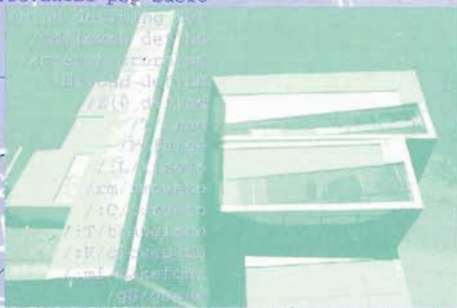


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Between Digital and Analog Civilizations: The Spatial Manipulation Media Workshop

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As the power shift from material culture to media culture accelerates, architecture finds itself in the midst of a clash between centuries-old analog design methods (such as tracing paper, vellum, graphite, ink, chipboard, clay, balsa wood, plastic, metal, etc.) and the new digital systems of production (such as scanning, video capture, image manipulation, visualization, solid modeling, computer aided drafting, animation, rendering, etc.). Moving forward requires a realization that a material interpretation of architecture proves limiting at a time when information and media environments are the major drivers of culture. It means to pro-actively incorporate the emerging digital world into our traditional analog work. It means to change.

This paper presents the results of an intense design workshop that looks, probes, and builds at the very interface that is provoking the cultural and professional shifts. Media space is presented and used as an interpretive playground for design experimentation in which the poetics of representation (and not its technicalities) are the driving force to generate architectural ideas. The work discussed was originally developed as a starting exercise for a digital design course. The exercise was later conducted as a workshop at two schools of architecture by different faculty working in collaboration with its inventor.

The workshop is an effective sketch problem that gives students an immediate start into a non-traditional, hands-on, and integrated use of contemporary media in the design process. In doing so, it establishes a procedural foundation for a design studio dealing with digital media.

**architecture:
between digital and analog civilizations**

Since its origin, architecture has been the art of organizing physical reality, the act of establishing the material expression of a cultural order. Until recently this meant to work in, with, and for the analog world (i.e., material, embodied, tectonic). However, as our civilization moves deeper into the information age, cultural expressions are under increasing pressure to virtualize their sources, processes and products.

At first sight, it would appear that architecture should be at odds with the rising culture of the simulacrum (Baudrillard 1994 and Taylor 1994). Architecture may find it hard to deal with a world in which construction competes with the speculative stock market and the ephemeral *art*. Yet we find that architecture is in a unique position to reflect and respond to the new civilization because it is under the same dilemmas facing society. For the technological mutation underway is forcing a major change not only in our culture at large (Negroponte 1995) but also in our profession. This shift from analog to digital is profound enough to challenge our traditional ways of thinking and making architecture.

This condition has generated three responses from our discipline. On one extreme is the revolutionary approach, fully committed to the new digital world and trying hard to leave behind any remainder of the analog ways of doing architecture. On the other extreme is the conservative response that sees no reason to abandon the proven, centuries-old analog methods. The conservative attitude refers to the many undelivered electronic promises of the past. Between these two poles is an intermediate third position that superficially incorporates digital media into the production of architecture. In this view, computers are used in ways that mirror analog work except that they are used after and not during the design process and the results are faster and more seductive (e.g., drafting, graphics, walk-throughs). This

third approach is clearly a reaction to the unstoppable momentum of the digital and geared towards some accommodation of electronic media into the existing analog framework of the profession. The intermediate position is a response taken by default and not by an informed understanding of the digital.

None of these three responses is appropriate considering the degree of development of today's media and the nature of available analog methods. At the same time, given the transitory cultural and technological period in which we live, it is also apparent that we need an intermediate position. However, and unlike the described third position, this middle response must investigate and be informed by the nature of architectural making today, that is, the messy production space where the digital and the analog meet. For it is in this space of between-ness where the dialectic processes unfold and therefore new techniques, knowledge, and ideas first arise. The future is not ahead, in the digital, but between the analog and the digital.

The challenge for today's architects is to explore the interface that is provoking the radical shift in our civilization. This can be done by using the dialogue between analog and digital systems in architectural production as a metaphor to address, study and advance our culture.

a pedagogy of play and interpretation

What is the best pedagogy to introduce students to the little explored multimedia territory of today's hybrid cultural production? We propose a learning system based on play and interpretation.

Educators have long known that play is the most fundamental way in which humans learn, especially when they have to confront totally unknown environments and situations (Dewey 1938 and Huizinga 1950). Play is successful at instilling and integrating many kinds of skills whether associated with the body (e.g., a particular set of movements) or the mind (e.g., language, reasoning, imagination). Play teaches the indi-

vidual how to move from an initial and natural discovery-driven approach to the existing conditions to more sophisticated interactions based on hypothesis testing and theory development.

Interpretation is also relevant from both professional and public perspectives. Architectural design is a value-added process in which the particular vision and reading of the designer is of essential importance. Architecture requires intentional filtering, a biased act of interpretation. In our era of information and media overload, interpretation is a survival skill that all citizens must possess to assess the value of the worlds of simulacra that we inhabit. A media culture depends on and begs for interpretation. In the contemporary civilization the interpretive act is an essential design act.

A pedagogy based on play and interpretation creates an inviting environment for experimenting with design in the context of contemporary media. The act of playing (execution) precedes results (conception) or, interpretation follows form and form follows action.

the spatial manipulation device exercise

The spatial manipulation device was originally conceived as a beginning set of exercises for the course ARCH 6642: Design and Architecture with the Macintosh, taught by Associate Professor Bennett Neiman, at the University of Colorado at Denver. The computer systems used in this work are modest by 1997 standards: Macintosh Quadra 800's with 24mb ram and 240mb hard drive, a RasterOps video capture board, the Macintosh operating system 7.1, and Adobe Photoshop 2.5.1. The ideas hitherto presented were used in a collaborative three-day workshop, directed by Professor Neiman, that was offered at two schools of architecture (Ben Gianni's studio at Carleton University and Dr. Julio Bermudez' studio at University of Utah). Dr. Bermudez also worked in the development of the theoretical foundation of the workshop.

The workshop explores how architectural

space is being informed by media and the intellectual and making processes associated with it. The studio presents and utilizes media environments as interpretive playgrounds for design experimentation in which the poetics of representation are the driving force to generate architectural ideas.

The workshop adopts a progressive use of technology that recapitulates the historical development of media: first photography, second video, and last the computer. This evolutionary approach is intended to clarify the gradual effect that each medium has in the understanding and design of space. This method potentially reveals the shift from material to media culture. It also helps to define a clear process that moves from the analog to the digital and from concreteness and reality to abstraction and simulation. This process unfolds in five successive stages.

stage 1 – spaces of construction

A building in progress becomes the ultimate analog expression of both the architectural process and space. Space is assessed and evaluated from within through the observer's senses. Space is the analog experience of architectural reality. Photographs are used to capture and investigate the spatial nature of the construction site. The experiential quality of the real space is collapsed into layers of information that present a flattened space. Real space is accessed and evaluated from without through the intentional lens of the photographic camera. Space appears as and becomes a framed image: a literal yet biased reference to the real. At this stage, design is the act of looking, isolating, emphasizing, framing, and freezing the real spatial experience. (*Figure 1*)

stage 2 – the reconstructed space model

Photographs are distilled and applied to clear acrylic planes that are then freely assembled into configurations that acknowledge spatial

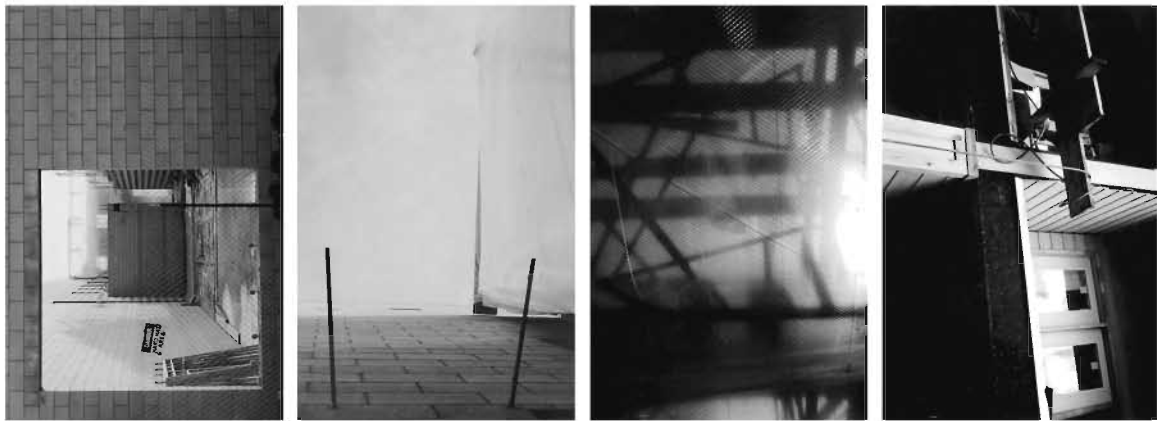


Figure 1 *Construction spaces*

concepts extracted from the photographs (e.g., layers, apertures, tectonics, etc.). Each panel becomes a spatial reinterpretation of the construction site. Space is accessed and evaluated through the observer's senses. Space is a physical simulation that only has a conceptual reference to the original. At this stage, design is the compositional arrangement of spatially ambiguous elements for a video performance. (*Figure 2*)

stage 3 – video performance

The interpretive potential of the video image as architectural space is examined by video taping the analog model. The model and video recording are manipulated in search of unexpected spatial viewpoints that challenges the model's space. Video space flattens the physical space of the model and changes the scale perception. Space is accessed and evaluated from within through the intentional lens of a video camera. Space becomes a video simulation whose reality depends more in its internal visual logic than in maintaining a resemblance to the original model. At this stage, design is the choreography of the video performance. (*Figure 3*)

stage 4 – video capture

A frame-by-frame analysis of the video taped performance is studied, and several spa-

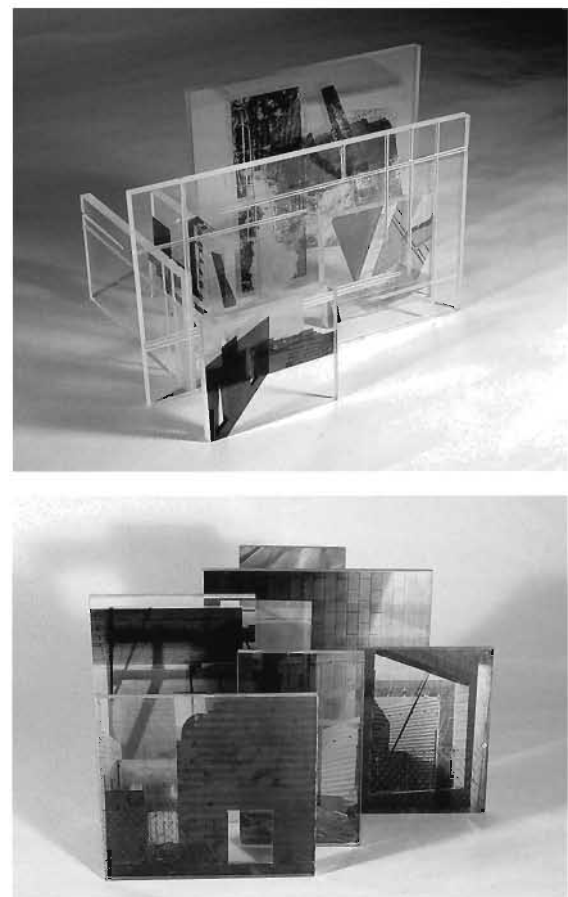


Figure 2 *Different examples of re-constructed transparent panels ready for video performance.*

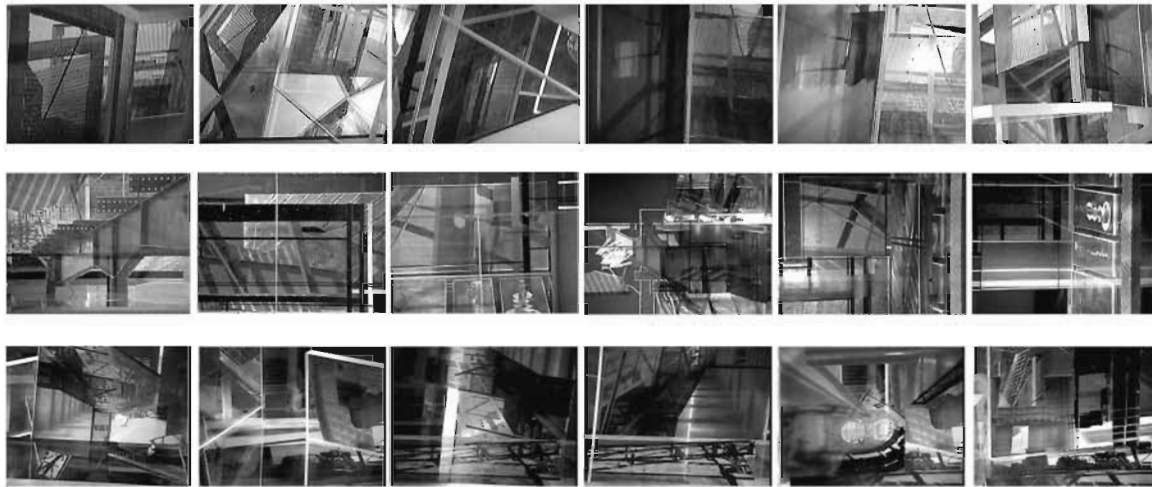


Figure 3 Three strips of video captures

tially provocative still frames are selected and captured into digital media. At this stage, design is selecting the captured images by finding and interpreting meaning into them. (*Figure 3*)

stage 5 – digital extrapolation

An electronic manipulation of the captured video images is conducted by means of digital processes (e.g., repetition, isolation of elements, changing context, deformations, subtraction, graphic overlay, filters, etc.). Space is accessed, manipulated, and evaluated from within through the computer. At this stage, design is the digital transformation of the images following two types of electronic extrapolation: spatial enhancement and radical transformation.

spatial enhancement

Digital media is used to edit and enhance the captured images so they improve the inherent spatial qualities that they already convey. Subtle changes in lighting and color relationships, and the blurring and sharpening of elements are accomplished with filters and other image manipulation software tools. The enhancement corrects an already mediated architectural reality by re-emphasis. Simulation

reformulates space. It improves reality by making it more perfect than it really is. As this stage, design is making a simulation that is hyper real. (*Figure 4*)

radical transformation

Digital media pushes the spatial qualities of the original captured image beyond its intrinsic aesthetic and conceptual possibilities. Proportional distortions, as well as the selective isolation, addition, subtraction, and repetition of video material, transforms the original video captured frame into a newly realized spatial reality. Perspectival scenes become quasi sectional or planimetric. The end product holds peripheral resemblance to the original video-image. Simulation creates its own space. At this stage, design is making an alternative, virtual reality. (*Figures 5 and 6*)

evaluation

The workshop is a successful sketch problem that gives students an effective introduction into a non-traditional, hands-on and integrated use of contemporary media in the design process. In doing so, it establishes a procedural foundation from which a design studio dealing

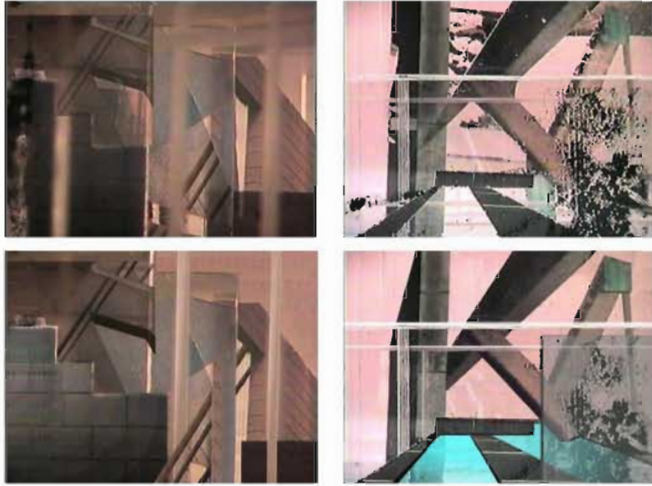


Figure 4 *Original captures* (top row),
spatial enhancements (bottom row)



Figure 5 *Original captures* (top row),
radical transformations (bottom row)

with digital media can build.

Part of the success of the workshop owes to purposely avoiding the use of CAD software. This achieves two things. First, it breaks down students' technical preconceptions concerning computers and encourages the participants to develop new ways of seeing and using digital media. Second, it shifts the attention to alternative digital-analog conversations that de-emphasize the capacity of digital media to deliver objective depictions of architectural space. This facilitates states of production more akin to the unclear states associated with the design process. The workshop products express the no-CAD approach in the surreal contrast between the accuracy and sharpness of the digital images (that at first suggest high degrees of design certainty and refinement) and their actual high levels of dissonance, fluidity, and ambiguity.

The impressive level of workshop production in only three days is a good indicator of how media technology speeds up the designer's ability to create, find, develop and present design ideas and products. In addition, the wide range of results and the fact that most of these designs would have never been attempted by

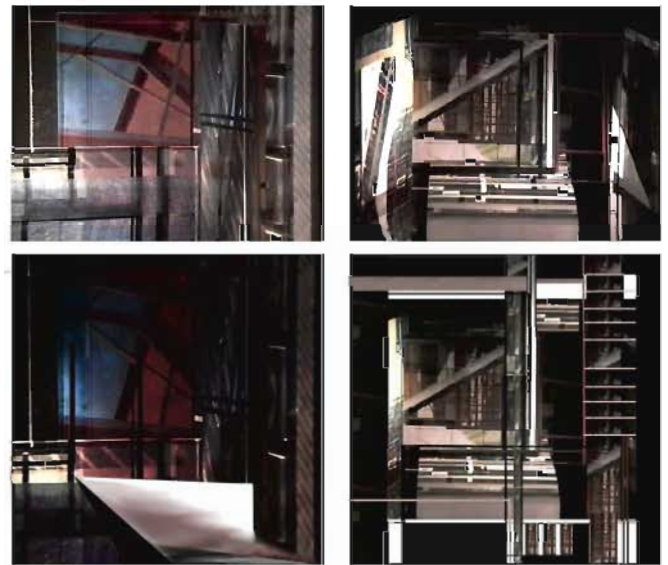


Figure 6 *Original captures* (top row), *radical transformations*
(bottom row)

traditional analog means demonstrate the power of contemporary media to expand the intellectual and making horizons of design production.

The workshop deserves credit not only for these concrete results but also for another less measurable but far more important outcome:

students leave the workshop with a renewed and informed enthusiasm towards the present and future of designing with computers.

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