

## **Restorative Urban Open Space: Exploring the Spatial Dimensions of Human Emotional Fulfillment in Urban Open Space**

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### **Abstract**

The capacity of outdoor settings to benefit human wellbeing is well established by research. Examples of restorative settings can be found throughout history and are still applied today in healthcare facilities. However, wider significance in the urban public realm remains insufficiently explored. This paper presents a conceptual framework for restorative urban open space based on developing mosaics of linked spaces woven into the urban fabric. The concept synthesizes the theory of centres, pioneered in the 1970s and refined in recent work by architectural theorist Christopher Alexander (2001), with material relating to social and ecological dimensions of outdoor spatial configuration (Hillier and Hanson, 1984; Forman, 1995; Porta and Renne, 2002). The concept argues for fundamental properties of order, present in the natural and cultural world and associated with human psychological benefit, which can potentially resurrect people's connection with intuitively preferred forms and with relations between human functioning and the spatial environment.

**Keywords:** Restorative urban open space; spatial networks; location; direction; transition

### **1. Introduction**

Urban open spaces with restorative potential are more necessary today than ever. But, although the idea of a restorative environment can still be found applied to healthcare facilities, its application in the wider public realm is less visible, perhaps having become subsumed in the broader arena of socially responsive urban design. This paper offers some reflections on this, proposing a conceptual framework for restorative urban open space based on mosaics of linked spaces. Relevant is the theory of centres pioneered by architectural theorist Christopher Alexander (1987, 1993, 2001). This asserts the existence of fundamental properties of order, present in the natural and cultural world, associated with human psychological benefits which have potential to resurrect people's connection with intuitively preferred forms and with the connection between human functioning and the spatial environment.

### **2. The Restorative Environment**

The term restorative is used here to explore properties that may contribute generally to human psychological wellbeing by mitigating the mental fatigue and stress which can arise from prolonged exposure to some aspects of urban environments and which, at extremes, may generate tangible detriment to health. Our understanding of the restorative potential of the outdoors has roots in early institutional health care. About 500 BC the Greeks constructed asklepieia to aid recovery of the sick by orienting patient wards to facilitate dreaming because they believed the subconscious to be instrumental to the curing process. In Britain, the later Monastic cloister gardens also intended to induce a spiritually reflective mood by providing access to nature in a safe and ordered environment. As Monasticism declined so too did faith in the restorative

significance of gardens but, during the mid-eighteenth century, the rise of Romanticism and the emergence of scientific medicine once again drew attention to the role of nature in bodily and spiritual restoration. Outdoor spaces began to be viewed again as essential elements of healing environments and interior therapeutic courtyards continued to be incorporated into hospital design until the mid 1800s. The twentieth century, however, saw one of the most rapid periods of social change in human history. Advances in medical science combined with technical advances in high-rise construction and increasing demand for economic efficiency in healthcare brought about more compact multi-storey medical complexes. If it was present at all, landscape became largely cosmetic and bore no relation to historic ideas that natural areas could help the healing process. Westphal (2000) however, highlights that once again, landscape which is integral to hospital complexes is again beginning to be viewed as a resource to aid healing and improve wellbeing. However, these contemporary developments continue to focus on gardens in managed healthcare establishments which “are intended to function as an adjuvant therapy within conventional western medicine protocols”. (2000: 19) and do not yet seem to have extended far into consideration of design in the wider public realm.

An exception to this, however, lies with the work of Stephen and Rachel Kaplan who have conceptualised restorative experiences arising from contact with nature (Kaplan and Kaplan, 1989). Although the Kaplan’s findings derive from a research programme in wilderness, parallels can be drawn with urban lifestyles because they associate restorative potential with the mitigation of mental fatigue arising from the effort involved in managing information we are exposed to, often subliminally, in routine life (Kaplan, Kaplan and Ryan, 1998). They argue that this is a special kind of tiredness, however, related to the need to focus attention and does not preclude engagement with certain types of activity that can assist recovery from mental fatigue. In general this is based on stimulating a relationship between the mental world of imagination and the physical surroundings (Kaplan, Kaplan and Ryan, 1998).

This brief overview highlights that aspects of the outdoors are thought to have restorative capacity, at least in the sense of inducing reflective contemplation for psychological and spiritual replenishment, and that this has been understood in various ways for centuries. We can also begin to appreciate some of the characteristics of outdoor settings associated with restorative potential. These seem to emphasise the importance of material elements and spatial configurations that can draw together the physical and mental worlds, stimulating the mind to wander.

### **3. Contemporary Urban Regeneration**

To make Britain’s towns and cities not just fit to live in, but thriving centres of human activity has been said to be one of the key political challenges of the new century (Urban Task Force, 1999). A key priority to encourage people back into urban areas is the creation of high density, compact, many-centred cities of mixed uses as the most sustainable urban form. This may reduce the availability of land in urban centres for large tracts of green space, encouraging instead an urban integration based on smaller facets of open space for respite and escape. This change of emphasis is clear in the Task Force report: “To achieve urban integration means thinking of urban open space not as an isolated unit – be it a street, park or a square – but as a vital part of the urban landscape with its own specific set of functions.” (1999: 57).

This more holistic approach seems firmly embedded in contemporary thinking about the provision of public open space in towns and cities. A strong theme developed at the Urban Regeneration conference organized by the ODPM and *The Guardian* newspaper in London on 1 July 2004 was for systems of linked open spaces, of different kinds, woven into the fabric of towns and cities. It was suggested a principle goal for urban regeneration in terms of open space policy should be the identification and development of such spatial continuities, as they were believed to play a significant part in making towns and cities liveable. Central to this developing concept is the re-establishment of the street as the urban focus providing for a web of connections offering people a range of choices as they move about. The tightly-knit, mixed-use Lanes district in Brighton is cited as a desirable example of this form of urban integration (Urban Task Force, 1999). Streets and their connection to a diversity of outdoor rooms that have the capacity to mitigate the stressful effects of urban living and offer replenishment from mental fatigue could become the new urban park of the regenerated and rejuvenated compact city.

The Urban Task Force recommended the development of a national urban design framework to disseminate key design principles (ibid: 84) and a number of excellent publications now set the agenda for best practice in urban design. There is growing evidence of their influence in the development of new approaches to the provision of green open spaces (DTLR, 2002; CABESpace, 2004) and in local urban design strategies. But, although all of these publications proclaim the importance of enhancing human life quality through design of urban spaces, it seems implicit that their capacity to help people mitigate the effects of mental fatigue may be assumed to accrue automatically as a by-product of other more general urban design principles. If so, this opens the possibility that a range of properties and characteristics relevant to design, which could strengthen the restorative potential of urban spaces, remains overlooked, or has become subsumed within wider recommendations.

To examine this in more detail Beth Helleur carried out exploratory research at Leeds Metropolitan University in 2001, applying findings from a comprehensive literature review to the observation and analysis of a wide range of public places in Europe and America (Helleur, 2001). Helleur identified a diversity of specific characteristics associated with restorative benefit, concluding that this hinges on the development of spatial networks in which the individual spaces forming the network are understood as the unique and distinguishable parts of a larger whole. Especially important was that whenever harshness, intimidation or other undesirable sensations likely to occur in the urban environment are experienced, then there should be places, readily available and within easy reach, that can offer feelings of ease. They should also be designed to be sustainable and enduring, partly because, as O'Brien recently pointed out, "Once places become part of a person's identity, then changes or loss of that place can have a significant impact" (2004: 23). We have, then, an emergent spatial structure of restorative urban open space which moves away from the idea of large discrete open areas that people purposefully go to in order to seek respite and rejuvenation, to more of a web or mesh-like structure that links together a system of smaller spaces, each of which has restorative properties, woven into the fabric of cities in a more holistic way.

#### **4. The Theory of Centres**

This emergent conception can be developed further through consideration of Christopher Alexander's humanistic approach to planning and design, particularly his views about the spatial sensation of centre. This is rooted in Alexander's notion of order as an unbroken spatial

continuity consisting of distinguishable, yet inseparable parts. One of Alexander's principal preoccupations throughout forty years as an architectural thinker and practitioner is with what generates wholeness in the environment. He asserts that the process generating wholeness is called 'centering' (Alexander, 1987, 2001). The term 'centre' defines "...a psychological entity which is perceived as a whole, and which creates the feeling of a center..." (1993: 32). Certain geometric properties relating to the achievement of this sensation are defined including a set of procedures for interacting centres into a structure called a 'field of centres'. The objective of applying this geometric system to environmental design is effectively expressed by Alexander's biographer, Stephen Grabow: "The overall character of these interactions is a very highly differentiated, high density spatial unit - a sort of maximum saturation of ordered interconnectedness, analogous to a poem which produces, with the bare minimum of elements, the highest possible degree of meaning." (1983: 201). Alexander's centres are not simply abstract principles but are intended to be a fundamental part of a deeper and more complex attempt to unify geometry, human experience, and spatial form and function. They are the key to his fervent belief that there is life in certain spatial systems and that making this manifest in the world is vital to creating and sustaining human fulfilment (Alexander, 2001).

## **5. Social and Environmental Sustainability**

Compelling though Alexander's ideas are, it remains difficult to grasp how this is to work in urban settings at the human scale. A fruitful direction seems to be provided by a branch of urban design theory concerned with social sustainability, in particular the interrelatedness of certain spatial forms and social interactions in neighbourhoods, streets and communities. Hillier and Hanson (1984) have related the social potential of urban outdoor space to networks of convex spaces that can be discerned from figure-ground plans. Their assertion is that quality of human communication in neighbourhoods correlates with the presence and density of 'beady-ring systems' (1984: 90). In essence these consist of points within small convex spaces, discernible by analysing the nature of the site's physical containment, connected by paths between them. The denser the resulting mosaic, the better the potential is for the spatial configuration to sustain a positive social life. The implications are profound in that social interactions are thought of as interdependent with the spatial organization in which they occur. Although Hillier and Hanson's work is complex in terms of its mathematical underpinning, the nature of the spatial configuration they identify is essentially very simple, consisting of closely linked networks of locational and directional spaces, woven together as a whole.

More recent research helps amplify detailed characteristics of locational and directional experiences. Porta and Renne (2002) developed formal indicators of social sustainability and described their application in the analysis of towns in Western Australia. Their findings show that socially sustainable streets involve a complex mix of locational experience, related to the capacity of the street to contain and engage users, strung out within an overall sensation of directionality governed by degrees of façade continuity and sky exposure. Locational attributes give a roughness or fine-grain quality to streets, intensifying their social potential and making them more than mere conduits of movement. Another of Porta and Renne's indicators is softness. This introduces an additional spatial category of social sustainability; that of the need for transparency and transitional sensations that satisfy the need to see out of and to move out from where one is into adjoining realms.

In addition to being associated with socially sustainable urban settings, we can also see this kind of integrated spatial structure in ecological analysis. Richard Forman (1995), for example, discusses the importance of patches and corridors and the way they relate together as a matrix in the landscape (1995: 514). Like Porta and Renne's fine grain or roughness as an indicator of the social sustainability of streets, Forman also considers the significance of grain size to the biodiversity potential of landscape: "A coarse-grained landscape containing fine-grained areas is optimum to provide for large-patch ecological benefits, multi-habitat species including humans, and breadth of environmental resources and conditions." (1995: 515). Forman further suggests that the spatial arrangements he describes as important to environmental sustainability can equally be applied to achieving human needs: "[W]e hypothesise that for any landscape, or major portion of the landscape, there exists an optimal spatial arrangement of ecosystems and land uses to maximize ecological integrity. The same is true for achieving basic human needs and for creating a sustainable environment. If so, the major but tractable challenge is to discover the arrangement" (1995: 522).

## **6. Conclusion: A Restorative Spatial Arrangement**

There is growing evidence to suggest that not only is there a need in contemporary urban regeneration for public open space provision to be reconceptualised in terms of networks of small linked spaces of various kinds, but that this kind of spatial arrangement may in itself have a restorative potential, arising mainly from its capacity to facilitate social interaction. Other features that seem significant include the experience of connectivity, so that the spaces making up the network can be experienced as special and significant in their own right, but not to the extent that they become perceived as detached. One way to accomplish this may be to make more explicit the fundamental nature of how people journey through space, in a joined-up way; physically and visually. A frequently occurring theme in the material considered for this paper (much more than actually cited here) is that most spatial sensations, at their most fundamental, fall into one of three categories relating to the sequential experience of moving through space. They either emphasise proximity or location; direction or continuity; or transition or change. The routine experience of these three spatial sensations seems to be required, regardless of whatever else might be involved, to sustain social and psychological health. Helleur's (2001) research also suggests that, for this kind of spatial arrangement to deliver restorative benefit, it must also collectively and in its parts: induce reflective contemplative sensations; combine mental and physical worlds; allow the mind to wander; stimulate wonderment; and be compatible with expectations.

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