Architecture User Interface: Towards a Performative Architecture

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Abstract

This is our primary question: with the inexorable advance of digital technologies along all fronts of human endeavor, *whither architecture*?
We identify *performance* as the primary criterion to revealing a new paradigm for architecture. We do not delimit this definition to the role traditionally played by mechanical and quasi-mechanical technologies in the optimization of environmental control systems and building skins. Nor do we intend to ascribe to performance the interpretation narrowly defined by the emergence of digital gadgetry, primarily optical in methodology, which have nonetheless already radically altered the means by which we negotiate our environment, built and otherwise. The focus of our work, then, is to make the building responsive, to see the performance of the user as an integrated part of the building. A performative architecture will have the user become a central part of the experience in a way that modernist thought, absorbed as it was with function, could embrace in only a desiccated form.

We seek to engage a notion of *performance* that encompasses these definitions in a wider arc: one that seeks an understanding of a broad interface between architecture and technology, and one that attempts to solicit optimal collateral advantage from their respective strengths. From architecture, we affirm *presence* as its quintessential condition, its inalienable concreteness, with the necessarily contingent properties of Benjamin's 'tactile appropriation'. And from technology, we recognize the emergence of models of interactivity and intelligence that allow for not only new possibilities for the inhabitation and manipulation of space, but for indications of a new definition of architecture itself.

Figure 1- Dido and Aeneas- Wireless Camera and screen – technology has to be free to move about on stage just as the actors do.

Architectural User Interface is an operational metaphor to an architecture that might exist if we think of the computer not as a means of representation, but as embedded with-in the media of architecture itself.

Architecture's irreducible presence is its engagement of all our senses. We do not make an argument for a phenomenological approach, but rather recognize the manner in which architecture inevitably engages our senses of sound, tactility and smell as surely as it does our sight. This physical presence and the digital interface are two separate yet complementary aspects of any architectural interface.

Figure 2- Dido and Aeneas- Stage sets are produced as flexible elements for receiving characters and projections in a variety of interfaces.

This proliferation of narrative engagements will lead to an issue of framing. Lacking the clear mechanisms of the literal picture frame and the metaphorical frame of the museum, architects have almost always relied on geometry to call attention to their art; it is "here" and not "there" that you should look. Whether this takes the form a simple and reductive form (Palladio and Eisenman) or a loosely composed grouping set apart from the context (Gehry) or a set of particular and idiosyncratic gestures (Libeskind), we have no problem identifying the limits for our attention. But a truly *performative* architecture must disdain these limits, and accompany the user into overlapping and loosely defined environments.

The primary venue for our research in performative architecture is theatre and opera. These endeavors enjoy a tradition of human interaction that is more focused, time-based and articulated than a general architectural practice.

One advantage of such venues is the existing tradition of *liveness* in theatre, and which define practices that align themselves with our research preoccupations with interactivity. Interactive media can be invented and explored to extend this idea in a controlled setting.

Figure 3- Dido & Aeneas- Wireless Motion Capture suit on actor and "linked" avatar projected in rear.

In theatrical settings, electronic interactivity has both a traditional theatrical meaning and a potential to destabilize and expand the theatre setting. Interactivity defines an essential characteristic of theatrical performance; actors making asides to the audience, entering from the house to the stage, and performances that physically engage the audience demonstrate aspects of the fundamental liveness of theatre. Computers offer a way to extend the reach and character of this interactivity, but ironically only to the extent that they clearly reveal their character a artificial. Computers can force the audience to be aware that it is watching a play, and create critical distance from the action; Bertholt Brecht describes this as *Verfremdungseffekt*, or "estrangement effect". [1]

Figure 4- Dido and Aeneas- Camera "loop" projection. Recombination of "off-the-shelf" components, can create robust altered environments.

Another advantage, particularly in early stages of development, is the fact that the users are more expert at using what are often systems that are initially less than robust. Just as a line in the

score may be awkward and a costume change may come at inconvenient moment, actors are more agile in their adaptation to unconventional participants. They can find ways to avoid a particular position in a motion capture suit the same way they learn not to make a particular move for fear they may tear their costume.

Figure 5- Les Arts Flourisants- "Planevation" projection of plan of view to connect audience with the geometric organization of the performance.

Figure 6- Les Arts Flourisants- "Planevation."

The collaboration of an Opera Workshop and an Architectural Insititution has created laboratory for the development of performative architecture. We have collaborated on performances of *Dido and Aeneas* by Henry Purcell and *Les Arts Flousissants* by Marc-Antoine Charpentier.

During the staging of these operas, we used video and sound capture, motion capture suits, real time compositing and a variety of other technical devices. But our focus was not on the technical aspect, but rather on the transformative aspects of the technology.

Our work had lead us to recognize three realms of presence: the presence of time, the presence of material and the presence of experience.

The presence of time arises from any form of interactivity. As the computer is incorporated into the stage, it connects actions on the stage with reactions from the setting in new, more immediate ways. This has been accomplished using video and audio feedback mechanisms, motion capture suits driving avatars and through motion controlled sound systems. The immediacy of real-time effects heighten the interaction of the actors with their control systems. Timing is everything and the reaction of the entire troupe to a misstep or to a misguided wii-mote, renders their characters more human, despite the very unreal nature of their mistakes.

The presence of material has contrasted the virtual and the tangible aspects of the stage design. Our design have emphasized the physical presence of the stage sets though large scale rolling scaffolding and elaborately fabricated sets that have a physical presence that sharply contrasts with the virtual devices and effects. The visceral sound of the rolling stage is made evident by the artificial layering of images and projections. The physical objects become surfaces, which are both seeing and being seen. They are the devices for interpreting the actor's moves and for redisplaying their altered states.

Figure 7- Les Arts Flourisants- Flash Based motion analysis creates paint for the actors to throw.

The presence of experience serves to allow the "spectactor" (2) to be seen as both a character and a human actor. Clifford Geertz has called this effect "experience near" and "experience distant" (3) and identifies it as the critical skill needed to understand other people in a cultural setting. We have done this by making clear the mechanisms by which the opera are made to work. We reveal the projectors, the computers and the operators who cause the altered reality. These objects are placed in the theater in ways that make them as much a part of the performance as any one audience member or any one actor. The technology occupies the most prominent places backstage, onstage and in the best box seats of the theater. Speakers for real-time panning are even placed in the theater to sing back at the singers, under their control on stage, of course.

The Architectural User Interface will be a combination of the tangible and the virtual. Rather than proposing either that all intellect will become silicon based or that computers are essentially useless, it will make a new setting that takes advantage of the strengths of both. [4]

The Architectural User Interface will be defined not by geometry but by topology, which insists that the essential character of a problem is in the sets of relationships rather that in a singular form. It will probably doom most of the formal conventions of architecture, certainly as they are used to en-frame and limit a specific object. [5]

Finally, and primarily, the Architectural User Interface is defined by interactivity with the user, through a specific and sustained performance. This is a disquieting situation for architects who by training and reflex view the world quietly and synchronically. But, it is precisely this aspect of the digital that can force us to see the world with fresh eyes and to cast aside preconceptions masquerading as the natural. [6]

The *degree* to which technology is instrumental in the mutability of contemporary cultural practices suggests its *immanence* within a new definition of architecture, while the *rate* of change wrought by technology suggests the *imminence* of such a paradigm.

Architecture is dead; long live architecture.

Endnotes

1. Bertholt Brecht, *Brecht on Theater: the Development of an Aesthetic* (Hill and Wang: New York, 1964) page 91.
2. Augusto Boal *Games for Actors and Non-Actors* (London: Routledge, 1992) and *Theatre of the Oppressed* (New York: TCG, 1985)
3. Clifford Geertz "From the Native's Point of View" in *Local Knowledge: Further Essays in Interpretive Anthropology* (Basic Books, 1983)
4. Luis von Ahn. "Human Computation." *Google Talk*, July 26, 2007. http://video.google.com/videoplay?docid=8246463980976635143&q=von+ahn&total=16&start=0&num=10&so=0&type=search&plindex=0.
5. Stan Allen, *Point + Lines: Diagrams and Projects for the City (Princeton Architectural Press: New York, 1999).*
6. Reyner Banham, *Theory and Design in the First Machine Age, (*Praeger: New York, 1960).