Lessons on Architectural Simulation taken from Drawing and Gaming

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The computer game *The Sims* is the most popular computer game in the history of the genre. This paper examines what it is about this game that makes it so popular and asks how this might be relevant as an example of simulation technology. Furthermore it is argued that this the game manipulates the ‘abstraction’ of the game play through the apparent crudity of the graphic interface. It is suggested that a ‘gap’, or distancing, from an image has always been a component of non-digital architectural drawing. Typically architects have relied on a pictorial abstraction between a drawing of a building and an actually building, and if seen as expressions of ‘building simulation’ offer examples of the limitations in pure mathematical simulation.

Conference Theme: Digital Architecture
Keywords: environmental simulation, computer gaming, architectural drawing

INTRODUCTION

"All science should be scholarly, but not all scholarship can be rigorously scientific... The terrae incognitae of the periphery contain fertile ground awaiting cultivation with the tools and in the spirit of the humanities."

*John Kirtland Wright*

This is not a scientific paper yet we hope it holds some pertinence to scientific research in the field of building performance simulation. It is our contention that while the computer encourages degrees of mathematical accuracy that could only be imagined just a few years ago, they also tend toward the creation of rational environments somewhat removed from the irrational and arbitrary ways human beings actually occupy buildings. This is not a criticism, simply an observation. With reference to the computer game *The Sims*, and the drawings of architect Aldo Rossi, we hope to show that sometimes an important component in architectural simulation is the acknowledgement that human activity does not always follow scientific reason. Following John Kirkland Wright observation, we feel it is the unscientific nature of this paper that makes it a useful contribution to simulation concerned with improving the built environment.

*The Sims – People Simulator*

*The Sims* is the most successful title in the short history of PC gaming but its appeal is not immediately apparent, at least not to the authors. It lacks the adrenalin driven game-play of first person ‘shooters’, or the labyrinthine strategising of tactical games. There is no narrative structure to drive the challenge, and nor is there any challenging problem solving. On the technical side it is graphically friendly without being exciting, and the sound-scape consists of electronic elevator music and the incomprehensible mumblings of the characters.

As a game *The Sims* consists of a digitally simulated domestic environment (hence the games name) in which a player directs the behaviour of a ‘family’ of characters. There is no obvious end goal for the game other than keeping the characters alive to accumulate material wealth and social relationships.

The games designer, Will Wright - an architecture school drop-out - has described developing the game as a dollhouses simulation in which a player outfitted a model house in order to influence the occupants positively. The point was to simulate home ‘ownership’ in the sense that a player would take individual responsibility for the decoration and furnishing of a digitally constructed home.

Originally called *Home Tactics: The Experimental Domestic Simulator*, (Keighley) the prototype game was literally a dollhouse simulation in which a player outfitted a model house in order to influence the occupants positively. The point was to simulate home ‘ownership’ in the sense that a player would take individual responsibility for the decoration and furnishing of a digitally constructed home.

Unfortunately executive reactions to the prototype of *Home Tactics* were negative. As Wright himself acknowledged, the idea of a dolls house for adults just does not seem marketable (Wright, 2000).

The breakthrough in the games evolution occurred when Wright realised that the attraction of *The Sims* as a simulation programme lay not in manipulating the buildings, but the people. In 1997 *Home Tactics* was picked up again (following the success of another Wright simulation game, *SimCity*) and was released in January 2000 as *The Sims* (Keighley).
Creating an Architectural Environment Digitally

Exactly what makes *The Sims* so popular is not immediately obvious. Our experience of *The Sims* is somewhat less than glorious. With the authors first ‘family’ attempts to speed things up by leaving the game running unattended lead to all the furniture repossessed and the characters dead from starvation. The next attempt was worse. A failure to undertake cooking lessons lead a stove fire which spread through kitchen and burnt to death the characters sitting at the dining table. With practice the authors have learnt how to keep characters alive and now they only suffer the usual household problems of poor upkeep, little maintenance, no money, and even less sleep. So in this sense the game does now successfully simulate real-life and perhaps this is the point of *The Sims*, to approximate reality closely enough to make the game seem empowering?

One clue is in the games influences. When developing the *The Sims* Wright turned to architect and educator Christopher Alexander. For Wright, Alexander’s research on environmental behaviourism and architecture provided a framework to understand how a simulation program might become an entertaining interactive activity. As he wrote:

“I was really interested in how a game could possibly show how the design of something could impact the way people behave and live within it. I think that’s a deeper lesson that I would hope that a lot of people take away from The Sims. Even so, it’s not necessarily that a building that would work well in The Sims would work well in real life, but just the fact that there is a real link there between behaviour and environment.” (Wright in Foreman, 2001: npn)

Wright’s distinction - that a successful building in *The Sims* might not be as successful in ‘real-life’ - highlights certain representational limitations in this programme. To attempt to render a building in *The Sims* would inevitably fail as the software is not designed to accommodate the ‘realities’ of the concrete world. Elements such as natural and artificial lighting, thermal and acoustical properties, material and constructional restrictions; all are subordinated to the efficacy of the game play. The formal palette is too limited to provide expressive three dimensional forms, and even the most imaginative buildings in *The Sims* are clumsy boxes utilising faux columns and peaked roofs. Indeed, even the social interactions needed to be made palatable for children, so much so that babies are made by kissing passionately (Wright, 2000).

At the same time *The Sims* offers something not found in professional simulation software: independent people. Or at least artificial characters that behave in a manner meant to reproduce the complex predictability of human behaviour. The depth or correctness of the behavioural patterns in *The Sims* is probably not grand. In practice characters have a limit AI capacity built around eight basic ‘needs’: hunger, hygiene, bladder, comfort, energy, social, fun, and room (Foreman, 2001). Each category is keep in balance by being provided for in a harmonious way, and while it is a simplistic formula variations between characters coupled with randomized events and interactions with other characters ensures that complex variety occurs and careful pastoral care is required. This duty of care is the key to the addictive appeal of *The Sims*. In the context of computer gaming it is unusual in that it does not simulate a physical world but instead it attempts to replicate the behaviour of humans, and with that it moves into moral and ethical dimensions.

However, as Gonzalo Frasca observes, even then the Sims is less about human relations than ‘life administration’ (Frasca, 2001). The games designer admits that it can start to feel like juggling:

“You start to realise that you basically don’t have enough time in your day to do everything that you want to do. And you’re rushing form this to that to this, and then you’re able to make these time decisions. . . . then all of a sudden, the whole pile comes crashing down.” (Cambron, 2002).

Little wonder then that Frasca stopped playing the game when she realised she was becoming a virtual housemaid even as her actual home fell into disorder. Kathleen McGowan is more forthright in her criticism; the point of the Sims, she says, is to be the boss of the banal, with the quickest route to happiness in the game being the acquisition of ‘stuff’ (McGowan, 2003).

The rampant consumerism that motivates, rewards, and defines the games developments is the most alarming ideological aspect of *The Sims*. As Gonzalo Frasca sees it, the game promotes the accumulation of material belongings in order to facilitate all other aspects of the reward scheme (Frasca, 2001). As an example, owning an entertainment centre encourages other characters to visit and therefore benefits ones social quotient. To assume a Buddhist stance on material processions inevitably results in some social or physical catastrophe.

In the increased time zones of *The Sims* we can test the that maintaining a balanced lifestyle, advancing careers, nurturing families, investing in friends, and developing extracurricular interests real does bring a better quality of life, or not. In this regard the game is a simulation of everyday life as defined by John Fiske. It is concerned with the culture of what is concrete, contextualized, and lived, and it is therefore difficult to investigate academically (Fiske, 1992: 154-5).

The ‘People’ Effect in Action

On example from our failed attempts to master *The Sims* might help illustrate this point. The authors are fond - some say desperate - fans of the fine addiction called coffee. So when we discovered that the characters in *The Sims* could avoid sleep by consuming coffee we bought firstly a drip coffee machine, and then a home espresso machine, to increase productivity. Sadly we projected our values into the game as though it was a simulation we had a personal stack in, and productivity actually dropped as coffee dependency replaced a balanced management. The temptation to do this in *The Sims* is compelling, and it is not helped by the fact that one can achieve so much so much quicker
than in ones own ‘reality’. Indeed, the coffee machine in *The Sims* looked better than the one in our staff room. Inevitable the cross-identification of material desires makes *The Sims* attractive as an alternate world works the same but which offers everything so much quicker.

What makes this work in *The Sims* is the graphics. Although it is a game of systems and interactions rather than images, the graphics are integral to establishing a positive feedback loop form playing. Furniture, plants, pets, carpet and wallpaper, everything is selected from a pixelated catalogue, and there is about this a naïve charm that harks back nostalgically to first generation PC games but also to first person experiences.

From Dolls House to Computer Simulation

This has much to do with the processes of miniaturisation that *The Sims* utilises. In this sense it is much more like a dolls-house than Will Wright might have imagined. Susan Stewart has observed that the dolls-house was originally an adult amusement, and its two dominant motifs have always been wealth and nostalgia (Stewart, 1993:61).

Traditionally the dolls-house demonstrated both though its scale and quality of its execution. *The Sims* takes this display a step further and allows players to accumulate surplus wealth but the principle is the same. Stewart continues that the dolls-house works as a world of arrested time that ‘stops’ the outside world; a dolls-house is not a simulation but a fantasy with the difference being the way in which the fantasy abandons the world it is approximating. *The Sims* differs from a dolls-house in this regard as the artificial intelligence that controls the behaviour of characters never allow a full control, as the stove fire that killed my last family illustrated so well. However Stewart’s main point is still true, the miniaturised world of *The Sims* is nostalgic in so far as it attempts to simulate an ordered world of open possibilities that we generally associate to childhood (Stewart, 1993:145).

The key to *The Sims* success in this regard may not be the games visual accuracy, but perversely its pictorial abstraction. As Wright has discussed it, a highly detailed game field is not necessarily more interesting, it just requires more processing power (Cambron, 2002). In Wright’s view what is important is the consistency of abstraction so that no single part appears more concrete than any other: “In fact you want the entire world and the entire representation to be abstracted at almost the same level. At which point it holds together very nicely.” (Wright in Cambron, 2002:npp)

The implication of this abstraction is a visual ‘chunkiness’ of the user interface. This is very true of the architectural information. The houses are of regular rectangular rooms snapped to a one metre grid and with a limited palette of textures and patterns, and while an infinite number of combinations can be compiled none of the results is ever very different from any other. The effect, according to Wright, is to require the user to ‘fill in the blanks’ from their own imagination much in the manner that child fleshes out the abstraction of a dolls house into a miniature world (Wright in Cambron, 2002:npp).

Abstraction then is not a failure of the simulation to provide comprehensive information but rather it is an opportunity for the user to input information of their making. That this requires a creative imaginative act - the ‘gap’ provided by abstraction - should not detract from the fact that input is still a data source and is therefore reinforcing the simulation processes. In principle someone playing *The Sims* is engaged in a research experiment where they manipulate a defined set of criteria in a ‘what if’ cycle, although it is not always clear whether reflective parameters exist to quantify the result. Consequently the success, or otherwise, of this testing is harder to define. As a ‘game’ we might expect that *The Sims* has a target, goal, or standard that needs to be achieved in order for success or failure to be gauged, but in practice *The Sims* is a simulation of a reality that we wish to exist rather than one that one which does exist.

Simulating the ‘Gaps’

We feel the success of *The Sims* owes much to how we see the everyday aspects of our lives. In a capitalist society it is inevitable that the visual domain be dominated by consumerist paraphernalia, and it is a fact of *The Sims* that the obvious attributes of the houses dominant. For example, characters do not have the option to meditate when agitated, instead they watch television and gain more relaxation rewards from a plasma screen television at that. In *The Sims* even do nothing needs to be conveyed pictorially.

At the same time pictures are also a useful tool for unlocking aspects of our unconscious. As architectural theorist Robin Evans has explained it, our understanding of the world is dominated by vision yet these images in which we locate ourselves are never fixed but are themselves abstractions of a reality that lies beyond ourselves (Evans, 1995). This suggests that our perceptions of ‘reality’ are already a type of simulation in which we can only occupy the gaps. Evans continues:

“The magic in pictures is often explained as due to their transmission of feeling or to their mimetic properties, but it is more likely that their inexhaustible mystery arises from the fact that they externalize an aspect of perception, or that they appear to externalize it, as if one were seeing the thought itself, which does not happen with words or numbers in the same way.” (Evans, 1995:397)

This, we suggest, is how *The Sims* works – it presents a model of desirable presentation that a player feels is their own. The accuracy of this model is irrelevant as it is the visual impact which is important. It is a simulation of a desired space rather than an actual space.
Furthermore, we suggest that traditional architectural drawing has long attempted to simulate a particular type of space. This space - often oversimplified as that of 'representation' – is a system of projection where architectural drawing stands for a built work as a visual metaphor based in codes of convention and regulation. In this view the drawing attempts to maintain a condition, which Michel Foucault has defined as utopian; that is, the architectural drawing is the site of an architecture with no real place of its own (Foucault, 1986). The architectural drawing presents an ungrounded architecture, firstly in terms of its representational quality, but more importantly, by the way in which the architectural project is necessarily organized by temporality – much like the dolls-house - to displace the intention of representation from the drawing action onto the responsibility of drawing to represent a built work. The architectural drawing can be seen to encompass all those works where the integrity of architectural representation is maintained through its intention, rather than in spite of it, and this can be found in arguments that maintain the neutrality of the drawing.

The ‘Gaps’ in Traditional Architectural Drawing

The drawings of Aldo Rossi are an extreme example of this phenomenon. Perhaps more so than any other major architect of the last fifty years, Rossi’s widely publicised drawings are a personal record of architectural inquiry. With Rossi, the drawing is not only concerned with the hand, it is the presence of the hand - its tactility, speed, and momentum – that invests in his work a vitality and immediacy that have become the characteristics of his drawing style. We might say that for Rossi architecture and drawing, and the drawing of architecture, are one and the same.

Discussing Rossi, Rafael Moneo argues the case that discussions of architecture are always discussions of architectural representation. While buildings cannot be separated from an act of building, architecture can, and is, treated as parallel to an act of architecture (Moneo, 1985). In Moneo’s view Rossi’s drawings act to provide an anticipation of his buildings that is not simply a visual metaphor but a sophisticated visual simulation where the spirit of the building is communicated.

“Thus the operation of building serves, if we reserve the terms, to materialize the drawing, to ‘make it real.’” (Moneo, 1985:314)

Rossi’s drawings frequently challenge the boundaries of architecture’s representational objectivity by including subject matter that evokes a much wider spectrum of pictorial experience.

In his 1993 image, Il natale di Diana, a conjunction of elements collide in a domestic scene: hand, coffee pot, glasses, dog, door, picture. Yet these images remain related to architecture, or at least the problem of architecture. Against the authority of codified architectural representation, it would be easy to dismiss the inclusion of common domestic artefacts as at best marginal. Yet to do so with Aldo Rossi’s drawings would be to jettison much of the richness of his architectural vision. Within the institutional space of the compositional frame all material is given some equality through its inclusion. To differentiate between classes of information on the premise of representational is to forcibly narrow the parameters of Rossi’s architectural s, and therefore also the possibility of a non-pictorial simulation. Referring again to Stewart, she has identified a tendency to cast the marginal from the centre - the place of authenticity, sincerity, and consensus - to the abstract. These are the signs of an architecture which has been made peripheral through the centralised dominance of familiar convention. Against the hegemonic authority of plan, section, elevation, etc., other forms of notation, whether biographic, narrative, analogous, or metaphoric, become secondary and marginal (Stewart, 1993:62). ‘Second-hand’ in Stewart’s wording, but we draw a parallel between this and Will Wright’s reference to the ‘gap’ of abstraction. In both cases we are discussing an interstitial space between simulation and representation that allows a player, or drawer, to insert them into the model under discussion.

The authority of traditional architectural drawing, based in orthographic projection, is structured around limits defined by Cartesian geometry. Principally, architectural drawing is not permitted to discuss anything outside of rational objectivity and seeks to exclude the subjective – the gaps and the second-hand.

Yet the fundamental character of Rossi’s Il natale di Diana is wholly subjective. If there is architecture in this drawing it is one made implicit rather than explicit. Here the rational tangibility of architectural drawing is suppressed in favour of an abstracted and calculated effect of interiorised subjectivity that challenges traditional drawing practices.

As a counter-site, Rossi’s drawings no longer seek to establish their authority in a realm of constructed authority beyond the representational domain, but rather posit the drawing as a speculative realm with its own spatial parameters.

For this reason Rossi adopts strategies of representation normally excluded by a conventional architectural drawing program. The presence of self-referential material, the allegorical, narrative, biographical, and scalar juxtaposition, all seek to reposition the dialogue of architectural drawing away from a projected and objective external world, and onto a subjectified one internally organized. The purpose of this shift is to re-authorize architectural drawing as a conceptual spatial site rather than simply a representational spatial one. In this way Rossi’s drawings become real sites of architectural speculation, which construct their own simulated space of architecture.

But rather than simply undermine the importance of drawing as a representational realm, these ruptures reinforce the power of drawing to operate as a spatial simulation in its own right, one able to change and evolve and consequently advance the practice of built form rather than be subjugated to traditional representational authority.
And so often the point of this is to remind us that while architecture may be conceived of remotely through the objective machinery of computers and drawing boards it nonetheless is defined by its servitude to the human frame and all its fragilities, and the dolls-house is the perfect capsule to present this reminder.

**Visual versus Tactile Simulation Phenomena**

*Interno con il Teatro del mondo* is an image of Rossi’s where the simulated domesticity of the dolls-house is so apparent. A model of classical architecture is presented on a table alongside items of domestic consumption – glasses, models, pictures, etc. It is an image not held in a pictorial relationship but an experiential one. These objects are not to be understood as purely visual phenomena but as a set of experiences defined by tactility.

This tactility parallels the tactile imperative found in traditional architectural drawing in the form of the translation to building. For the modern architect the act of constructing on the drawing board is an abstract proxy of the direction given by a master mason during the guild tradition of building construction (Fawzy, 1991). In the Medieval practice the master mason directed the construction of a building with a ‘hands on’ direction (Harvey, 1971). By comparison the architect who draws touches only the page and the pencil, and it is these that in turn ‘touch’ the direction of construction. Rossi references the distance of touch throughout his drawings by the inclusion of objects that are touched compulsively. He alludes to the fact that this might be the case in the foreground imagery of *Interno con il Teatro del mondo*, where the cigarettes and drinking glass refer to activities not only of touch but also of smell and taste, addiction and destruction. To this end the parchment-like quality of the tabletop is evocative of a skin onto which these experiential references are incised. *Interno con il Teatro del mondo* is not a painting but an architectural drawing that challenges the ability of any architectural drawing to convey the complexities of architectural experience by emphasising the difference between visual and tactile phenomena. Thus the tabletop, with its whitened palimpsest surface, shifts between readings as dirty tablecloth and whitewashed wall, and brings to mind Alvar Aalto’s term for the first sketch – “the white table.” (Alter in Hewitt, 1985: 3). It is a simulation of a state of architectural domesticity.

In *The Fork of Man* (1980) Rossi reiterates this by transposing an image of a coffeepot with more conventional architecturally represented forms to produce two distinctly different solutions to the problem of the scalar juxtaposition of a domestic object and a tectonic form (Rossi, 1979). Here architecture has been brought forward to the coffeepot. The suggestion of a horizon line in the background is countered by the foreground presence of a cup and fork so that the plane upon which the comparison is taking place is not tectonic but domestic - the surface of a table. The comparison is possible through the reduction from a drawing to a drawing of a model where the coffeepot should be understood as full-size and ‘proper’. Against this, Rossi alters his hatching style to provide a manipulative reference between the coffeepot itself to compositionally enhance the typological relationship between the pot and the model. Architecture has become domesticated, and is therefore intimately involved with the passage of the hand (Bunschoten, 1992).

With Rossi, as with *The Sims*, the coffee pot is emblematic of life that is regulated and recorded by consumption to be sure, but also social ritual and celebration and the relationship between everyday artefacts and Platonic forms. As Rossi wrote:

“Today I still like to draw these large coffeepots, which I liken to brick walls, and which I think of as structures that can be entered.” (Rossi, 1981:2)

Rossi associates the humble coffeeepot with that genre of simulation devices whose functionalism precludes personalization: the apparatus, the instrument, the tool. Yet we should be careful not to dismiss a coffeepot as merely utilitarian any more than we can accept it as purely spatial (Lehman, 1999:169). Coffee, after all, is not essential to cultured soc iety (much like a rchitecture itself). By using drawing to blur representational scalar distinctions, Rossi liberates typological expression in a unique and idiosyncratic way.

**CONCLUSION**

It may seem a small thing that *The Sims* and Aldo Rossi have coffee in common, but to the authors the lesson to be taken from each is the importance of acknowledging the limitations, expectations and assumptions behind simulation models. If we are not prepared to acknowledge that the second-hand or the gaps are important places of abstraction then we risk relying on simulations that are exceedingly accurate models of states of living which we, as human beings and not machines, cannot maintain.

**REFERENCES**


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