User experience in (virtual) worlds

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Summary
A lot of user experience research use living lab settings to test products and services in an almost natural user context. However, for several reasons, not all companies have the possibility to create such natural user contexts. Most of the time, this has to do with a lack of budget and the fact that some natural test settings simply cannot be created. This is why companies often test their products or services in environments that do not equal the ideal testing environment. For all these situations, virtual test settings (near living labs) become a relevant alternative. After all, now that new interaction and visualization technologies allow us to build virtual settings that *simulate* real environments in an increasingly realistic and refined way, new possibilities occur.

Simulations
In 1981, the French philosopher Jean Baudrillard wrote one of his most influential works: *Simulacra and Simulation*. This book (or textual simulation) was, almost twenty years later, perhaps the most important source for the Wachowsky brothers when they created *The Matrix*. Both book (Simulacra and Simulation) and film (The Matrix) deal with simulations that look so real that they actually mislead the people who deal with it.

Of course the level of sophistication and the immersive (immediate) qualities of the simulation that is presented in The Matrix is not available to us yet. The Matrix in that respect creates an immediacy that Bolter and Grusin would mark as a utopian state that "… is not available to us today, when media are as much a part of our world as any other natural and technical object." (1999: 234) The last decade, however, game technology has advanced rapidly and has become easily available, which means that good quality simulation settings (virtual environments/contexts) are accessible on a broader scale. The promise of these developmwents has certainly not gone unnoticed. Many companies are curious to learn whether new game and interaction techniques would already allow a *simulation* of a natural user context.

A key feature of digital simulations is that it can give the user the feeling 'as if he is really there'. Such strategies, that are familiar under the label immersion (Murray, 1997), go beyond the level of representation. Simulations do not only show a 'world' to their users; they provide an environment in which the objects also behave believably. Or, as Gonzalo Frasca states:

> "[…] "to simulate is to model a (source) system through a different system which maintains to somebody some of the behaviors of the original system". The key term here is "behavior". Simulation does not simply retain the – generally audiovisual – characteristics of the object but it also includes a model of its behaviors. This model reacts to certain stimuli (input data, pushing buttons, joystick movements), according to a set of conditions." (Frasca, 2003)

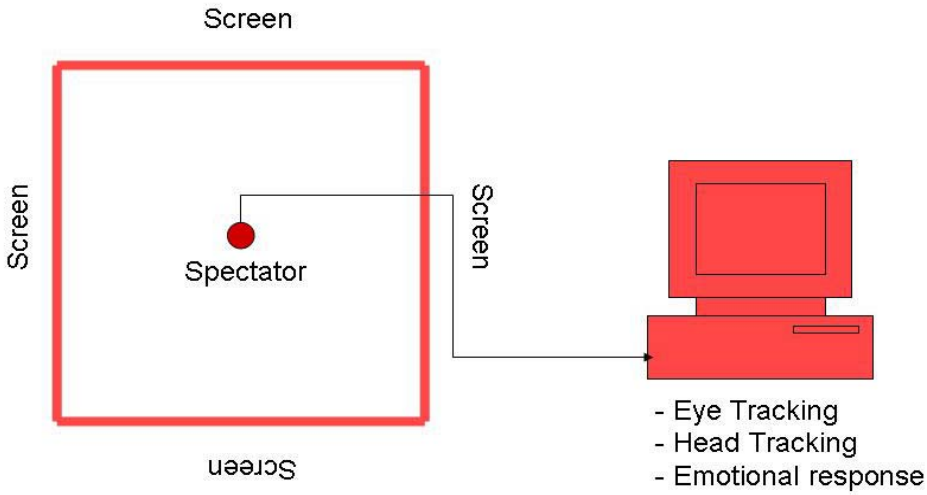
Perhaps one of the most underestimated aspects of simulations is how they can have a rather fundamental impact on academic disciplines: in order to function well, simulations need to transform theoretical insights into performative procedures. In a race simulation, for instance, physical insights in gravity, g-forces, and the resistance of 'rubber' tires on 'asphalt', are transformed into the programmed (algorithmic) and performative rules that directly determine the realistic behavior of the 'race car'. The point is that those physical insights do no longer exist for their own sake; they have become crucial aspects of a media product that aims to immerse its players.

Immersion

Ideally, digital simulations make you forget that you are dealing with a *mediated* environment. Instead, the aim is to provide consumers with intuitive and immersive settings with such intensity that one in fact forgets one is in the presence of media. (Bolter & Grusin, 1999) In such settings, immersion refers to the capacity of media to create products that are experienced as a virtual reality "because our brains are programmed to tune into stories with an intensity that can obliterate the world around us." (Murray, 1997: 98) There is, however, also a more literal aspect of immersion. Immersion can also refer to the overwhelming presence of media in real life. With millions of screens in public space, with PDA's in our pockets, and with an increasing set of tags to monitor, guide and personalize our (consumption) behavior, we are almost literally immersed in media. The two dimensions of immersion – both physical and mental – generate overwhelming possibilities for the engagement of audiences. Whether intuitive and immediate as in augmented reality, or clearly (in a hyper-mediate state) presented in colorful billboards and narrow-cast screens, digital media can take any shape anywhere and appeal to anyone. Inside and outside the digital platform, orchestrated around fictional (avatar) or real (consumer) characters, media build their messages increasingly *around* consumers, waiting to systematically reveal their messages through users' navigation.

Media Lab

Based on the considerations that media increasingly and systematically reveal content *around* consumers, researchers at the Academy for Digital Entertainment in Breda have built a media lab. By orchestrating an interactive media environment around a user, the lab enables us to position a test-person in the middle of any kind of environment; virtual, physical, realistic or nonrepresentational. In that respect, the lab embodies the first-person position of games. However, in the advanced setting of the media lab, in which four screens surround a test-person, the first person's perspective, normally incarnated in an avatar, comes even closer to the first-person perspective of the player himself.



The lab is a controlled media space in which we try to create an optimum balance between technology, immersion (experience) and measurements. It enables us to perform several important tasks. First, the combination of head tracking technology,[1] interactive technologies (Kinect), together with four screens that surround the test-person in the installation, enables us to evoke a strong sense of immersion. Second, by equipping a test-person with an eye-tracker and a biometrical shirt that measures heart-rate, skin conduction, etc., we can precisely measure user response.[2] Third, by positioning four screens around a test-person, we can create any kind of immersive environment, from game environments to film settings, realistic environments and even environments that are planned for development in the outside world.[3]Fourth, because the lab is a controlled media environment, we can embed and manipulate all kinds of media stimuli. This means, for instance, that we can not only measure how in-game advertisement is perceived, we can also adjust the advertisements in games, so that an optimum balance

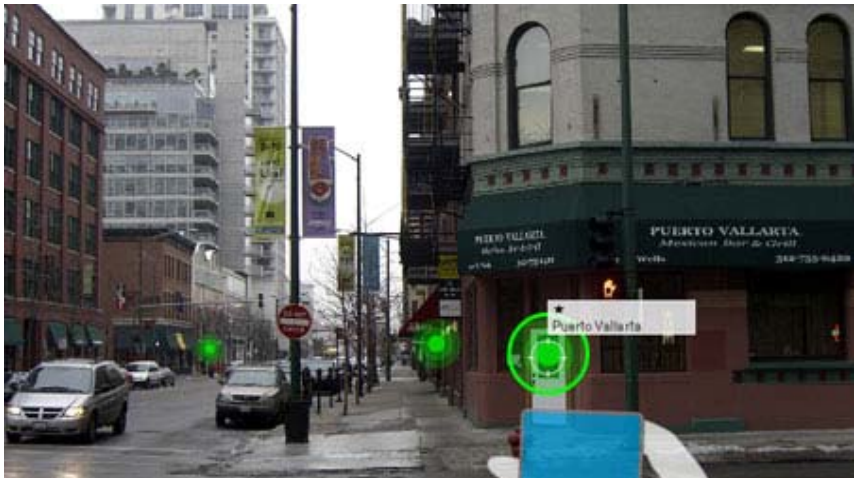
[1] For an instructive demo of head tracking, see video of Johnny Lee on You Tube: http://www.youtube.com/watch?v=Jd3-eiid-Uw

[2] Although there are more technologically advanced caves (see for example SARA Institute in Amsterdam), the problem with these caves is that they often use 3D projection technologies. We have chosen not to use these technologies for the simple reason that in those advanced 3D caves it is very complicated to obtain 'hard' data. Head tracking technology, because it tracks the position of the head in relation to the screen, does enable us to obtain 'hard' data.

[3] While building the media lab, several real estate developers already showed interest. Their interest lies in visualizing future buildings or city blocks, and in testing how users will experience those environments.

can be found between game functionality, contact time, and communicative effect of a branded product. Moreover, in a similar way, the lab enables us to measure the effects of strategies such as narrow-casting in real environments, visualize what next-generation supermarkets[4] could look like, etc.

An interesting case was presented by Zachary Jean Paradis[5] in 2006 who created a future scenario for Motorola's WNDR: Moto WNDR was based on three premises.[6] The premises are: One, in the next ten years, a device the size of a mobile phone or I-pod will be as powerful as a laptop; two, imaging will be such that high resolution projection will be available portably, with low power, directly on the retina; and three, ubiquitous high-bandwidth connectivity will be achieved in developed countries through WIMAX or mobile networks. In this future scenario a WNDR user walks in a city, with cues projected directly on his retina. This vision of the future anticipates the overwhelming impact of new generation media.



http://creativeslant.com/projects.html

It is remarkable to see that Paradis's premises in 2006 are almost a reality now. With respect to 2006, PDA's are almost as fast as a laptop, bandwidth is indeed almost ubiquitous, and currently the University of Washington is developing a contact lens that allows projections directly on the eye. Yet, the scenario as such is still hard to orchestrate in vitro since these types of refined projections would be complex to orchestrate. A green dot projected into the retina would need to register precisely with the structures (restaurants in this case) of interest in the environment. An interplay of variables (eye-projection, eye-objects, projection-objects, object-user's body) would need to be executed at a level of precision not yet supported by the current state of technology (GPS, etc.).

In the settings of the media lab, however, it is possible to simulate and manipulate the media stimuli in this future scenario. For instance, if we film the route of the future

[4] Refer to Saatchi and Saatchi's "Theatre of Dreams".
[5] Zachary Jean Paradis at Institute of Design at IIT (Illinois Institute of Technology).
[6] http://creativeslant.com/projects.html

WNDR user with four cameras, and project those recordings on the four screens while systematically manipulating the design, timing, sounds, intensity, etc. of those stimuli, we would achieve two things. One, we bring this scenario to life in a dynamic, filmic manner and therefore would take a next step in the visualization of, for instance, Moto WNDR. Two, without being dependent on the three anticipated developments, it becomes possible to test how a future WNDR user would respond to these kinds of stimuli. Based on the outcomes of such a test, the design, timing, and amount of stimuli can be adjusted. In manipulating and testing specific media stimuli, while embedding them in virtual as well as physical environments, the media lab enables designers to build up an important data set representing the experience of (future) media products and media spaces.

This brings me to the fifth and final task of the media lab. Because it enables the exploration and orchestration of new media spaces like film, future, fictional, and realistic spaces, it becomes possible to research, prototype and develop new media and entertainment concepts. In the case of trans-media storytelling, trans-media gaming, or alternate reality games, for example, it becomes possible to test how best to orchestrate and time sets of information on several channels (PDA, Narrow Cast screens, etc.).

Transdisciplinary

The lab for simulations and immersive media is the result of a multidisciplinary approach, including technology, user experience studies, economics, industry and media theory. Each field has the potential to bring the media lab to a higher level, contributing to a constant process of remediation. Technology research is being done on advanced rendering and ray-tracing with the aim to create an increasingly realistic and fast interactive 3D experience. Moreover, built on the notion of a controlled space where the projection on screens could be replaced by projection on glasses, new steps in augmented and virtual reality can be taken. From the perspective of user experience studies, a relatively new way of measuring media stimuli is established that opens new possibilities. Keeping track of and anticipating developments in digital media, it is already possible to build a data set of consumer experiences that is increasingly relevant.

In a later phase of development in the media lab, when data have been obtained, marketers can use these insights to develop strategies for the development of a systematic use of multiple channels to engage audiences. Examples include transmedia storytelling and games, crowd sourcing/collaborative creativity,[7] or the effects of product placement in

[7] Although it is a little outside the direct scope of this study, the notion of collaborative creativity is an interesting one, with quite some impact. In his book *We Think*, Charles Leadbeater, for example, looks at the revolution around participatory culture. Beyond distributed creativity, he states, is collaboration - finding ways to coordinate our creative actions so we can participate in new and more complex ways. In an attempt to illustrate his case, Leadbeater chooses the online game I Love Bees. I Love Bees was an alternative reality game built by 42 Entertainment to promote Halo 2. The url of this game appeared in a trailer for the Halo 2 game. When visitors loaded the site, they found what appeared to be a personal blog of someone who loved bees and published recipes to use honey. The recipes had been replaced with GPS coordinates. As 4,000 core players - who called themselves The Beekeepers explored the game, they discovered that the coordinates corresponded to phone boxes around the world. On a specific day, the game engineers started calling these phone boxes and read lines of a drama. The participants, scattered around the world, had to reassemble the drama from the individual lines. Leadbeater's premise is that if you can get people to participate in such a "mindless" game, what could you actually accomplish if you use this collective power for collaboration to social goals? Leadbeater believes that this capacity for collaboration is what lets us build open source software or collective works like Wikipedia.

games and real environments. This will enable market researchers to influence industry partners and concept developers in their search for new means of communication. Concept developers can use media theoretical insights to develop new media and entertainment concepts in which commercial utterances, like product placement, in-game advertisement, etc., are tightly integrated into the final product. All in all, the media lab creates opportunities to develop an increasingly coherent, conceptual view of future media, while simultaneously generating current media developments.

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