Cancel the Plane:
I'll meet you in the Second Life

Can virtual environments lead to a more sustainable world?

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As an academic, I attend, on average, two to three conferences a year, often in far-flung locations and I confess that it's not unknown for me to take into account a conference's geographic location in order to decide whether or not to submit a paper: "New York – *yes please*; York – perhaps not…"

Such trips constitute one of the few remaining perks of modern academic life, but one about which I feel increasingly guilt-stricken due to the annual air-miles that I regularly accrue (this year's schedule already features Istanbul, Fredericton, Canada and Melbourne, Australia). Of course, the chance to visit hitherto personally unknown destinations is only a small part of why academics, and other professionals, converge and congregate at regular intervals. So what is so valuable about face-to-face interactions and could it ever be possible to hold, for example, an academic conference without the attendant physical travel?

SPACE AND SOCIETY

Well, I am no futurologist, and I would therefore hesitate to give an unequivocal answer to the above question, but I would certainly suggest that any possible answer would have as much to do with space and the design of virtual spaces as with the emergence of any new technologies (although these too are obviously important). There is a set of architectural theories and techniques, known as 'space syntax', which originated in the early 1970s at University College London and which is concerned with the relationship between space and society.

In particular, space syntax theories start from the premise that space, that stuff that surrounds us all, is not merely a neutral backdrop for human activity, but rather it plays a fundamental role in guiding and shaping all manner of social interactions. Space syntax analyses start by bringing space to the foreground of our enquiry as opposed to built form: all spaces within a building, neighbourhood or city are identified (often by subdividing continuous, flowing space into discrete 'chunks') and then the relationships between these discrete spaces are considered. For example, if it is possible to move freely from one space to another, without passing through any intervening, third space/s, then these spaces are held to be adjacent and are represented as being 'connected' within the larger spatial system.

In space syntax theory, space is considered to be a 'configuration': a term that we use to mean a complex set of spatial relations, in which any one relationship is affected by and, in turn, affects all others. One of the problems that designers have is that we have no terms in our language to describe spatial relationships that involve more than two or three objects, and yet, as social animals we appear to be remarkably good at 'reading' or intuiting such complex spatial patterns. Once a spatial system has been identified and represented in this way, it is subjected to mathematical analyses, based on specific graph-theoretic techniques, which sort the spaces into a system of hierarchies from which some spaces emerge as being intrinsically more strategic and prominent and, at the same time, others are identified as being more segregated. (Typically this hierarchy is represented visually by a spectrum of colours, in which red signifies the integrated and strategic spaces, through orange, yellow, green and finally to blue indicating the most segregated or spatially cut-off spaces).

REAL AND VIRTUAL WORLDS

It so happens that, by analysing space in this manner, we are able to understand the role that space plays in a whole range of social behaviour. One of the early findings of space syntax research was that our social use of space is inherently lawful, hence the title of the first book published on this research, '*The Social Logic of Space*', by Bill Hiller and Julienne Hanson (*1984*). The kinds of human behaviour that appear to be particularly structured by space are pedestrian movement, or navigation, and the potential for chance encounter (the second is obviously related to the first). Co-presence, or the act of two people coming together in the same space at the same time, is clearly a prerequisite for a whole range of associated human activity, from informal chats around the office water-cooler to bumping into a distant acquaintance whilst shopping. However, what began to be of fascination was the question of whether virtual space was as equally 'lawful' as real space or whether it was a 'horse of a different colour'.

The first stage of such an enquiry was to determine whether patterns of navigation were similar in real and virtual worlds. However, what is meant by virtual space? After all, as John Perry Barlow famously claimed, virtual reality could even be considered to be where you are when you are on the phone. To be precise, most of the research in this area has tended to focus on 3D simulations, which are, in many respects, as close to real-world environments as it is currently possible to create (such worlds often contain photo-realistic textures, have sophisticated mechanisms of depth perception and simulated physical constraints such as solidity and gravity). Anyone who has played a modern computer game, such as *Grand Theft Auto*, will immediately understand the kind of virtual universe (or 'metaverse' to borrow a term from Neal Stephenson's cyberpunk novel, *Snow Crash*) I am describing. Some of my own initial research (dating from the mid to late 1990s) was undertaken to determine the similarity, if any, between patterns of navigation in real and virtual worlds: 3D simulations of a series of real-world environments were created and through the use of a VR headset, people were able to immersively explore these worlds. Their routes or paths through the environments could then be compared to observations made of pedestrians in the equivalent real-world settings. To my surprise, even when the simulations of the real-world environments were extremely basic and unsophisticated, there were extremely good correlations found between patterns of movement in the real and virtual worlds. It appeared that, at a most basic level, we seem to use virtual space, in terms of paths of movement, as if it were, in some sense, 'real'. This was an important research finding as it was the first time that such results had been established rather than simply conjectured.

MUDs & MOOs

However, space syntax research of virtual space has not been confined to such high-level environments; attention has also been focused on the use of virtual worlds known as MUDs/MOOs (multi-user domains or multi-user object orientated environments), which, initially, seem to bear little or no resemblance to the real-world, as they are text-based environments. However, these too, seem to follow an inherently spatial lawfulness. In research undertaken by students at the Georgia Institute of Technology, patterns of movement and occupancy were examined in a series of MUD/MOO environments. A number of text-based virtual worlds were exhaustively mapped, with each textual 'space' being represented as a distinct space in the system. The image that looks a little like a complex chemical molecule is actually a 3D space-map of such a world. The students then 'observed' the pattern of occupancy (which spaces were 'occupied' by whom over a period of time) and compared these to how integrated or segregated the spaces were, using space syntax analysis. The relationship between the relative importance of a space, within the system, and its popularity over time was found to be positive, in precisely the same manner as would be expected in the analysis of, for example, a complex building.

OBEYING SPATIAL LAWS

In 2001, my attention turned to analysing patterns of movement and social interaction in one of the early online, multi-user environments known as Alphaworld (an antecedent to the currently popular Second Life online world). It was found that, despite users' ability to 'teleport' (or spatially relocate instantaneously) from one place to another, Alphaworld did appear, when analysed, to follow some of the basic spatial patterns found in any large city, such as London. Two maps are shown here, one above the other: one shows the structure of 'lines of potential movement' in London and a similar map of the *Grand Theft Auto* game-world, San Andreas (the red to blue colour spectrum is used once again, in which the red lines are the strategic integrators and the blue lines the quieter, more segregated locations). More recent studies examining the *Grand Theft Auto* game-world have found that its spatial structure was remarkably similar to those found in real cities and, in particular, the pattern of distribution of certain objects and 'events' in the game seemed to obey the underlying spatial laws we would expect of real-world events. Finally, I am currently analysing the online social world, Second Life (*see the image of the author in Second Life, opposite*), and considering the spatial distribution of people and events within that environment. In conclusion, all research so far, appears to suggest that, despite the immateriality of these worlds and despite their frequent use of actions irreproducible in reality (such as teleportation), they do seem to mimic the kinds of spatial paradigms found in the real world. This is hardly surprising: human beings are inherently spatial animals, and our understanding of space and its social significance is fundamental to every aspect of our lives. If only some of these are reproduced in virtual worlds, we will immediately begin to respond to them as if they functioned like real-world spatial systems.

INCREASE THE UNDERSTANDING

And where does this leave our future virtual-conference delegates? I would suggest that if we are given the task of designing virtual environments that function successfully, from a social perspective, then it is imperative to increase our understanding of how such environments work in the real world and ensure that any virtual equivalent can reproduce these spatial factors. If an online environment is able to be, for example, intelligible and easily navigable, provide a high potential for chance encounter and create a well-defined, hierarchical structure of spaces, then it is more likely to support a dynamic social environment. Of course, ultimately, nothing will ever completely take over from the real world (I am pleased to say), but perhaps the virtual realm may serve to augment and sustain our social networks, if designed efficiently and knowledgeably □

IMAGE 1.
San Andreas – the game world of Grand Theft Auto. Surprisingly, its spatial structure is remarkably similar to those found in real cities, such as London, below.

IMAGE 2.
The structure of 'lines of potential movement' in London. Similarities between this and Alphaworld have been discovered when analysed.

IMAGE 3.
A number of text-based virtual worlds were exhaustively mapped, with each textual 'space' being represented as a distinct space in the system. This is a 3D space map of such a world