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1.2.8. SIMULATION

Simulation is a widely and loosely used concept in the new media literature, but is seldom defined. It often simply takes the place of more established concepts such as 'imitation' or 'representation'. However where the concept is paid more attention, it has a dramatic effect on how we theorise cultural technologies such as VR (2.6.1), cinema (2.7.1) and photography (2.6.3). For the moment, it is important to set out how the term has been used in order to make the concept of simulation, and how we will subsequently use it, clear.

Looser current uses of the term are immediately evident, even in new media studies, where it tends to carry more general connotations of the illusory, the false, the artificial, so that a simulation is cast as an insubstantial or hollow copy of something original or authentic. It is very important to invert these assumptions. A simulation is certainly artificial, synthetic and fabricated, but it is not 'false' or 'illusory'. Processes of fabrication, synthesis and artifice are real and all produce new real objects. A videogame world does not necessarily imitate an original space or existing creatures, but it exists. Since not all simulations are imitations, it becomes much easier to see simulations as things, rather than as representations of things. The *content* of simulations may of course (and frequently does) derive from 'representations'. This is what lies at the core of Umberto Eco's analysis of Disneyland for instance: the houses in Disneyland's version of an ideal American Main Street are fakes, deceits, they look something like real houses yet are something quite different (in this case supermarkets or gift shops) (Eco 1986: 43. But noticing a gap between the representational content of a simulation (shops, space invaders) and its architectural or mechanical workings should not lead us then to discount and ignore the latter. The simulation exists regardless of whether we are fooled by its content or not. Thus the problem to which simulation draws our attention is not that of the difference between 'simulated' and 'real' content, but rather that of the material and real existence of simulations as part of the furniture of the same real world that has been so thoroughly 'represented' throughout the history of the arts and media. In other words a simulation is real *before* it imitates or represents anything.

Margin note: this is very clear as regards the functional character of VR, which we discuss in 2.6.5., below.

For the present, however, as things stand in new media studies, not only is there no agreement that simulation does in fact differ from representation or imitation, but the simple profusion of answers to the question of what simulation really is and how, if at all, it differs from representation or imitation, has led many commentators to give up seeking any specificity to the concept and to concede that

... [t]he distinction between simulation and imitation is a difficult and not altogether clear one. Nevertheless, it is vitally important. It lies at the heart of virtual reality. (Woolley 1992: 44)

Yet if the concept is, as Woolley here notes, “vitaly important”, it surely becomes all the more important to seek some clarity. We should then examine the ways in which the term is in use with regard to the analysis of new media. There are three very broad such ways, which we will call Postmodernist, Computer, and Game simulation.

1. postmodernist simulation

Here the term is drawn principally from Jean Baudrillard’s identification of simulation with hyperreality (Baudrillard 1994). According to Baudrillard, simulacra are signs that cannot be exchanged with ‘real’ elements outside a given system of other signs, but only with other signs within it. Crucially, these sign-for-sign exchanges assume the functionality and effectiveness of ‘real’ objects, which is why Baudrillard calls this regime of signs hyper-real. When, under these conditions, reality is supplanted by hyperreality, any reality innocent of signs disappears into a network of simulation.

In postmodernist debates over the past few decades the nature of simulation over representation has been posited as of fundamental importance for questions of the future of human political and cultural agency. Baudrillard himself, however, is no fan of postmodernist theory:

“The postmodern is the first truly universal conceptual conduit, like jeans or coca-cola. . . . It is a world-wide verbal fornication.”
(Baudrillard 1996a: 70)

This is in stark contrast to those who use Baudrillard’s theorizing as the exemplification of postmodern thought. Douglas Kellner, for instance, considers Baudrillard as resignedly telling the story of the death of the real without taking political responsibility for this story. Others consider him the media pessimist *par excellence*, who argues that the total coverage of the real with signs is equivalent to its absolute disappearance. Still others celebrate Baudrillard as an elegant “so what?” in the face of the collapse of all values. All, however, omit the central point regarding his theory of simulation: that it functions and has effects – it is operational - and is therefore hyper-*real* rather than hyper-*fictional*. The grounds of this operativity are always, for Baudrillard, technological:

Only technology perhaps gathers together the scattered fragments of the real.
(Baudrillard 1996b: 4)

“Perhaps”, he adds, “through technology, the world is toying with us, the object is seducing us by giving us the illusion of power over it” (1996b: 5). Baudrillard, who published an early (1967) and positive review of McLuhan’s *Understanding Media*, makes it clear that the ground of hyperrealism is technology as a complex social actor over which we maintain an illusion of control. To cite a typically contentious Baudrillardian example, electoral systems in developed democratic states do not empower an electorate, but rather determine the exercise of democracy in cybernetic terms: voting for

party X rather than party Y consolidates the governance of binary coding over political systems. This constitutes a 'simulation' of democracy not in the sense that there are really and in fact more complex political issues underlying this sham democracy; but rather in the sense that real and effective politics is now conducted in precisely this new scenario. Choice has become the only reality that matters, and it is precisely quantifiable. Thus the simulation, or transposition of democracy onto another scene, concerned exclusively with a hypertrophied 'choice', is the only political reality there is. It is for this reason that simulations constitute, for Baudrillard, the hyper-reality of cybernetic governance. The "perfect crime" to which the title of one of Baudrillard's works alludes is not the destruction of reality itself, but the destruction of an illusory reality beyond the technologies that make it work (Baudrillard 1996b). The effect is not a loss of reality, but the consolidation of a reality without an alternative.

Where commentators on contemporary cultural change have seized upon the concept of simulation, is in noting a shift from 'representation' to simulation as dominant modes of the organisation of cultural objects and their signifying relationships to the world. According to such scholars 'representation' was conceived to be a cultural act, an artefact of negotiated meanings, pointing, however unsuccessfully or incompletely, to a real world beyond it. 'Simulation', they assert, supplants these negotiated relationships between social and cultural agents and reality, replacing them with relationships that operate only within culture and its mediations:

The theory of simulation is a theory of how our images, our communications and our media have usurped the role of reality, and a history of how reality fades (Cubitt 2001: 1).

Such critical approaches draw on theories that identify profound cultural, economic and political shifts in the developed world in recent decades. A defining moment in the development of this approach is Guy Debord's *Society of the Spectacle* (1967), which argues that the saturation of social space with mass media has generated a society defined by spectacular rather than real relations. Although there are various approaches and positions within this broad trend, they generally share the assumption that the emergence in the post-War period of a consumption-led economy has driven a culture which is dominated and colonised by the mass media and commodification. The rise of this commercialized, mediated culture brings with it profound anxieties about how people might know, and act in, the world. The sheer proliferation of television screens, computer networks, theme parks and shopping centres, and the saturation of everyday life by spectacular images so thoroughly mediated and processed that any connection with a 'real world' seems lost, adds up to a simulated world: a hyperreality where the artificial is experienced as real. Representation, the relationship (however mediated) between the real world and its referents in the images and narratives of popular media and art, withers away. The simulations that take its place also replace reality with spectacular fictions whose lures we must resist. In broad outlines, this remains the standard view of Baudrillard's theses.

Accordingly, Baudrillard's controversial and often poorly-understood versions of simulation and simulacra have proved very influential on theories and analysis of post-War popular and visual culture. The nature of the ascendancy of this order of simulation over that of representation has been posited as being of fundamental importance to questions of the future of human political and cultural agency. Cultural and critical theory, when faced with the manufactured, the commodified and the artificial in modern culture has identified the simulational and simulacral character of post-War culture in the developed world – a culture, it is claimed, that is increasingly derealised by the screens of the mass media, the seductions and veilings of commodification, and (more recently) the virtualisations of digital culture. For instance, Frederic Jameson describes the contemporary world as one in which all zones of culture and everyday life are subsumed by the commodifying reach of consumer capitalism and its spectacular media:

a whole historically original consumers' appetite for a world transformed into sheer images of itself and for pseudo-events and 'spectacles' . . . It is for such objects that we reserve Plato's concept of the 'simulacrum', the identical copy for which no original has ever existed. Appropriately enough, the culture of the simulacrum comes to life in a society where exchange value has been generalized to the point at which the very memory of use value is effaced, a society of which Guy Debord has observed, in an extraordinary phrase, that in it 'the image has become the final form of commodity reification . . .'

(Jameson, 1991: 18)

Similarly, for Cubitt, as reality fades, the materiality of the world around us becomes unsteady, 'the objects of consumption are unreal: they are meanings and appearances, style and fashion, the unnecessary and the highly processed (Cubitt, 2001: 5).

What is at stake for these theorists is that any sense of political agency or progressive knowledge is lost in this seductive, consumerist, apocalypse. The relationship between the real and the mediated, the artificial and the natural, implode. It is also clear how the technological sophistication, seductive/immersive and commercial nature of videogames might be seen as a particularly vivid symptom of this postmodernist condition (Darley, 2000). It is equally clear, however, that these critics' conceptions of Baudrillard in general and simulation in particular are at best partial, and at worst, wholly misleading. For these reasons, it is wholly appropriate to refer to such a constellation of theories as 'postmodernist', as it is to argue that Baudrillard's simulation is not postmodernist. Far from providing any specificity to the concept of simulation, the postmodernist approach generalises it to the point where it becomes an entire theory of culture (the pervasiveness of technological visual culture is further discussed in 1.5.3., below, and with specific regard to the theory of the 'virtual' in 2.6.5).

2. computer simulation

The second use of the concept reflects a more specific concern with simulation as a particular form of computer media (Woolley 1992, Lister et al

2003, Frasca 2001, Prensky 2001). Just as a confusion of imitation, representation or mimesis with simulation arises for postmodernist uses of simulation, critical approaches to computer simulation tend to take a more nuanced attitude to the mimetic elements sometimes (but not always) present in simulation. The principal difference is, in this case, the simulation is not a dissembling, illusory distraction from the real world (like Eco's Disneyland) but rather a model of the world (or of some aspect of it). This context presents a more specific and differentiated use of simulation than that of the postmodernists. For some (writers, engineers, social scientists, military planners, etc.) the computer simulation models complex and dynamic systems over time in ways impossible in other media.

Marc Prensky, in a book that espouses the use of computer games in education and training, offers three definitions of simulation:

- any synthetic or counterfeit creation
- creation of an artificial world that approximates the real one
- a mathematical or algorithmic model, combined with a set of initial conditions, that allows prediction and visualisation as time unfolds (Prensky 2001: ??)

The first and second of these definitions recalls the confusion of simulation and imitation – although not totally. That a simulation is a 'counterfeit' (definition 1) suggests it may be smuggled in, unnoticed, to stand in for 'the real thing'. That it is 'synthetic', by contrast, suggests only that it has been manufactured. Just as it would be false to say that any manufactured product, by virtue of being manufactured, counterfeits a reality on which it is based (what does a car counterfeit?), so it would be equally false to argue that all simulations 'counterfeit' a reality. In short, if manufacturing goods adds additional elements to reality, so too, surely, should manufacturing simulations.

Definition 2 repeats this error: an artificial world does not necessarily approximate the real one. Consider, for example, the work of exobiologists – biologists who research the possible forms life on other worlds might take. An exobiologist, for instance, might simulate a world with denser gravity than ours; this would entail that, if life evolved on such a world, it would take a different form, with creatures perhaps more horizontally than vertically based, replacing legs with other means of locomotion, and so forth. Undoubtedly such a world is simulated, but it precisely does not approximate ours. In a more familiar sense, this is what we encounter in videogame-worlds, and the rules governing the motion of characters, the impact and consequence of collisions, and so on. In particular, the issue of 'virtual gravity' (generally weaker than the terrestrial variety with which we are familiar) demonstrates the extent to which such simulations owe their contribution to reality to their differences from, rather than approximations of, our own. We will see in section 5.3 that historians and theorists of automata quite specifically differentiate between automata proper and simulacra – in brief, not all automata are simulacra, insofar as they do not necessarily approximate the human form. These examples alone ought to make us wary of suggesting any equivalence between imitation and simulation.

For the task in hand – the identification of analytical concepts and approaches in the study of computer simulation in the context of a general account of new media studies – Prensky's third definition – simulations as material (and mathematical) technologies and media is very useful. It recalls, for instance, both the temporal aspects of simulation (see below) and the Baudrillardian sense, reflecting on the notion of simulation as productive of reality, neither a 'counterfeit' nor necessarily an approximation of a real world beyond them. This is helpful in that such an account makes more obvious sense of those simulations used in many different contexts, for example by economists to predict market fluctuations, and by geographers to analyse demographic change. Unlike the postmodernist use of the term, this gain in applicability does not cost a loss of specificity. The processes of simulation are also foregrounded in gaming, since all digital games are simulations to some extent. Prensky cites Will Wright (the creator of *SimCity*, *The Sims*, and numerous other simulation games) discussing simulations as models quite different from, for example, balsa wood models. The simulation is temporal, modelling processes such as decay, growth, population shifts, not physical structures. The model, we might say in more familiar terms, really does precede the reality it produces (see again section 2.6.3., below).

3. simulation games

In recent years, game studies has adopted analytical, formal and descriptive approaches to the specificity of computer simulation software. 'Simulation' here refers to the particular character and operations of games, particularly computer and videogames, as processual, algorithmic media. Distinctions are made between simulation as a media form that models dynamic, spatio-temporal and complex relationships and systems (for example, of urban development and economics in *SimCity*) and the narrative or representational basis of other, longer-established, media (literature, film, television, etc.).

Note: in computer game culture the term 'simulation games' refers to a specific genre in which the modelling of a dynamic system (such as a city in *SimCity* or a household in *The Sims*) provides the main motive of the game as structure and gameplay experience.

unlike traditional media, video games are not just based on representation but on an alternative semiotical structure known as simulation. Even if simulations and narrative do share some common elements – character, settings, events – their mechanics are essentially different. More importantly, they also offer distinct rhetorical possibilities (Frasca, 2003: 222).

Gonzalo Frasca's simulations are media objects that model complex systems. They are not limited to computer media (predigital machines and toys can simulate) but come into their own with the processing affordances of computing. This emphasis on the simulational character of computer and videogames has proven to be productive in the task of establishing the distinctiveness of the videogame as a hybrid cultural form, emphasizing features, structures and operations inherited from both its computer science

and board game forebears over other sides of its family – notably its media ancestors (literature, cinema, television).

What distinguishes the computer simulation is precisely what video games remind us: it is a dynamic real time experience of intervening with sets of algorithms that model any environment or process (not just imitating existing ones), - playing with parameters and variables.

So simulation in a videogame could be analysed thus:

1. productive of reality – So in *Doom*, *Tomb Raider*, or *Grand Theft Auto* the game is representational on one level – tunnels, city streets, human figures, monsters and vehicles – part of the universe of popular media culture, but the experience of playing the game is one of interacting with a profoundly different kind of environment. These maps are not maps of any territory, but interfaces to a database and the algorithms of the computer simulation;
2. this ‘reality’ then is mathematically structured and determined. As Prensky points out, *The Sims* adds a fun interface to a cultural form rooted in science and the mathematical and traditionally presented only as numbers on the screen.

Games such as *SimCity* incorporate a variety of ways of modeling dynamic systems – including linear equations (e.g. spreadsheets), differential equations (system dynamic – based simulations) and cellular automata – where the behaviours of certain objects come from their own properties and rules for how those properties interacted with neighbors (Prensky 2001: ??).

Note: Prensky makes a clear connection here between the playful simulation of popular videogames and the computer science of Artificial Life. For more on ALife and cellular automata see 5.3.5).

3. as we have seen, exobiology and some videogames clearly indicate that simulations can function without simulating or representing already existing phenomena and systems. The mimetic elements of *Tetris*, *Minesweeper* and *Donkey Kong* are residual at best, yet each of these games is a dynamic simulated world with its own spatial and temporal dimensions and dynamic relationships of virtual forces and effects. They simulate only themselves.
4. thinking of videogames as simulations also returns us to the assertion that the player’s experience of cyberspace is one not only of exploration but of realising or bringing the gameworld into being in a semiotic and cybernetic circuit:

The distinguishing quality of the virtual world is that the system lets the participant observer play an active role, where he or she can test the system and discover the rules and structural qualities in the process
Espen Aarseth (2001: 229)

Margin note: for the cybernetic nature of videogame play see 4.5.6 and 5.4.4.

Summary

Ostensibly, these three positions have quite different objects of concern: the computer simulation of interest to game studies is not postmodernist simulation. Game studies is more modest – keen to establish the difference of games and simulations from narrative or representational media forms, rather than claiming simulation as an overarching model of contemporary culture. To analyse a videogame as a computer simulation is to understand it as an instance in everyday life, rather than as an all-encompassing hyperreality. Moreover, the screen metaphors of the postmodernist simulation carry little sense of the dynamic and procedural characteristics of computer simulation. Studied as such, computer simulations can be seen not only as the visual presentation of artificial realities (as, again, the screens of hyperreality suggest) but the generation of dynamic systems and economies, often with (and always in videogames) an assumption of interactive engagement written into the models and processes.

The three broad concepts of simulation outlined above overlap however. Postmodernist simulation, though formulated before the rise of computer media to their current predominance and predicated on – crudely speaking – the electronic media and consumer culture, is now widely applied to the Internet, Virtual Reality and other new media forms. Discussions of the nature of computer simulations often also entail a consideration of the relationships (or lack of) between the computer simulation and the real world. Both make a distinction between ‘simulation’ (where a ‘reality’ is experienced that does not correspond to any actually existing thing), and ‘representation’ (or ‘mimesis’, the attempt at an accurate imitation or representation of some real thing that lies outside of the image or picture) – though often with very different implications and intentions.

To sum up: within all of these approaches to simulation there is a tendency to miss a key point: simulations are real, they exist, and are experienced in, the real world which they augment. Since, as *Donkey Kong* and the alien creatures of exobiology teach us, not all simulations are imitations, it becomes much easier to see simulations as things in their own right, rather than as mere representations of other (“realer”) things.

Baudrillard, Jean (1994) *Simulacra and Simulation*, trans. Sheila Faria Glaser, Ann Arbor: Michigan.

Baudrillard, Jean (1996a) *Cool Memories II*, trans. Chris Turner, Cambridge: Polity.

-- (1996b) *The Perfect Crime*, trans. Chris Turner, London: Verso.

Cubitt, Sean (2001) *Simulation and Social Theory*, London: Sage.

Darley, Andrew (2000) *Digital Visual Culture: surface play and spectacle in new media genres*, London: Routledge.

Debord, Guy (1967) *The Society of the Spectacle*, Detroit: Red and Black.

Eco, Umberto (1987) *Travels in Hyperreality*, London: Pan.

Frasca, Gonzalo (2003) 'Simulation Versus Narrative: An Introduction to Ludology', in Mark J.P. Wolf and Bernard Perron (eds) *The Video Game Theory Reader*, London: Routledge, pp. 221–35.

Giddings, Seth (2007) Dionysiac machines: videogames and the triumph of the simulacra, *Convergence*, 12(4), 419-43

Jameson, Fredric (1991) *Postmodernism, or the cultural logic of late capitalism*, London: Verso.

Prensky, Marc (2001) *Digital Games Based Learning*, New York: McGraw-Hill

Woolley, Benjamin (1992) *Virtual Worlds: a journey in hype and hyperreality*, Oxford: Blackwell.