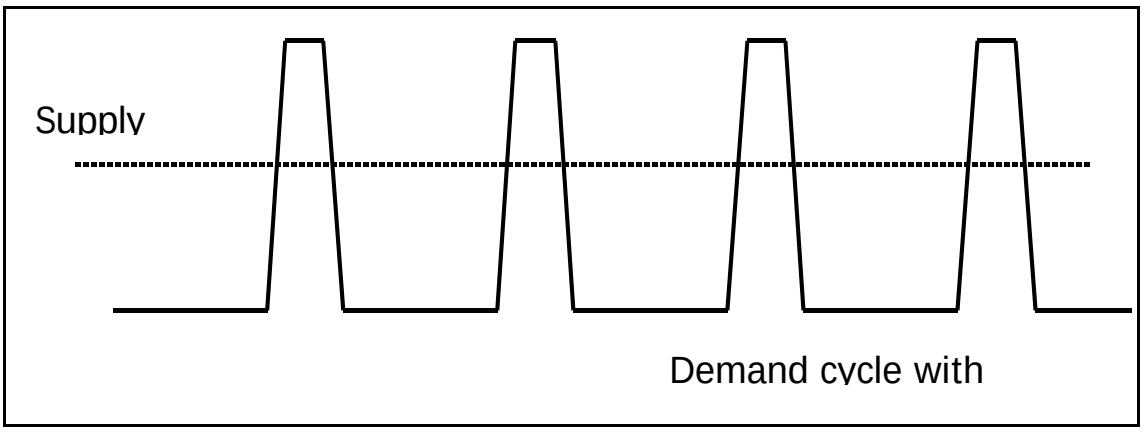

Figure 2: Recurrent peaks in the demand for services: During the peak periods, the additional services required (above the dotted line indicating the supply capacity) are provided by temporary measures, while the troughs may be filled by smart demand-side management

as well as creating additional demand during the low-demand periods. Both are normally achieved by pricing and marketing measures. Similarly, underused public exhibition

facilities are rented out for appropriate other purposes, thus "filling the troughs" by marketing the excess capacity at favourable prices. Peak cutting (of the number of spectators and visitors, e.g.) would neither be possible nor desirable, but peak demands for hotel and transport services (during major trade fairs, e.g.) are usually met by tapping additional services at the fringe of the metropolitan area.

4.4 A framework for the sustainable management of 'pulsar effects'

Conceptually, the issues of special events and their 'pulsar effects' on urban development comprise four major phases that have to be handled by good management:

- **Phase 1:** The time before and around the city's application for being a host of the big event (such as major sports competitions, exhibitions or trade fairs), and thus, its commitment to create the required facilities in time. This phase (and the time long before the application) must include a serious capacity analysis and pre-investment studies centred around the expected demand and supply functions. Without such 'dry runs', the preparation for the event in the short Phase 2 would hardly be sufficient.
- **Phase 2:** The preparations for the additional infrastructure and services required to host the event itself (sports arenas, e.g.) and to cope with the additional demand (hotels, housing, transport, communications, e.g.); this includes planning, financing and implementation of all measures.
- **Phase 3:** The management of the event itself; and
- **Phase 4:** The long-term management after the 'hand-over', including post-event adjustments (such as dismantling temporary buildings and winding up ad-hoc services).

Phases 2 and 3 would require some specific institutional arrangements, including an ad-hoc authority for overall planning, coordination and implementation. At the beginning of Phase 4, most of the special institutional arrangements would end as the facilities are handed over to the agencies that are normally in charge. While Phases 2 and 3 are concerned with supply-side management, Phase 4 would also have to deal with demand-side management. The preparatory Phase 1 must provide solid answers to both demand and supply-side questions.

Figure 3 shows a conceptual outline of the management tasks to be accomplished, with particular emphasis on demand and supply aspects of infrastructure and services. During the initial phase, when the host city commits itself to hosting the big event, the supply and service levels of infrastructure may be felt to be below the general demand level. Therefore, the event and its acceleration effects are expected to push the city up the next threshold to cope with the long-term demand trend. During the short period around the event itself, a large portion of the short-term demand can usually be met by temporary measures and voluntary helpers.

However, after the event, there would be a relatively long period of oversupply of new infrastructure services. The conceptual diagram suggests demand-side management measures to create additional demand above the long-term demand trend, so as to mitigate the unwanted 'pulsar effect' of under-utilized infrastructure capacity created on the occasion of the 'big event'. This principle applies to primary facilities (sports arenas or exhibition halls, e.g.) as well as for secondary facilities such as transport systems.

It should be obvious that especially the longer-term programming of the use of the new facilities requires an advanced planning and management system so as to reduce the uncertainty (Phase 1). Especially Phase 2 would resemble the style of 'planning under pressure' (as realistically conceptualized by Friend and Hickling, 1997). It would likely include computer simulation methods to inform and support management (Wyatt, 1999, for a critical review of methods) It is equally obvious that management will not succeed if its political economy goes wrong. There are many examples of hopeful starts with great

expectations, serious commitments and initially bright planning efforts that have ended with lost investments, disenchanted stakeholders and widespread corruption. As stated in the congress brochure: "It is easy to make mistakes whose consequences for society may be far-reaching and costly".

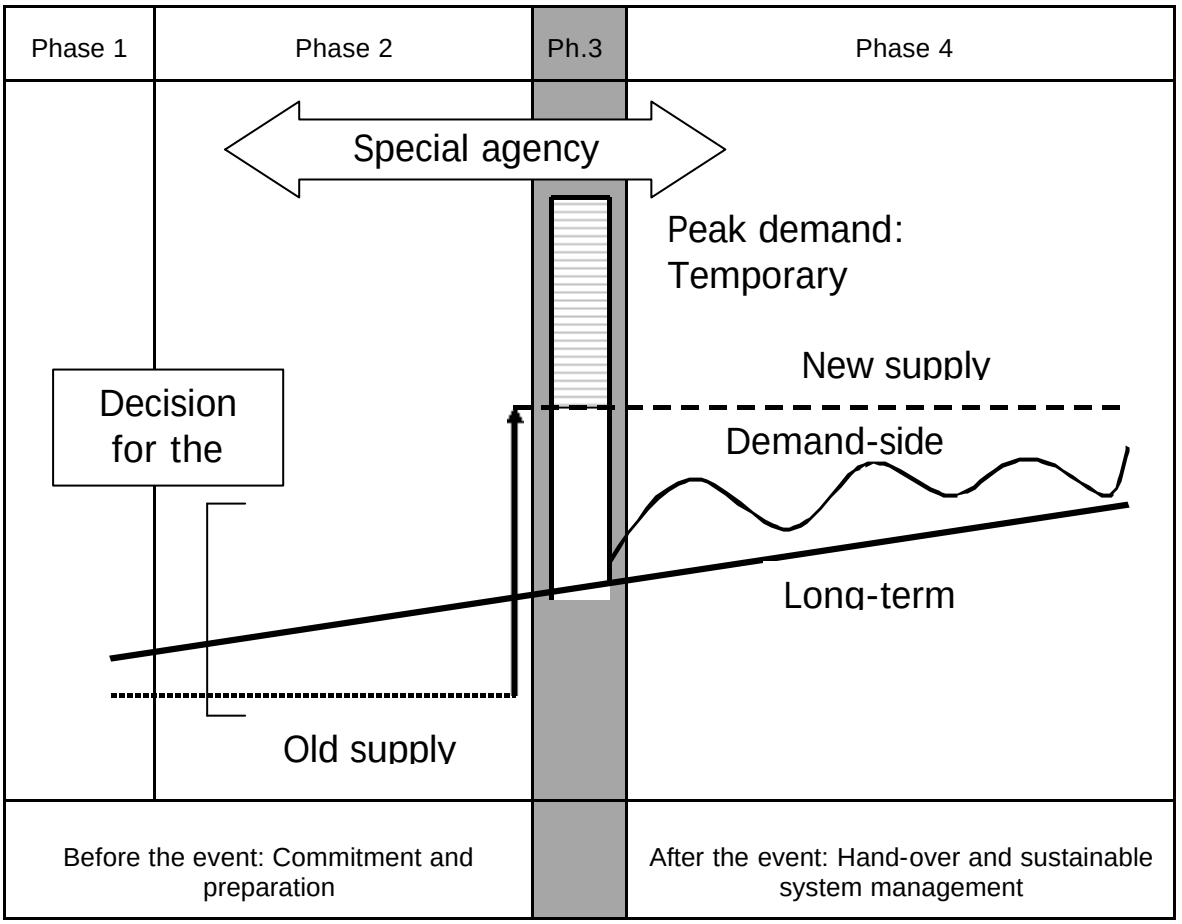

Figure 3: Supply and demand-side aspects of a 'big event' and its 'pulsar effects': Both permanent and temporary supply measures are employed to cope with the peak demand during the 'event'; Phases 1 and 2 are at least as important as Phases 3 and 4.

The unusual conditions of all 'pulsar events' require non-routine approaches that are 'tailor made' in each country and city, as neither financial nor staff resources at the city level are sufficient. The case studies presented at the congress may provide enough material for assessing the strengths and weaknesses of management models, so as to support a process of learning from relevant experience.

In preparation of the suggested analysis based on empirical case study data, the following two tables are designed as a framework for orientation. Table 2 summarizes the demand-side questions, aiming at a typology of 'big events'. Table 3 outlines the broad options for planning and management. Although the policy mix would differ from situation to situation, it should be possible to derive some patterns of management solutions (special authority, national and local actors involved, relative size of national budget share, etc.). To be useful, the skeleton headings in both tables need to be fleshed out in much greater detail. So there is hope for a thoroughly revised version of the paper.

Table 2: Demand-side questions

Type of "event" causing various kinds of demand: Typology of events?	**Uncertainty** about the event itself: ▪ Unexpected event (emergency or disaster, e.g.); ▪ Expected, applied for, or hoped for, special event (various degrees of uncertainty related to effects) **Size** (need for comparative quantification): ▪ Number of visitors per day in comparison with normal population ▪ Number of users (per day, per hour) of transport services ▪ Number of users of other services **Periodicity:** ▪ Once, but never again; ▪ Periodic (long – short, regular – irregular periods)	
Category of demand	**Primary demand for** ▪ The venue (sports, exhibition, convention facilities) ▪ Related transport facilities	**Secondary demand for** ▪ General transport infrastructure (international links and local systems) ▪ Accommodation ▪ Commercial facilities
Costs	**Direct** ▪ "Hardware" project costs incl. land acquisition and resettlement if required ▪ "Software" planning and management costs	**Indirect** ▪ Transformation of economic structure ▪ All other infrastructure systems ▪ Social costs
Benefits	**Direct** ▪ Tangible project effects (many different categories incl. communication royalties) ▪ Intangible effects (rising experience and capacity)	**Indirect** ▪ System change (over-coming technical and economic thresholds) ▪ Gains in international prestige
Factors contributing to beneficial effects	▪ Tradition of comparable previous events to permit informed estimates of demands ▪ Complementary other demands in the same city / region	

Table 3: Options for planning and management response

Major phases for dealing with the 'event'	▪ **Prior to application:** Reducing uncertainty by smart planning including multi-level forecasting and simulation ▪ **Preparatory phase:** Special-purpose management system ▪ **"Aftercare":** Integrated management and marketing of facilities and the city at large
Supply-side factors meeting the special demand	▪ Existing administrative set-up and its adaptive qualities ▪ Existing public-private partnerships and ▪ Capacity of private sector and civil society groups
Sources of finance to cope with special event costs	▪ National grants and loans ▪ Local public finance ▪ Refinancing through fees, royalties and franchises ▪ Private investments triggered by long-term prospects
Supply and demand-side management	▪ Marketing to create additional demand needed or to shift demand into troughs ▪ Load shifting ▪ Balancing national and local interests and influences ▪ Appropriate mix of temporary and permanent structures ▪ Public relations
Related aspects	▪ General economic and political stability ▪ Long and medium-term economic development cycles

5. Wider implications: 'Special events' as drivers of innovations

Cyclic or recurrent imbalances between infrastructure capacity and demand for infrastructure services drive the planning machinery – which then tries to re-establish balance, by an appropriate mix of supply-side and demand-side measures. From this point of view, large differences such as the ones created by big-bang events are particularly interesting opportunities for urban development.

All cities that are applying to host major events such as the Olympic Games or the Football World Cup, would hope that the extra finance available to them would lead to a 'quantum leap' in their infrastructure endowment and with this, their future position in the global competition of cities. The cases of the Olympic Games in Tokyo (1964) and Munich (1972) would exemplify the quantum leap in infrastructure: Tokyo had an almost unmanageable transport problem due to the rapidly increasing private motorization in the 1950s. Without the extra push of being on the world stage, and without the financial resources provided by the national government, Tokyo would have taken many more years to complete the network of urban expressways that were in place for the Olympic Games. Similarly, Munich used the golden opportunity of hosting the Olympic Games in 1972 to live up to its slogan 'world city with a heart'. This was achieved, in addition to building the memorable sports facilities, in just about eight years. Progressing from trams and suburban trains as major mass transit system, to an impressive integrated rapid transit system (underground and suburban rail networks), and, facilitated by the new transit system in the city core, laying out the largest pedestrian zone in Europe.

Tokyo (1964) and Munich (1972) are just two examples where apparently all of the above-mentioned four phases of dealing with the 'pulsar effects' were successfully handled to the benefit of the city, proceeding from infrastructure deficit to a higher level of urban development innovation. In his monumental world history of cities, Peter Hall (1998) shows the wider context of innovation that some of the successful Olympic cities were able to achieve. They knew "how to gear public finances so that the public sector triggers private development and in turn is financed by it…" (Hall, 1998: 614).

Put in one sentence, Peter Hall's most recent work is a fascinating analysis of factors contributing to the occurrence of a 'Golden Age' in cities, and that would be the ultimate achievement in handling the pulsar effects we are concerned with in this paper. It is worth referring to the underlying theoretical paradigm of long- medium and short-term economic cycles that determine the lucky coincidence of a sustained span of golden years in a city. "An innovative burst, precipitating a Kondratieff economic boom, produces a new transportation or communication technology, which in turn fundamentally alters the pattern of accessibility and the popular perception of it; as a result, urban space is revalorized: rural areas, previously almost valueless, suddenly become valuable, central areas with certain properties suddenly have new potential." (Hall, 1998: 616)

6. Conclusions

The objective of the paper is to sketch a conceptual framework for the complexities that are associated with the flashy congress title. Many of the 'pulsar effects' are wanted and hoped for, but unfortunately, the unwanted side effects must not be underestimated also. It is hoped to enrich the assessment framework by concrete case study data, so as to arrive at a clearer overview of the opportunities and risks of big events, and the critical dimensions for responsive and creative management. Planners would always hope to be able to play a strong advisory role in the decisions that have to be made in this context, long before the city's application is decided upon, and then, all the way until a final phase of consolidated management as part of sustainable urban development. However, big events and their pulsar effects are likely to be governed by largely unpredictable political economy factors. We may need another congress to deal with those 'golden age' factors.

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