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Design Precedents for Virtual Worlds

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Abstract

The usual precedents cited in relation to Cyberspace are William Gibson’s book “Neuromancer” [1] and Ridley Scott’s film “Bladerunner” [2]. This paper argues that, whilst literature and film are appropriate precedents, there are more suitable sources to refer to when designing virtual worlds. The paper discusses the use of computer modelling in exploring architectonic concepts in three-dimensional space. In doing so it draws on the philosophy of simulation and gives examples from alternative film and literature sources but concludes that one of the most appropriate metaphors is widely available in the form of the television soap opera.

Keywords: Design; Simulation; Space; Time; Virtual Reality

1 Introduction

Marcos Novak [3] has conflated several definitions of Cyberspace into an omnibus definition:

Cyberspace is a completely spatialised visualisation of all information in global information processing systems, along pathways provided by present and future communication networks, allowing input and output from and to the full human sensorium, permitting simulations of real and virtual realities, remote data collection and control through telepresence, and total integration and intercommunication with a full range of intelligent products and environments in real space.

This paper provides a background for the consideration of possible design metaphors for Cyberspace. What is the real space and physical place of architecture in such a seemingly placeless environment as Cyberspace?

Much of the terminology used to describe such new technologies as Cyberspace has emerged from science fiction, where architecture, although an important feature of the worlds described, is not the central concern. For example, the technonoir scenography of “Bladerunner” is little more than a setting for the action (incidentally, the architecture of “Bladerunner” is discussed, in a rather different context, by Benjamin [4]). Similarly, in “Neuromancer” architecture is merely a backdrop. Rather than offering new analyses of what architecture might be these films and novels do not really advance our understanding at all. They do not begin to address such questions as: How is the architecture of the electronic environment different from that of the built environment? Does the electronic environment preclude built space? Does the very distinction between substance and surface make sense any longer?

2 Drawing for Design

An alternative starting point is in the consideration of the uses of drawing in design. Computer drafting is used predominantly as a way of documenting design. However, drawing (more generally) also plays a major, if not entirely decisive, role in the creation and development of architectural ideas. If rhetoric is the art of persuasive discourse, then the drawing is the form architects use to frame their rhetorical strategies. The role of drawing as a form of rhetoric has provided a way for architects to explore their concepts about built form free from the constraints of construction. The implication here is, of course, that virtual worlds may provide an alternative environment for design exploration.

The delimitation of the surfaces of immovable objects by lines on paper is an amazingly inadequate way of describing an extended spatiality. However, the power of drawings lies as much in their power of suggestion as in their power of description. Robin Evans [5] pointed out that the real powers of drawings are scarcely recognised: “Recognition of the drawing’s power as a medium turns out, unexpectedly, to be recognition of the drawing’s distinctness from and unlikeness to the thing that is represented, rather than its likeness to it, which is neither as paradoxical nor as dissociative as it may seem.”

Daniel Libeskind develops his architecture from such exploratory drawings. Libeskind claims that his drawings draw attention to the fact that “Disorder, the arbitrary, born of the delirium of order pushed beyond its limits, by

a strange paradox, discovers its own logic, a structure which, like an inaccessible and secret truth, has been prefigured in the alluring depth of chaos.” [6]. More than the discovery of chaos, architecture becomes a direct engagement in the non-sensible world through the medium of drawing. For a particular group of architects (Libeskind included, but also Lebbeus Woods, Wolf Prix, Zaha Hadid, Rem Koolhaas, Frank Gehry and others) the drawing is almost more important than the building for it is only relatively recently that these architects are being commissioned to build.

3 Drawings as Signs

Libeskind [6] elaborates on how drawings have assumed the identity of signs. They are now considered to have an existence of their own. Indeed they may be seen as the major output of architectural design. Question: What do Architects do? Answer: Produce drawings - buildings are produced by Builders. Once the idea of a drawing as an instruction for building is dispensed with drawings may be seen as a coherent formal system in themselves: unknown instruments for which a usage is yet to be found. There is an historical tradition in architecture whereby drawings (as well as other forms of communication) signify more than can be embodied in stabilised frameworks of objectifiable data. If we can go beyond the material carrier (sign) into the internal reality of a drawing, the reduction of representation to a formal system - seeming at first void and useless - begins to appear as an extension of reality which is quite natural. The system ceases to be perceived as a prop whose coherence is supported by empty symbols, and reveals a structure whose manifestation is only mediated by symbolism.

An architectural drawing is as much a prospective unfolding of future possibilities as it is a recovery of a particular history to whose intentions it testifies and whose limits it always challenges. The act of creation in the order of procedures of imagination coincides with creation in the objective realm. Drawing is not mere invention; its efficacy is not drawn from its own unlimited resources of liberty. It is a state of experience in which the “other” is revealed through mechanisms which provoke and support objective accomplishments as well as supporting the one who draws upon them. Being neither pure registration or pure creation, these drawings come to resemble an explication or a reading of a pre-given text. Drawings may thus exist as independent systems without any reliance on the existence (or potential existence) of any building. They have their own coherent set of rules and conventions and, furthermore, can carry meaning and serve as subjects for

interpretation. Eisenman makes the point that drawing is “not the representation of a text” and asserts that, while buildings may also be texts, drawing does not just act as a secondary text to re-present them: “first it must be understood that the idea of an extended text, whether in architecture or not, is the idea of essential multivalence. It does not cancel or deny prior notions of narrative or structure, nor does it necessarily contain them, but exists simultaneously with them. Text never allows a single signifier. Everything is shown to mean more than one thing.” [7].

4 Simulation in General

Baudrillard [8] argues that the explosion and acceleration of cultural commodities, or, more generally, of social images or “signs” functioning as commodities, produces a “political economy of the sign”. This operates under what he calls the law of the “code”, which seems to mean the predominance of technologies and practices concerned with the exchange, promotion, distribution and manipulation of signs in general, from raw information, to cars, to fashion, and even to the “images” of pop stars, actors and governments. He [9] discusses a spontaneous exchange which is based upon neither the dominating logic of the “code” or upon the logic of general equivalence, in which everything has its price in terms of something else via the intermediary abstraction of the market, but upon open and spontaneous communication. Baudrillard is nowhere very clear about what would count as this kind of “symbolic exchange”, but gives some indication in an essay entitled “Requiem for the Media” [10]. Here Baudrillard attacks the notion that the mass media possess intrinsic liberating or democratic potential which is blocked or suppressed by the ruling groups and power interests in whose hands they lie - and the consequent belief that it is the role of the Left to wrest control of these media from such narrow or oppressive interests. Baudrillard argues that it is not possible simply to take over the form of the mass media and change their content to any good purpose, since what is oppressive about the media is precisely the “code” which in their very form they embody. This code functions by the denial of response or exchange in mass communication. He claims that a mass medium talks to its audience while never allowing that audience to respond to it and, indeed, confirms its audience’s muteness by simulating audience response, via phone-ins, studio audiences, viewers’ polls and other forms of bogus “interaction”. The mass media, Baudrillard declares, “fabricate non-communication” [11]. The experience of the events of May 1968 in France, in which radio and TV stations were taken over by revolutionary groups, was that every form of subversive message can be made

harmless by this means, since “transgression and subversion never get on the air without being subtly negated as they are: transformed into models, neutralised into signs, they are eviscerated of their meaning” [12]. Against this synthesised communication, Baudrillard posits his ideal of free, immediate exchange in which the hierarchical split between the transmitter and the receiver is transmuted into a mutual responsiveness and discursive responsibility in spontaneous dialogue. Perhaps a little romantically, Baudrillard finds this form of exchange in the discursive activities of the street:

The real revolutionary media during May were the walls and their speech, the silk-screen posters and the hand-painted notices the street where speech began and was exchanged - everything that was an immediate inscription, given and returned, spoken and answered, mobile in the same space and time, reciprocal and antagonistic. The street is, in this sense, the alternative and subversive form of the mass media, since it isn't, like the latter, an objectified support for answerless messages, a transmission system at a distance. It is the frayed space of the symbolic exchange of speech - ephemeral, mortal: a speech that is not reflected on the Platonic screen of the media. [13]

In “L’Echange symbolique et la mort” [14] Baudrillard reads history in terms of the successive stages of the simulacrum, just as McLuhan [15] read history as a function of changes in media technology. The chapter on the orders of simulacra is introduced in the following way:

Three orders of the simulacrum, parallel to the mutations of the law of value, have followed one another since the Renaissance:

- Counterfeit is the dominant scheme of the “classical” period, from the Renaissance to the Industrial Revolution;
- Production is the dominant scheme of the industrial era;
- Simulation is the reigning scheme of the current phase that is controlled by the code. [16]

It is this later Baudrillard, the theorist of the regime of the “simulacrum”, who has been most influential in the postmodern debate, and perhaps the most influential of all his work has been his short essay “The Precession of Simulacra” [17]. Baudrillard here extends the point made in “Requiem for the Media” about the capacity of the mass media to neutralise dissent simply by representing it, to the claim that nothing can resist the conversion of reality into empty signs. We live in an age, says Baudrillard, in which signs are no longer required to have any verifiable contact with the world they allegedly represent. He provides a synopsis of the four stages through

which representation has historically passed on its way to the condition of pure simulation. Initially, the sign “is the reflection of a basic reality”; in the second stage the sign “masks and perverts a basic reality”; in the third stage, the sign “masks the absence of a basic reality” and in the fourth, terminal stage, the sign “bears no relation to any reality whatsoever: it is its own pure simulacrum” [18]. In the regime of simulation which is contemporary culture, Baudrillard diagnoses the incessant production of images with no attempt to ground them in reality. Alongside this, as though in response to the awareness of the fading out of the real, is a compensatory attempt to manufacture it, in “an escalation of the true, of the lived experience” [19]; in other words, the cult of immediate experience, of raw, intense reality, is not the contradiction of the regime of the simulacrum, but its simulated effect. Baudrillard generalises this to the claim that all of contemporary life has been dismantled and reproduced in scrupulous facsimile. But the mood of all this is far from that of quiet satisfaction or indifference; rather, it produces “a panic stricken production of the real and the referential” [20], such that simulation takes the form, not of unreality, as many of Baudrillard's followers wish to believe, but of manufactured objects and experiences which attempt to be more real than reality itself or, in Baudrillard's term, “hyperreal”.

Hyperreality also brings with it the collapse of all real antagonisms or dichotomies of value, especially in the political sphere. Baudrillard claims that, with the whole of the political spectrum being dominated by the logic of the simulacrum, even the most inveterate antagonisms, like that of capitalism and socialism, are annulled by the dependence of one upon the other; authority depends upon subversion, just as subversion draws its energies from authority. Seemingly, no events can shatter or destabilise the models of political relationship which precede and hermeneutically intercept these events; Baudrillard gives as an example a bombing outrage which could equally well be interpreted as the work of leftist extremists, or of extreme right-wing provocateurs, or of centrists concerned to discredit political extremism. The responses are all pre-programmed, all equally available and can all be activated at once. The upshot of this is that power and effectiveness are no longer asymmetrical (one group has power, while another group lacks it; one group benefits from a certain situation, another group suffers) but are distributed evenly across the political spectrum by the model of simulation. Everybody benefits from an infraction of the code, because the code is thereby consolidated. In this situation, opposites collapse into each other; as Baudrillard says, they “implode” producing “a floating causality where positivity and negativity engender and overlap with one another, where there is no longer any active or passive”, in which “every act terminates at the end of the cycle having benefited everyone and been scattered in all directions” [21]

Baudrillard's later work takes further the idea of the collapse or "implosion" of social theory and the situation that it theorises:

The space of simulation confuses the real with the model. There is no longer any critical and speculative distance between the real and the rational. There is no longer really even any projection of models in the real ... but an in-the-field, here-and-now transfiguration of the real into model. A fantastic short-circuit: the real is hyperrealised. Neither realised, nor idealised: but hyperrealised. The hyperreal is the abolition of the real not by violent destruction, but by its assumption, elevation to the strength of the model. Anticipation, deterrence, preventive transfiguration, etc.: the model acts as a sphere of absorption of the real. [22]

This raises the difficult question of the hermeneutic entanglement of theory with the social reality that it describes. This is to say that postmodernity must be considered partially in terms of the difficulty of describing "itself"; or rather, in terms of the difficulty of specifying the "itself" which is postmodernity after the drawing of knowledge and theory into the sphere of culture, even as culture itself alters its scope and co-ordination. Not all accounts of the postmodern condition exhibit this degree of self-reflexivity so openly; nor is it true that every form of self-reflexivity is the same, with the same values and effects.

Hassan's (1982) "The Dismemberment of Orpheus: Towards a Postmodern Literature", asserts that there is no absolute break between modernism and postmodernism, since "history is a palimpsest, and culture is permeable to time past, time present and time future" [23]. Hassan provides a table showing how postmodernism may be seen as opposed to modernism rather than a reformulation of it:

Modernism	Postmodernism
Romanticism/Symbolism	Dadism
Form (conjunctive/closed)	Antiform (disjunctive/open)
Purpose	Play
Design	Chance
Hierarchy	Anarchy
Mastery/Logos	Exhaustion/Silence

Art Object/Finished Work	Process/Performance/Happening
Distance	Participation
Creation/Totalisation	Decreation/Deconstruction
Synthesis	Antithesis
Presence	Absence
Centring	Dispersal
Genre/Boundary	Text/Intertext
Paradigm	Syntagm
Hypotaxis	Parataxis
Metaphor	Metonymy
Selection	Combination
Root/Depth	Rhizome/Surface
Interpretation/Reading	Against Interpretation/Misreading
Signified	Signifier
Readerly	Writerly
Narrative	Anti-narrative

(Table abbreviated from the original [24])

Baudrillard’s metaphor for the collapse of the subject-object dichotomy is the television screen. A TV screen or computer monitor cannot be thought of as simply an object to be looked at, instead, the screen interacts responsively with our desires and representations and becomes the embodied form of our psychic worlds. What happens “on” the screen is neither on the screen or in us, but in some complex, always virtual space between the two. This accomplishes the neutralisation of another opposition, that between the “invisible” world of feeling and fantasy and the “visible” world of public representations. The sheer bulk of representations, in film, TV and advertising, and the exponential expansion of information not only threaten the integrity of the private world but actually abolishes the very distinction between the private and the public. The TV screen represents absolute visibility, the loss of interiority, the proliferation of information and communication; it becomes “a pure screen, a switching centre for all the networks of influence” [25].

Baudrillard’s work echoes back to McLuhan. The first page of “Understanding Media” [15] begins:

After three thousand years of explosion, by means of fragmentary and mechanical technologies, the Western World is imploding. During the Mechanical Ages we had extended our bodies in space. Today ... we have extended our central nervous system itself in a global embrace, abolishing both space and time as far as our planet is concerned. Rapidly we approach the final phase of the extension of man - the technological simulation of consciousness.

McLuhan isolates four stages of cultural history: one, a “primitive”, tribal society, a cool audile culture with an oral technology of speech; two, a hot visual culture with a technology of phonetic writing; three, an even hotter visual culture with the mechanical technology of print (the Gutenberg Galaxy); and four, a return to a cool culture on a higher level, an audile-tactile culture with an electronic technology of television and the computer. The persistent issue in this scheme is the rise and decline of visuality, and McLuhan associates visuality with linear continuity, uniformity, abstraction, and individualisation. This culture of visuality is characterised by separation, distance, alienation, and the dissociation of sensibility - reification as the early Baudrillard termed it. This culture of visuality, modernity in other words, is about to be superseded by a culture of instantaneous inclusiveness, a mythical and integral culture in which “electric speed [brings together] all social and political functions in a sudden implosion” [26]

5 Literature

Here I simply wish to quote three extracts from Italo Calvino’s *Invisible Cities* [27]:

Kublai Khan had noticed that Marco Polo’s cities resembled one another, as if the passage from one to another involved not a journey but a change of elements. Now, from each city Marco described to him, the Great Khan’s mind set out on its own, and after dismantling the city piece by piece, he reconstructed it in other ways, substituting components, shifting them, inverting them.

Marco, meanwhile, continued reporting his journey, but the emperor was no longer listening.

Kublai interrupted him: “From now I shall describe the cities and you will tell me if they exist and are as I have conceived them. I shall begin by asking you about a city of stairs,

exposed to the sirocco, on a half-moon bay. Now I shall list some of the wonders it contains: a glass tank as a cathedral so people can follow the swimming and flying of the swallow fish and draw auguries from them; a palm tree which plays the harp with its fronds in the wind; a square with a horseshoe marble table around it, a marble tablecloth, set with foods and beverages also of marble.”

“Sire, your mind has been wandering. This is precisely the city I was telling you about when you interrupted me.”

“You know it ? Where is it? What is its name?”

“It has neither name nor place. I shall repeat the reason why I was describing it to you: from the number of imaginable cities we must exclude those whose elements are assembled without a connecting thread, an inner rule, a perspective, a discourse. With cities, it is as with dreams: everything imaginable can be dreamed, but even the most unexpected dream is a rebus that conceals a desire or, its reverse, a fear. Cities, like dreams, are made of desires and fears, even if the thread of their discourse is secret, their rules are absurd, their perspectives deceitful, and everything conceals something else.”

“I have neither desires nor fears,” the Khan declared, “and my dreams are composed either by my mind or by chance.”

“Cities also believe they are the work of the mind or of chance, but neither the one nor the other suffices to hold up their walls. You take delight not in a city’s seven or seventy wonders, but in the answer it gives to a question of yours.”

“Or the question it asks you, forcing you to answer, like Thebes through the mouth of the Sphinx.” [28]

“From now on, I’ll describe the cities to you,” the Khan had said, “in your journeys you will see if they exist.”

But the cities visited by Marco Polo were always different from those thought of by the emperor.

“And yet I have constructed in my mind a model city from which all possible cities can be deduced,” Kublai said. “It contains everything corresponding to the norm. Since the cities that exist diverge in varying degrees from the norm, I need only foresee the exceptions to the norm and calculate the most probable combinations.”

“I have also thought of a model city from which I deduce all the others,” Marco answered.

“It is a city made only of exceptions, exclusions, incongruities, contradictions. If such a city is the most improbable, by reducing the number of elements, we increase the probability that the city really exists. So I have only to subtract exceptions from my model, and in whatever direction I proceed, I will arrive at one of the cities which, always

as an exception, exist. But I cannot force my operation beyond a certain limit: I would achieve cities too probable to be real.” [29]

The Great Khan’s atlas contains also the maps of the promised lands visited in thought but not yet discovered or founded: New Atlantis, Utopia, the City of the Sun, Oceana, Tamoe, New Harmony, New Lanark, Icaria

Kublai asked Marco: “You, who go about exploring and who see signs, can tell me towards which of these futures the favouring winds are driving us.”

“For these ports I could not draw a route on the map or set a date for the landing. At times all I need is a brief glimpse, an opening in the midst of an incongruous landscape, a glint of lights in the fog, the dialogue of two passers-by meeting in the crowd, and I think that, setting out from there, I will put together, piece by piece, the perfect city, made of fragments mixed with the rest, of instants separated by intervals, of signals one sends out, not knowing who receives them. If I tell you that the city towards which my journey tends is discontinuous in space and time, now scattered, now more condensed, you must not believe the search for it can stop. Perhaps while we speak, it is rising, scattered, within the confines of your empire; you can hunt for it, but only in the way I have said.”

Already the Great Khan was leafing through his atlas, over the maps of the cities that menace in nightmares and maledictions: Enoch, Babylon, Yahoooland, Butua, Brave New World.

He said: “It is all useless, if the last landing-place can only be the infernal city, and it is there that, in ever-narrowing circles, the current is drawing us.”

And Polo said: “The inferno of the living is not something that will be; if there is one, it is what is already here, the inferno where we live every day, that we form by being together. There are two ways to escape suffering it. The first is easy for many: accept the inferno and become such a part of it that you can no longer see it. The second is risky and demands constant vigilance and apprehension: seek and learn to recognise who and what, in the midst of the inferno, are not inferno, then make them endure, give them space.” [30]

6 Cineplastics

Since the late nineteenth century, film has provided a laboratory for the definition of modernism in theory and technique: it is the obvious role model for spatial experimentation. Abel Gance, writing in 1912 [31] expressed

the hope that cinema would be a “sixth art” which would provide “synthesis of the movement of time and place”. It was the art historian Elie Faure, however, who first coined a term for the cinematic aesthetic that brought the two dimensions together: cineplastics. “The cinema”, he wrote in 1922, “is first of all plastic. It represents, in some way, an architecture in movement that should be in constant accord, in dynamically pursued equilibrium, with the setting and landscapes within which it rises and falls. .. The cinema incorporates time to space. Better, time, through this, really becomes a dimension of space” [32]. By means of the cinema, Faure claimed, time becomes a veritable instrument of space, “unrolling under our eyes its successive volumes ceaselessly returned to us in dimensions that allow us to grasp their extent in surface and depth”. The “hitherto unknown plastic pleasures” thereby discovered would, finally, create a new kind of architectural space, akin to that imaginary space “within the walls of the brain”. “The notion of duration entering as a constitutive element into the notion of space, we will easily imagine an art of cineplastics blossoming that would be no more than an ideal architecture, and where the ‘cinemimic’ will ... disappear, because only a great artist could build edifices that constitute themselves again ceaselessly by imperceptible passages of tones and modelling that will themselves be architecture at every instant, without our being able to grasp the thousandth part of a second in which the transition takes place”.

One of the most striking preoccupations of modernist and postmodernist aesthetics is the question of time. The modernist approach may be reduced to a single principle - the flattening of time into space. To view history as an endless series of cycles is to attempt to defeat transience by bending it into patterns. The old ways are hard to break, however, and even those writers who attempted to follow Bergson’s counsel that time should be rendered as pure and fluid process rather than artificially frozen into instants tended to spatialise or suspend time in attempting to be true to it [33]. Bergson [34] puts forward several theses on movement which are of relevance to virtual worlds. The first (and best known) is that movement is distinct from the space covered. Space covered is past whereas movement is present - the act of covering. The space covered is divisible whilst movement is indivisible. This leads to the proposition that the spaces covered all belong to a single, homogeneous space, whilst the movements are heterogeneous, irreducible amongst themselves. Thus movement cannot be reconstituted with positions in space or instants in time. If we examine a sequence of film stills we see a succession of “frozen instants” but the movement always takes place in the intervals between. Movement thus always occurs in a concrete duration and each movement has its own qualitative duration. Deleuze [35]

comments that modern science has related movement not to privileged instants but to any-instant-whatever.

Although movement was still recomposed it was no longer recomposed from formal transcendental elements but from immanent material elements. Instead of producing an intelligible synthesis of movement, a sensible analysis was derived from it. Bergson shows how, in this way, modern astronomy was formed by determining a relation between an orbit and the time needed to traverse it (Kepler); modern physics, by linking the space covered to the time taken by a body to fall (Galileo); modern geometry by working out the position of a point on a moving straight line at any moment in its course (Descartes); and finally, differential and integral calculus, once it was realised that sections could be brought infinitely closer together (Newton and Leibniz). Bergson [36] remarks “Modern science must be defined pre-eminently by its aspiration to take time as an independent variable.” Cinema simply follows this lineage. Deleuze [37] thus defines cinema as the system which reproduces movement as a function of any-instant-whatever; that is, as a function of equidistant instants, selected so as to create an impression of continuity. The relevance to Virtual Worlds becomes apparent if we consider the “intermediary” form of animated film (cartoons). If the cartoon belongs to the cinema, this is because the drawing no longer constitutes a pose or completed figure, but the description of a figure which is always in the process of being formed or dissolving through the movement of lines and points taken at any-instants-whatever of their course. The cartoon film is related not to a Euclidean, but to a Cartesian geometry. It does not give us a figure described in a unique moment, but the continuity of the movement which describes the figure.

Writing around the same time as Faure, Erwin Panofsky [38] asserted “these unique and specific possibilities” of film could be “defined as dynamisation of space and, accordingly, spatialisation of time. ... Not only bodies move in space, but space itself does, approaching, receding, turning, dissolving and recrystallising as it appears through the controlled locomotion and focusing of the camera and through the cutting and editing of the various shots”. This led to the inevitable conclusion that the proper medium of the cinema was not the idealisation of reality, as in other arts, but physical reality as such”.

The elements of cinema relate to Virtual Worlds insofar as they operate within a closed system. Following Deleuze [39] again, we will call the determination of a closed system, a relatively closed system which includes everything which is present in the image - sets, characters and props - framing. Framing is the art of choosing the parts of all kinds which become part of a set. The closed system determined by the frame can be considered in

relation to the data that it communicates to the spectators: it is “informatic” and saturated or rarefied. Considered in itself and as limitation, it is geometric or dynamic-physical. It is an optical system when it is considered in relation to the point of view, to the angle of framing. Finally it determines an out-of-field, sometimes in the form of a larger set which extends it, sometimes in the form of a whole into which it is integrated.

Cutting is the determination of the shot, and the shot the determination of the movement which is established in the closed system, between elements or parts of the set. Thus movement has two facets: it is the relationship between parts and it is the state of the whole. The purest form of this kineticism may be seen in the Expressionist films of the 1920's. The first (and most striking) appearance of Expressionism in film was due to three painters - Hermann Warm, Walter Reimann and Walter Röhrig - creating the set for Robert Wiene's (1920) “Das Kabinett des Dr. Caligari”. Following this, architect Hans Poelzig developed a sculptural expressionism of organic shapes and spatial complexities for Wegener's (1920) “Der Golem”. The stairway, designed by Andrei Andrejew for Wiene's (1923) “Raskolnikov”, was one of the decades great designs and would not look out of place today. Geometry was emancipated from the co-ordinates which condition the extensive quantity and from the metrical relationships which regulated movement in homogenous space.

7 Soap Opera

The most important characteristics of designing in/for Cyberspace are the non-contiguity of space, the non-continuity of time and the self-reflexive nature of the space. The background discussion relating to these topics has been presented, but the practice comes together in a surprisingly accessible example. The television soap opera exhibits all of these features. The action typically takes place in the home of one of the main characters or in a public meeting place (in British soaps a Public House, in Australian soaps a café). The viewer accepts these locations as “real” and assumes them set in a “real” town, yet is (of course) totally unable to define the physical relationship of the house to the pub or café. The time-frame used in the story usually changes when the location changes, yet the viewer is easily able to accommodate this shift. The self-reflexivity comes about in the way that the script is modified to reflect changes in the actors' circumstances: if one should become pregnant or fall ill the story line is adapted to suit.

The conclusion arising from this analysis is that virtual environments should not attempt to model the “real” world in ever increasing detail (like Borges’ map makers who drew maps at greater and greater levels of detail until they finally produced a map which fitted exactly over the real space), but rather recognise that the participant/observer can cope with discontinuities. The Calvino story illustrates the point that the environment should be sufficiently rich to support alternative interpretations (Eisenman’s “multivalence”): all of the cities Marco Polo described were, in fact, Venice.

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