Digital Art – A Field of Inquiry for Contemporary Architecture

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This article investigates the interplay of digital technology, art and architecture and it presents a series of experimental workshops developed at LAGEAR (Graphic Laboratory for the Experience of Architecture, School of Architecture at UFMG, Brazil). The intention of these workshops is to include an artistic approach to the work in a computer lab dedicated to teaching and researching architecture. At first, a discussion on the relationship between art and architecture is presented, followed by an analysis of the enhancement of such relationship with the advent of digital technology. Then a series of works developed by artists and students in collaboration is described. The article concludes with a discussion on the role of digital art for architectural education. It is proposed that it may be one of the most adequate fields for students to freely investigate contemporary issues, such as interactivity and automation, which are now shaping our built environment.

1. Introduction

Architecture as a discipline has always occupied an ambiguous position, and has been classified as something between art and technique, between the social and the hard sciences. It seems to be one of those dilemmas which is more important to be acknowledged than to be sorted out. In fact, such ambiguity may be what gives architecture its uniqueness and richness. Despite such ambiguity, art has always been used by architects as a marginal way to investigate architectural matters and to explore one's own creative process. By doing so, they find a field of experimentation where they do not face the tough constraints found in everyday architectural practice: technical impositions, financial limitations, client's requirements, functional demands, etc. It is true that art's practice is not exempt from similar constraints, but they are of a different sort and usually much less limiting and mundane, so to speak. As the history of architecture demonstrates, the use of art as a way to carry out formal and conceptual investigations has a direct impact on the professional practice of most of the greatest architects – from Le Corbusier to Oscar Niemeyer, from Daniel Libeskind to William Alsop, to name but a few.

With the arrival of digital technologies, the field of art expression has found a new medium to be realized. Artists are meeting new possibilities for expressing themselves and, at the same time, they are facing new procedures regarding the production of their works, as Dinkla [1] has shown. This new realm of expression resulting from the convergence of art and digital technology leads to a complex interplay of different media largely based on interactive technologies. The use of interactivity has brought about a new approach to the question of temporality, renewing a general interest in the use of nonlinear narrative. As these possibilities touch the field of art, they inevitably bring in some questions for architects who see art as a parallel way of investigating design issues. This turns out to be even more relevant if one considers that the built environment, which is the final object of the architects' work, is increasingly defined by the presence of digital technologies.

This article raises a few questions concerning these matters, and describes a series of experiments carried out at LAGEAR (Graphic Laboratory for the Experience of Architecture at the School of Architecture at UFMG, Brazil) that aimed to include artistic procedures in an architectural computer lab. First, I shall present a discussion of the enhancement of the relation between art and architecture with the arrival of digital technologies. Then, I shall describe the experiments carried out at LAGEAR in which artists, researchers and students have worked together to develop a specific work of art. The article will be concluded with a summary of the implications of the new relation between art and digital technology for teaching architecture.

2. Art, digital technology and architecture

As far as human culture is concerned, art has always been a field where the most advanced investigations are made possible. It may be due to the freedom artists enjoy, or it may be due to the fact that the work of art is one of the purest forms of investigating language, as Vilém Flusser puts it [2]. As art enters the realm of digital technologies, high expectations are brought about regarding a new balance between the humanistic side of art and the scientific aspect of technology [1, 3]. The relationship between a work of art and the tools used in its production, which is of a very complex nature, gets even more complex when it comes to art and digital technologies. Certainly, it is not the first time that art production has changed as a consequence of a new technology arrival, but this time the technology has one remarkable feature that makes it stand out from the previous ones: it is a technology that has a considerable openness in its programmatic core, in other words, a functional indeterminacy [4]. This idea of an open functionality has a broad consequence for artists, who are then confronted with the conceptual freedom of a tool waiting to be ascribed a function. However, this freedom turns out to be a kind of theoretical freedom since it demands some technical knowledge to be fully achieved. As a result, an increasing number of institutions are setting up research centers that congregate artists, scientists and technicians. These institutes may have an educational structure, such as the ZKM (Germany), the Banff Center (Canada), the Media Lab (USA) or they may be company based, such as the Xerox PARC, the Interval Research, and the Philips Research.
This type of institution signals not only the merging of technical abilities, but also a blur in the idea of disciplines [5]. As these experiments are not yet consolidated, and as digital technology is an ever evolving field of investigation, these centers are rather open, and subsequently very likely to accept a transdisciplinary approach. Hence, under the designation of digital arts, a broad range of art expression is currently found. Several of these new art forms end up dealing with matters akin to the architectural domain: multimedia installations, immersive environments, responsive spaces, live image projections, etc. Sometimes they are grouped under the label of "expanded media" to designate that they make an active use of space rather than mere screens projections, being also open to the interaction of people. So, it is no surprise that a great deal of these artistic works is carried out by architects or artists who have had an architectural education as their background. The works of Jeffrey Shaw, for instance, are examples of the potential intertwine of digital technology and an architectural sensibility [6].

However, it seems that architects in general have not yet come to terms with the full possibility they could enjoy in the use of digital arts as a territory for privileged investigation. This is even more surprising if we consider the increasing interplay of interactivity and automation present in our built environment. If architects traditionally have been relying on art

because of the freedom they see in it, with digital art they are confronted with a lot more freedom since digital technologies are based on a functional indeterminacy. However, this new level of freedom that comes with the potential indeterminacy of digital tools demands a new type of technical expertise. It is true that these skills are becoming more widespread as the coming generations are increasingly more computer literate, and digital technology more user friendly. Notwithstanding, we know that the full potential of a tool may not be achieved if it is not explored subtly and radically. Therefore, we have to envisage new methodologies for bringing it into architectural education, if we want to prepare our students to profit the most from the particularities of digital art.

3. The role of art within a Brazilian architectural computer lab

LAGEAR was created in 1993 in the School of Architecture at the Federal University of Minas Gerais (Brazil) as a laboratory for supporting the implementation of the "Information Technology Applied to Architecture" course [7]. The national accreditation board had just made that course compulsory to every school of architecture in the country. At that time, a computer lab was a novelty in Brazilian architecture schools and information technology applied to architecture was very much identified specifically with the teaching of AutoCAD. Despite that, LAGEAR has had a broader scope of activities since its inception, including multimedia and video as complement to CAD. Moreover, as a computer lab, LAGEAR has a peculiar characteristic, as it combines in its premises undergraduate teaching and research facilities in very close contact. Such arrangement, presumably too disruptive for researchers, has a twofold advantage in a school with very little tradition on researching: researchers directly benefit from the freshness of young students eager to adopt digital technology in the most unbiased fashion; students benefit from a deeper consideration of matters brought about by researchers. In addition to the undergraduate students enrolled in regular courses and the post-graduate researchers, the lab also houses a group of undergraduate students, specially funded by a scholarship program aimed at initiating students into scientific research. They work under the supervision of a senior researcher, either as a research assistant in an ongoing project or even pursuing a modest research of their own. Depending on the characteristics of the projects being developed at the lab, students from other departments may join the group. Thus, in fact the undergraduates with their informality keep the lab running and give it a distinct quality within the school environment.

As LAGEAR became a special place within the school, where students would come to experiment with language, a problematic issue was identified: in the same way young students are fast learners and tend to master software very quickly, they also very quickly get used to some rules

and 'tricks' for dealing with digital language. This tendency was intensified by the very nature of computer technology that, as Pérez-Gómez and Pelletier [8] have pointed out, usually imposes itself over its products in such a strong and obvious manner that it leads to a self-referential formalism. As a way to prevent this weakening of an imaginative and exploratory approach, we envisaged a series of workshops and projects to bring in artists to work within the premises of the lab. The aim was to have the artist acting as a disturbing element in the lab culture, bringing in unexpected ways of framing digital work. As the intention was to create an opportunity for a confrontation of languages and skills, we invited mainly artists that were not using digital technology in their work. They would make a proposal of a digital work to be developed in conjunction with the students. In general, we would ask them to approach some themes of common interest, such as the problem of spatiality in a digital environment, the representation of information in a three-dimensional environment, and the question of interactivity. The idea was that the workshops would be mutually beneficial: the artist would have a new work developed with the aid of the students' expertise, and the students would have the opportunity to have close contact with the creativity of an established artist.

The first two workshops, the ones with Mabe Bethônico e Rosângela Rennó, were quite formally structured and lasted one week each. They consisted of an introductory lecture by the artist showing her career and her approach to art; then, after a brief presentation of LAGEAR's main works, a proposal was made by the artist. Thus, the LAGEAR team would evaluate the technical implications for realizing the work; and, at the end of the week, there was another public lecture to present the results achieved. This concentrated and somewhat rigid structure ended up being difficult to fit within the busy schedule of students. And also, it was difficult to finish the works within a week. Thus, the other collaborative works done with different artists had a more flexible schedule, some of them lasting longer, with meetings happening over several weeks due to the nature of the proposed works. A group of around 5 students from LAGEAR would engage in the more intensive development of the work, but usually many other students would join the team as apprentices. The workshops had as products either a multimedia piece, or a web site or a public art installation. Some of the more significant workshops are described below.

3.1 *"Lembrança de Ladrão"* – Mabe Bethônico (January1999)

Mabe Bethônico proposed the creation of a multimedia piece called "*Lembrança de Ladrão*" ("Thief's Remembrance"). The aim was the creation of a digital narrative that would relate fear, memory and architectural space. These issues were related to her PhD thesis that dealt with the subject of fear and the spaces of home. She envisaged a multimedia piece in which anguish and fear would be haunting the affective environment of a home.

Mabe brought in an archive of hundreds of images she had collected from newspapers, all of them depicting some kind of catastrophe happening to a house. They were mainly photos of houses destroyed by natural disasters such as hurricanes, floods, etc. She wanted those images of threats to be contrasted with the protective quality of a home environment.

The discussions about the possibilities for designing the interface were held with the whole group. The artist expressed her wishes of attaining a sort of strangeness and unhomeliness in the various rooms of a house. She thought of the images as slide projections in the walls of typical spaces identified with the daily life of a family. It was then decided that the students would model 5 furnished rooms: a living room, a bedroom, a kitchen, a bathroom, and a dining room. For each one Mabe would select a group of images from her collection, trying to relate the kind of accidents depicted in the image to the specificity of each room. Each room would have a slide projector that would display the selected images in random order. It was also decided that the interface should be kept simple and bring a sense of disorientation as one navigates the rooms. The final interface for the multimedia, created with the software Director, displayed the 5 modeled rooms placed independently against a black background (Figure 1). The rooms would move in all directions, behaving independently from each other in response to the cursor movement. Their different speeds and directions suggested a quasi-random interaction, as if they were floating adrift in a three-dimensional dark space (Figure 2). The erratic dance of the rooms was complemented by an endless whispering voice telling a story of living with fear inside a house, always waiting for an invisible thief. This was actually the artist reading a text describing in details the moments of fear and panic that she had as a child in her family house.

Regarding the methodological aspects, as this was the first workshop, everyone was a bit unsure on how to proceed to work in a team, especially in the creative aspects of the work. We had envisaged a strategy to "break the ice". We called it "language tuning" and it consisted of an entire morning of programmatic talks. At first the artist would present herself, her thoughts and her work, emphasizing her creative process and what she would consider the essential quality of her work. It was followed by the presentation of the LAGEAR's team, showing works previously developed in the lab, stressing the conceptual and technical aspects of them. Everyone was asked to be very personal in his or her presentation, so we could establish a necessary common ground language, a paradoxical step needed to allow the beginning of the exploration of the differences in each other's language, the main objective of the workshops. It ended up being a very stimulating week for everyone involved, despite the pressure to finish the work within the scheduled week. However, it was special for the students. As they put it, during the whole week they were put to test, as they had to focus on subtle discussions on aesthetics intertwined with the more hard
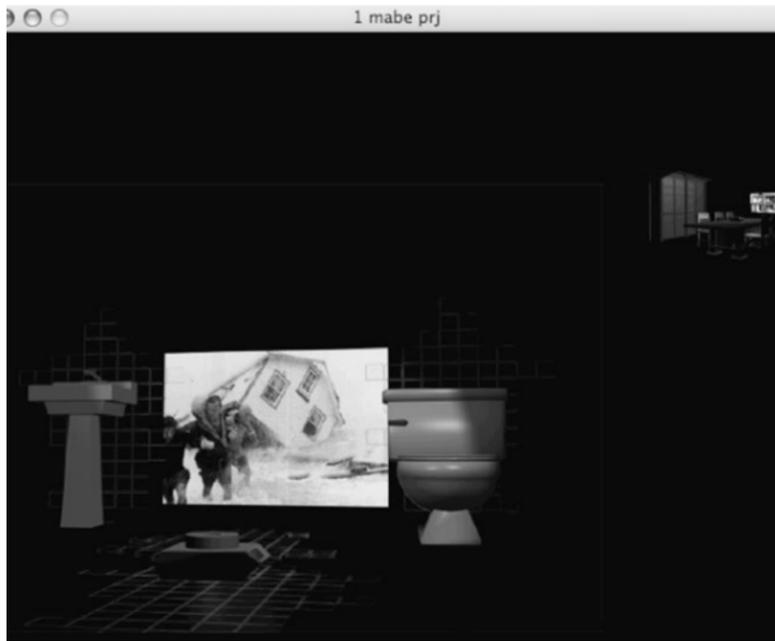
◄ Figure 1. Screen shots of "*Lembrança de Ladrão*".
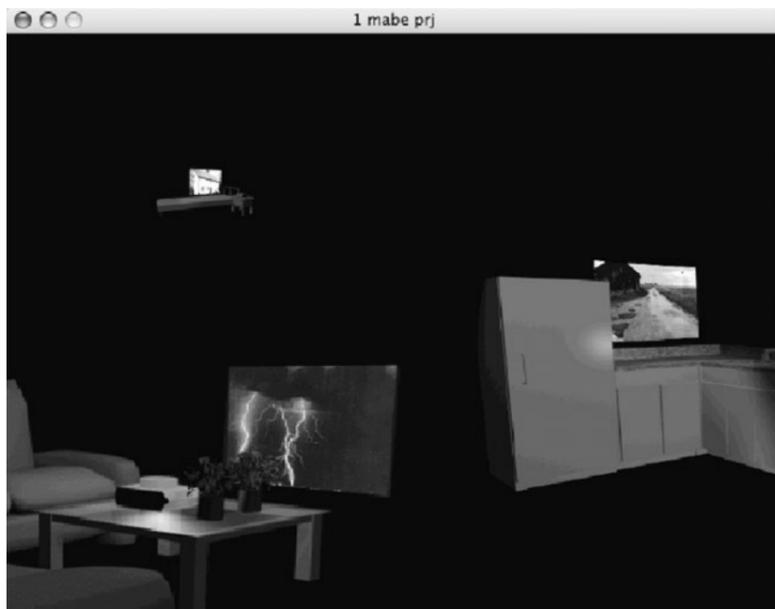
◄ Figure 2. Screen shots of "*Lembrança de Ladrão*".

technical tasks. Regarding the multimedia, the interactive aspect seems to have achieved the intended result as a disturbing and simple navigation, according to the feedback given by people using it. However, the artist was

not happy with the resulting images of the rooms, because they stood as computer generated models and she would rather have had a more conventional image of comfortable home environments.

3.2 "Hipocampo"– Rosângela Rennó (September 1999).

Rosângela Rennó [9], one of the best known Brazilian photographers, coincidently also proposed a multimedia piece related to memory and photography, drawing upon questions of register and archive. This theme was part of her ongoing investigation on the role of photographs in people's life. The workshop followed the same strategies of the first one and started with the "language tuning" session. Rosângela did a comprehensive talk on her career, presenting several of her previous works, detailing her main goals and the technical aspects involved in its realization. She also stated very clearly which qualities of her work she would like to see present in a digital work (it was her first digital approach at that time). Like Mabe, she also had a collection of newspaper photos. They were images portraying people in different parts of the world holding photographs of missing people, their relatives or loved ones. She also had the texts of the news article refered to each photo. She wanted to make an interplay between the news texts and their respective images, reinforcing the idea of image as an indication of presence and absence. After a discussion with the LAGEAR team, it was decided that a big patchwork with the pictures would be composed (Figure 3). The texts would be kept in a different layer, arranged in rigid format, similar to previous works by the artist.

► Figure 3. The patchwork of newspaper photos of people holding photos of missing people.

The final work was a multimedia piece consisting of an interface that kept a conceptual tension between texts and images. It was a simple interface based on hyperlinks between image and text, simulating an endless zooming in from one layer to the other. The image layer, a huge patchwork of the newspaper images, could also be browsed in a lateral movement, with an effortless panning movement responding to the mouse location. At the click of the mouse, a text related to the image would appear and occupy the entire screen, while the image would gently fade. Like in her other works, the text would have a graphic and bold quality, filling the entire screen. Then, by clicking in the text, the patchwork of images would come up again from the background, replacing the text.

The development of the work did not present any special technical problem and it was a matter of carrying on scanning images, composing the patchwork, typing the text, finding the right font and size, and assembling them in Director. However, the aesthetic quality which the artist wanted to attain demanded a lot of time from the students. So, a great deal of workshop time was spent smoothing the interface, getting the screen layout neatly arranged, getting the correct timing for the zooming, etc. It was a very productive interchange with the artist, who showed to the students the necessity of being committed and rigorous in the development of a work of art.

3.3 "W.AR.15" – Gustavo Schetino (December 2001)

The cooperation with Gustavo Schetino happened under a different format from the previous workshops. It lasted for over a year, within a more flexible schedule and resulted in different products and activities. Schetino is a young dance performer and had a project called W.AR.15, which consisted of a series of four performances, each one respectively related to the following issues: digital culture, war, architecture and Brazilian urban violence. They were named respectively W, WAR, AR, AR15, and were to be performed at different locations in the city of Belo Horizonte over a one-year period. To start the cooperation with LAGEAR the artist proposed the design of a web site that could work as an archive of the work in progress along that year. It was agreed that the artist would spend at least two days per week at the lab. To start the process Schetino brought a storyboard of the performances, several photographs and video footage he had produced to be used as raw material for the performances. In depth discussions were held every week. As these conceptual discussions evolved it was decided that LAGEAR would have a more extensive role in the performances, creating content and organizing ambient installations.

The web site did not present the images of the performances themselves. Rather, it presented the conceptual ideas that originated the performance [10]. It was comprised of five parts and each part was designated to one student (Figure 4). They had total freedom to develop

their own interpretation of the issue, but would frequently exchange ideas and help each other with technicalities. The first of the four performances was staged within the school premises, at the same time the web site was launched. The performance was based around a mobile cube, taken as an imaged dwelling, with semi-transparent screens in the four sides where video images were projected. The dance happened inside and outside the cube in an intimate relation with the projected images (Figure 5) . The performance would start with the web site being projected in the cube, while the audience would browse it in a nearby computer.

► Figure 4. W.AR.15 web site.
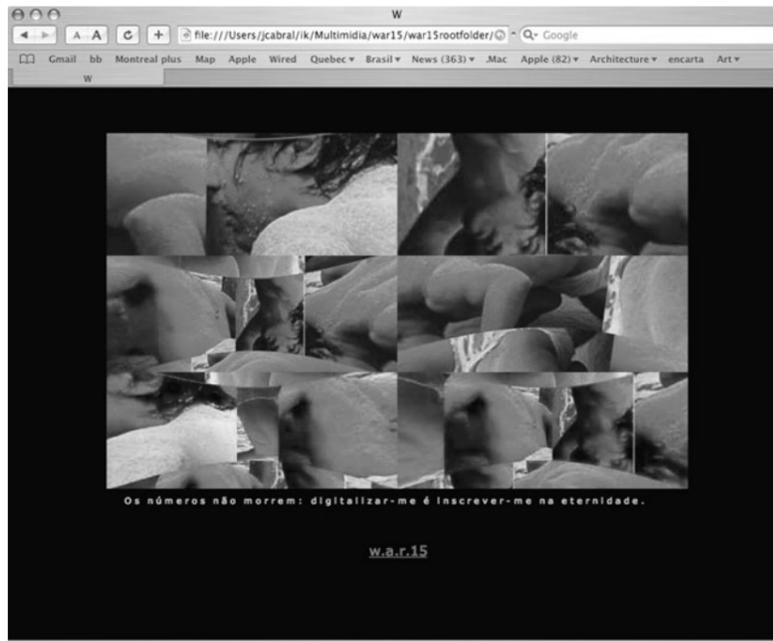
► Figure 5. The dancer and the imaged cube.

◄ Figure 6. Workshop in progress.

The work with Schetino had a different impact on the lab. The previous artists had brought about a discussion on digital language which was restricted to the language of multimedia seen on a computer screen. Having a dance performer in the lab was disturbing in another way: it demanded a more consistent discussion on the role of the body in a computer mediated environment. So this year long cooperation provided an occasion to consolidate a new trend in the lab research towards physical computing and responsive environments.

Apart from these collaborations based on the idea of a resident artist at the lab premises, there were a few other occasions when LAGEAR

► Figure 7 . Manipulating QTVR via gesture.

► Figure 8. Installing the TENT (Technological Environment for Negotiated Topology).
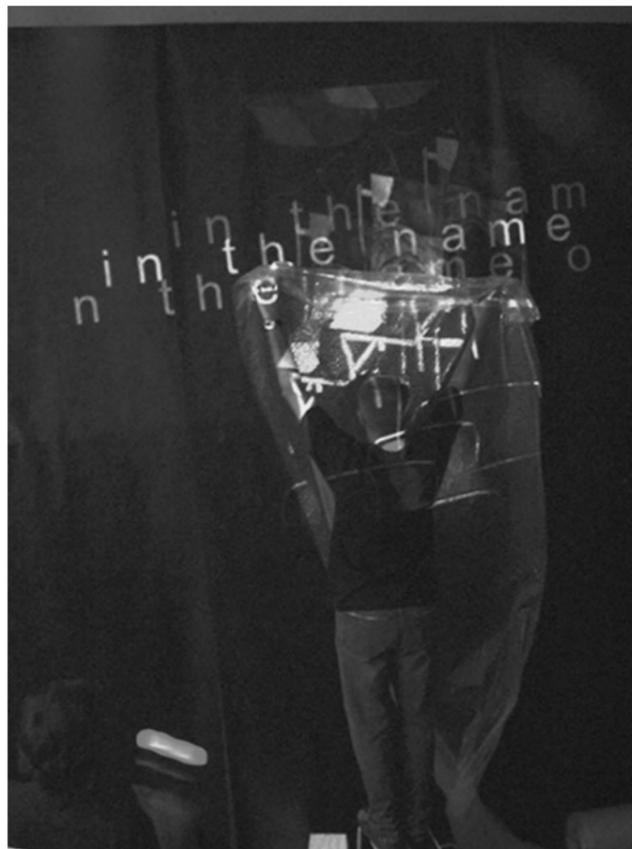
cooperated with artists in the development of works relating architecture and digital technology. The most recent collaborations were related to the creation of a responsive environment using motion track software. With the FAQ Group (2003), a multimedia music group comprised of artists from different backgrounds, we collaborated in the creation of a sensorial environment with live image projections and an interactive system to be manipulated by the public. With the performer Mauricio Leonard, at the Winter Festival in a historic town called Diamantina (2003), we organized the workshop "Immediate Media and Instant Architecture" (Figure 6), where the participants reconstructed their own body in a digital media and made them available for manipulation in an interactive installation (Figure 7). A similar investigation occurred at the "Digital TENT" (Figure 8), an installation which attempted to spatialize a multimedia piece (April 2004). The TENT (Technological Environment for Negotiated Topology) is a low-tech responsive environment developed at LAGEAR based on a radically opposite metaphor of the CAVE, highlighting the bodily experience rather than the visual accuracy in immersive environment (Figure 9).

◀ Figure 9. Low-tech devices created by students for interaction at the TENT.

4. Art as an incentive to architectural digital creativity

Several positive points resulted from the strategy of using art to base the work with undergraduate students at a computer lab within an architectural school. Apart from using art to educate students' senses, the presence of artists at LAGEAR had the specific aim of functioning as an element of disturbance in the way students approach digital activities, in other words, to disrupt what they would take for granted in the use of digital tools.

Although no systematic survey has been carried out to evaluate the impact of this strategy on the students' improvement, there are few observations that can be drawn from the feedback provided by other lecturers at the school and also by employers that have been hiring students:

- The strategy of using art at the lab develops students' perceptive abilities as they open themselves for the subtleties and intricacies of art works. That openness allows them to perceive the more subtle aspects of the architectural experience, which is usually an uncharted territory for them.
- It promotes an adoption of a more experimental approach since it prompts students to take a stance on very complex aesthetic issues. In this sense, they become more open to innovation.
- It enhances student creativity as it pushes them to face technical problems in practical situations. The learning through problem solving also boosts their self-stem, as they see the result of their effort right away.
- It provides the incentive students need to pursue innovative uses for digital tools, allowing them to adapt their skills towards the development of projects for different courses, other than the design studio, such as history and environment comfort.

However, the most rewarding results, from the perspective of an architectural computer lab in the context of a developing country such as Brazil, is to see students applying their newly acquired skills towards more socially oriented works. That practice has been happening not only at the lab, but also in other research groups in the school that have been incorporating students from LAGEAR. The situation can be illustrated by one specific research in which LAGEAR was involved with: the use of digital technologies to help a cooperative of homeless people to design their houses. The group of students tested their general creativity, their ability to work as a team, and their inventive use of digital tools as they had to accomplish quite complex tasks in support of a series of workshops with the homeless group. In order to facilitate the participatory design process, they had to envisage an interface to evaluate the ability of lay people in the use computers; they had to set up a multi-functional web page; they had to sort out network issues in order to make one interface working across a dozen computers (Figure 10). Moreover, what is remarkable is that they were able to achieve these tasks by transferring the technical and creative knowledge they had developed in an otherwise playful situation, related to digital art.

◀ Figure 10. Workshop with the
cooperative of homeless people.

5. Conclusion

The teaching of art has always been associated with architectural education
to a greater or lesser degree, but it was the experience of the Bauhaus that
set up the agenda for the modern application of art in schools of
architecture throughout the world. In opposition to the tradition of the
Beaux Arts education, that sought an aesthetic training of students, the
Bauhaus courses intended to have a broader scope. Art was considered an
avenue to innovation, which beyond the development of skills could also be
a way of dealing with questions of space [11]. Nowadays, the use of art in
education has been less and less instrumental and more concerned with the
complex issues related to language, addressing the problem of identity, as
Atkinson has shown [12].

In fact, art is probably one of the purest and most radical forms of
investigating the very nature of language [2]. As digital technology opens up
new vistas to the way we relate to language in general, it also changes the
way we relate to art, changing the way we appreciate and produce it.
Likewise, the relationship between art and architecture also changes. If art
throughout history has been used by architects as a way to carry out
parallel investigations about architectural language, this relation is bound to
change as well. If architects resort to art for its considerable openness and
its absence of heavy constraints (as found in architectural practice) they are
now met with a greater openness, as far as digital art is concerned.
However, this freedom comes with a price and there are different kinds of
constraints. If on the one hand digital art presents a more radical sense of
freedom due to its open functional core, on the other hand it demands

some technical skills to attain such a freedom. Thus, if we want to prepare our students to take advantage of the art as a field of enquiry, we have to prepare them to be fluent in contemporary issues such as interactivity and automation, which are now shaping our built environment.

The experience of LAGEAR described in this paper shows an attempt to find specific narratives that could cope with this new balance between art and architecture. This search for new narratives has been a fruitful field of investigation [13, 14], and has indicated the possibilities of taking information technology in architectural education beyond a mere instrumental approach. Our experience of bringing students to cooperate with artists has created within the architecture school a specific culture of experimenting with digital technologies that goes beyond the conventional use, such as CAAD drafting and presentational tools, which tend to prevail in the school. Furthermore the results of the workshops suggest that digital art may be an excellent medium not only to allow students to master conceptual aspects of contemporary architectural practice, but also as a special way to prepare them to tackle the more subtle aspects of their own relation to the experience of architecture. In this way, the experience with digital art may be one of the most adequate fields for students to prepare their future career as really creative architects.

References

1. http://www.kenfeingold.com/dinkla_history.html [12-7-2005].

2. Flusser, V., *Writings*, University of Minnesota Press, Minneapolis, 2002, 201.

3. Wilson, S., *Information Arts – Intersections of Art, Science, and Technology*, The MIT Press, Cambridge, 2001.

4. Manovich, L., *The Language of New Media*, The MIT Press, London, England, Cambridge, Massachusetts, 2001.

5. Harris, C., ed., *Art and Innovation: The Xerox Parc Artist-In- Residence Program*, The MIT Press, Cambridge, 1999.

6. http://www.jeffrey-shaw.net/ [12-7-2005].

7. http://www.arq.ufmg.br/lagear/ [12-7-2005].

8. Pérez-Gómez, and Pelletier, L., *Architectural representation and the Perspective Hinge*, The MIT Press, Cambridge, 1997.

9. Rennó, R., *O Arquivo Universal e Outros Arquivos*, Cosac & Naify, São Paulo, 2003.

10. http://www.arq.ufmg.br/lagear/war15/ [12-7-2005].

11. Varnelis, K., The Education of the Innocent Eye, *Journal of Architectural Education*, 1998, 51(4), 212–223.

12. Atkinson, D., *Art in Education: Identity and Practice*, Kluwer, London, 2003.

13. Bermudez, J., El Diseño de Experiências Arquitectònicas, in: Montagu, A., ed., *1er. Seminario Nacional de Grafica Digital,* Facultad de Arquitectura CAO Center, Universidad de Buenos Aires, Buenos Aires, 1997, 1, 43–50.

14. Engeli, M., Digital Stories: the poetics of communication, Birkhauser, Basel, 2000.
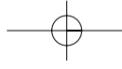
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