

## 2467/3970: A SHORTCUT TO CONNECTING PURDUE UNIVERSITY (USA) AND UNIVERSIDAD DE ANTIOQUIA (COLOMBIA) IN AN INTERDISCIPLINARY EXPERIENCE BETWEEN ART AND TECHNOLOGY

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### ABSTRACT

2467 miles / 3970 kilometers separates West Lafayette (USA) from Medellín (Colombia). Although this distance represents geographic, cultural and social differences, it also outlines a bridge for creative possibilities that connect two cities by an intercultural dialogue around new media. In particular, this paper describes the process and strategies that we developed between 2013 and 2014 to teach a study abroad course entitled "Interactive Art and 3D Animation" in the city of Medellín.

The purpose of this interdisciplinary course was to approach the topic of location, society and technology through each student's experience of the city. We combined each other's research expertise both in digital media and interactive visualization to create an integrated learning experience. Namely, merging Restrepo's experience leading the research group Hipertrópico – using digital media and open source software to develop socially interactive projects – with García's background on computer graphics visualization. This paper explains the collaborative efforts that brought both of these universities together, elaborating on the planning, methodology, realization and outcomes of the course in May 2014.

### INTRODUCTION

This paper gives an account of the different steps that were required for the realization and socialization of the academic experience Open Studio / Estudio abierto: Interactive art & 3D animation in Medellín. The experience was designed to facilitate an intercultural and interdisciplinary exchange among students, professors and researchers from Purdue University and Universidad de Antioquia in Medellín (UdeA).

### BRIDGING TRUST

This project idea was born in Sydney, Australia, at the 2013 International Symposium of Electronic Arts. We were both participating in the Latin American Forum panels. After the panel, we had a first conversation about the curricular similarities that our departments at our corresponding institutions (Purdue and UdeA) had on digital media. We both identified a great opportunity for educational research and development for the future. Upon our return, we expressed to the department heads and deans of each college our desire to solidify a Colombia – USA exchange. We would like to mention that the institutional support that we received was a strong step towards the realization of this project. To create a bridge between the two universities, we required the involvement and effort of several stakeholders. At Purdue, we were encouraged by Dr. Patrick Connolly, Department Head of the Computer Graphics Technology and Dr. Robert Cox- Dean of Globalization. At UdeA, we had the unconditional support of

Francisco Londoño, Dean of the School of Fine Arts, the Hipertrópico research group -a group of faculty devoted to the teaching and exploration on the digital arts. We were guided locally throughout this process by staff and administrators of the international relationships programs and globalization offices. All these people played an active role in the planning and creation of this intercultural bridge.

At the early stages of planning starting on September 2013, we held bi-weekly meetings via Skype. The meetings included the entire faculty from the Hipertrópico group in Medellín (Pablo Pulgarín, Carlos Mario Sánchez and Alexandra Tabares) and Esteban García in West Lafayette. This process was important to dialog and to get to know each other, as well as to outline the recruiting strategies and the content of the academic experience. These meetings continued regularly until the beginning of the course.

In November, Restrepo visited the Purdue campus to meet with the dean of globalization and other faculty at the College of Technology. We held our first student call-out and visited classrooms to promote our program, we also advertised using flyers across campus. During this four-day visit, we worked extensively to sketch the methodology of the course. During the following months (December through February) more call-outs followed and we recruited twelve Purdue students. Six UdeA students were selected by faculty to participate of this experience. We were especially intent on creating an intercultural classroom. Our entire course was bilingual, an aspect that facilitated conveying information, as well as the integration and cooperation of the participants.

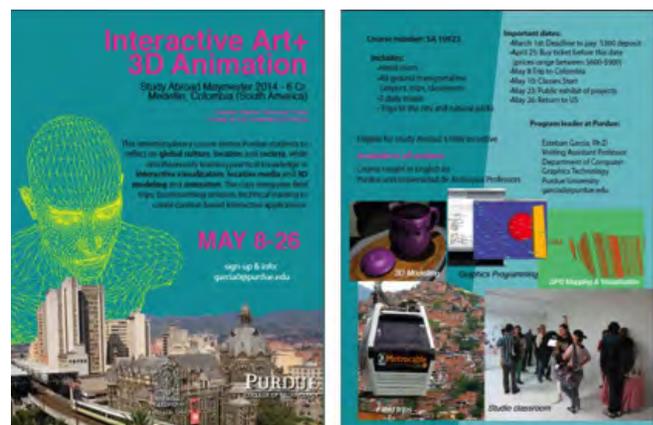


Fig. 1. Flyer for the open call, 2013, Esteban García, paper, © Esteban García.

## METHODOLOGY

Inspired on the pedagogies proposed by the artist Luis Camnitzer and the idea of an open studio we designed a collaborative learning experience. At a conference, Camnitzer proposed a non-hierarchical (horizontal) teaching model in which students played an active role as co-investigators. Additionally, he outlined the challenges of teaching technology in the field of art, especially those that include programming:

*“We teach the techniques of coding and de-coding without discussing the functions and relationships that they have with the perceptual actions that allow the existence and definition of these techniques.” [1]*

Consequently, we considered the importance of coupling technology with reflection in our curriculum design. The concept of “journey” enriched the methodology because it provided a groundwork that allowed the participants to think about on new intercultural realities and to activate them through the creation of new media projects. It is important to also highlight the interdisciplinary connections of the academic exchange as a whole. This course brought students and faculty from the fields of Fine Arts and Technology together. The course introduced students to computer code literacy and digital media while prompting them to research and create something on the topic of location, specifically in the city of Medellín. The course was themed around the topic *“Digital Cartography: Mapping the City.”* Students were asked to document their visit to Medellín using diverse media, such as sketching, journaling, photography, video and audio recordings through a series of field trips. These audiovisual documents became the source material for new interactive artworks. The distribution of the activities was designed to encourage participants to integrate the technological and academic work with the contextual experience gathered during the field trips. Our plan of activities followed Camnitzer’s idea in which the student drives the learning experience through their own reflections:

*“Only a good plan of study is capable of guiding a student to focus on the surrounding reality and equipping him/her for the construction and refinement of the culture and community within he/she acts. In this sense a functional plan of study is like a plan of action – a strategy – and it has to obligatorily express an ideology. It is also, as an strategy, a parallel action intertwined with the individual creation of an art piece. Therefore, this is why many times there is no difference between art making and teaching.” [2]* All the components of this course were woven together by field trips inside and outside the city, brainstorming sessions, technical training, conceptual dialogues and experimental input from all co-investigator participants. During the first week, students gained technical competence in the areas of programming and 3D animation through lectures and exercises. In the second week, both individual students and student teams developed their own projects reflecting on the course topics and

content in the studio. By the end of the second week there was a public exhibit of the resulting projects at the Cultural Center of Universidad de Antioquia. The image below shows an outline of the schedule:

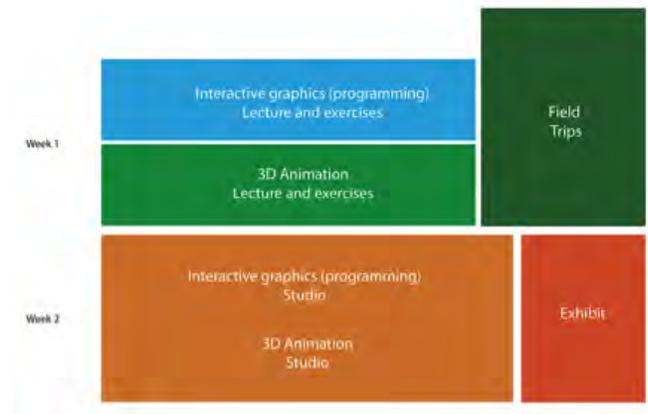


Fig. 2. Structure of the course, 2013, Esteban García and Isabel Restrepo, digital image, © Esteban García and Isabel Restrepo.

To provide the students with the opportunity to get familiar with the place of exhibition, most classes were taught at the Centro Cultural Facultad de Artes. For two weeks, students used this place as both a classroom and their studio. However, participants were introduced to other working spaces, such as Ruta N Medellín, an institution that hosts one of the Purdue’s global offices and that also has great facilities for projects that focus on technology and innovation.

As explained before, the personal documentation made by the students was the source material (data) for the creation of the artworks. The course involved three full-day field trips to facilitate the gathering of the data. Trips included: Parque Explora Medellín, Parque Arví and Universidad de Antioquia campus in Santa Fé de Antioquia. These field trips were also an opportunity for participants to have direct contact with geographical, social, political and economic realities and thus broadening the perspectives of all involved.

## THE REALIZATION OF THE COURSE

The course started with a general introduction to the philosophy and concepts that tied the entire course experience. We started the session allowing every participant to introduce themselves to the rest of the group. This was the first point of contact between the Purdue and UdeA students. After this, we led a brainstorming session prompting the group to think about the following terms: the journey, the shortcut, journaling, blogging, location, mapping, translation, critical cartography, icon design and ethnography. For this activity, we used *An Atlas of Radical Cartography*, a book that compiles designs and essays on mapping social issues. [3] We invited the students to become aware of their surroundings and to document their experiences through journaling, sketching and digital documentation.



Fig. 3. Introductory section: Fundamental concepts at School of Art, Universidad de Antioquia, May 10, 2014, digital image, © Esteban Garcia and Isabel.

### RESTREPO

During the first week, the classroom time was distributed in two four-hour blocks that introduced students to the development of technical competencies to create 2D and 3D imagery. The first block focused on interactive graphics (Processing) and the second block focused on 3D animation (Blender). We alternated the classroom experience with field trips to Cable Metro and Parque Arví. In this way, students acquired basic skills by using the mentioned programs and, at the same time, got direct experiences of the city.



Fig. 4. Field trip to Parque Arví, May 13, 2014, digital image, © Esteban Garcia and Isabel Restrepo.

The work done in Processing emphasized the idea of connecting two disciplines: Art and Technology. A search that is presented in the philosophical conception of the Processing language:

“Hybrids that can fluidly cross the chasm between technology and the arts are mutations in the academic system. Traditionally, universities create technology students or art students—but never mix the two sides of the equation in the same person. During the 1990s the mutants that managed to defy this norm would either seek me out or else I would reach out to find them myself. Bringing these unique people together was my primary passion and that’s

how I came into contact with Casey Reas and Ben Fry.” [4] The interactive graphics module was called “Programming for Visualization” and was structured to provide the following an introduction to programming using the Processing development environment. The module covered five thematic units in six days: (1) Fundamentals, (2) Interactivity, (3) Media, (4) 3D and (5) Processing. There were three small assignments in which the students applied the concepts from the modules. We helped each of the students or groups to assist with them with their specific programming questions and debugging. Our approach to teaching programming was allowing students to learn by doing and by letting them explore and play with the code structures and problems that we provided. The assignments required the use of their own collections of data, for example, in the first assignment, we asked them to create a landscape of the city using programmed vector graphics. Figure 5 shows an example of one of the assignments done in processing. The student integrated his vision of the city with the possibilities of creating 2D imagery through the use of processing. At a later stage these cable car images were turned into interactive programs.



Fig. 5. Cable Car (Cable Metro), 2014, Photo and digital image © Isabel Restrepo and Aaron Doenges.

The Blender workshop was called “Basic Principles for 3D Animation Utilizing Blender,” and was designed under the following themes:

- Introduction to the construction and display of storyline
- Interface and basic commands of Blender
- Modeling techniques in Blender: Predefined structure, box modeling, modeling, lathe, spline, loft, path, metaballs and text
- Properties of objects and their relation to the 3D environment
- Texture and lights
- Basic principles of animation

During the sessions students were introduced to the technical possibilities of the software through examples and were encouraged to develop their own perspectives by themselves. In this way, students had the opportunity to work with the program according to their own projects and ideas. Some of the participants from Purdue had experience on working with other software for 3D modeling, like Maya, so it was easy for them to raise comparison between those programs and Blender, as an open source version. In both learning modules, students developed a series of works that primarily represented their impressions about the city and

started to observe social and cultural phenomena. This point can be seen in the amount of projects that depicted the mountainous geography of the city, the piled distribution of buildings and the aerial perspective of the Cable Metro and other characteristic icons of the city.



Fig. 6. A compilation of works done by participants of Open Studio in Blender and Processing, 2014, Digital images © Isabel Restrepo and Esteban García.

In the second week, students were asked to develop their own projects integrating what they learned in the interactive graphics (programming) and 3D animation modules with their experience of the city. The module was called “studio” and the faculty played the role of mentors in helping develop their ideas technically and conceptually. For the creation of the projects students were invited to work in teams and to depart from their own observations or questions during their journey. The studio component included the following activities: collective work sessions, brainstorming, planning, development and installation of the projects.

## RESULTS

Each project revealed a unique perspective and process. The resulting projects were very diverse including interactive installations, videogames, animations and paintings. In several cases we observed that this experience was life changing in the sense that many students discovered a new passion through developing their work. We would like to mention the project *Diario cartográfico – Cartographic Diary* (2014) as an example of the studio work done by Sara Echeverri and Diana Marcela Zuluaga. The main goal of the students in this project was to capture the visitor’s movement in real time, as a way to facilitate the interaction with the space using digital and interactive content. The interface of the project included a camera that was installed on the ceiling, a map that was displayed on the floor and a video projection on the wall. In terms of the coding for the interactivity, the students, in cooperation with the professors, determined the brightest point in the space as a pattern for the recognition of movement. The movements of the users were designed to active different imagery in five sensitive zones. Although the project had some technical difficulties, it was a successful experience of bridging art and technology, allowing fine arts students to begin to work with code. After the course ended, one of the students decided to further

her work in *Processing* by enrolling in a programming class taught at Universidad de Antioquia.



Fig. 7. *Diario cartográfico*, 2014, Interactive Installation, Sara Echeverri y Diana Marcela Zuluaga © Photos by Isabel Restrepo.

Guillermo Blanco and Alex Stamm were interested in Medellín’s nightlife. They designed a survey and conducted interviews on the street asking people about their bar or club preferences. They were interested in applying this ethnographic research applied to the design of an interactive app. The project was called *Medellín: Vida Nocturna* and it provided the users information about the types of music, the cost and a rating system of the city’s preferred dance clubs and bars. The app used GPS data to locate the clubs on an interactive map with diverse genres of music. Guillermo and Alex’s friendship evolved into a strong designer-developer team. Both of them were so thrilled about the results that they would like to pursue app development professionally. They are currently working on a new version of the software and are planning to continue travelling around the world collecting data for their *Vida Nocturna* project.

Through this experience, another student became aware of her true passion. At the time she was enrolled as a freshman in computer graphics at Purdue, but this studio experience helped her to come to the realization that she didn’t quite want to be in front of a computer and that she did want to become an artist. She realized that she was not as much interested in coding as she was in painting and upon her return, she changed her major to Fine Arts. Her experience during the studio allowed her to further explore in the area of painting. Other projects allowed students to deepen their existing interests. One example of this is the animation *Equalizing the City* by Aaron Doenges and Jonathan Simonson. The animation tells the story of a white van that strolls through the city dancing to rhythm of Salsa and Electronica music. Both John and Aaron are animation majors. For the development of the projects students worked directly in the exhibition space, allowing them to experience and learn about the display of interactive and non-interactive artworks, as well as creating an exhibition. To create a coherent unit in the space, the

faculty planned the space distribution of the projects, considering the equipment that was available for the exhibition.

### PUBLIC EXHIBIT

The resulting projects were presented to the general public at the Centro Cultural of Universidad de Antioquia (Colombia) and displayed online on the site [www.2467-3979.org](http://www.2467-3979.org). All participants were present at the reception, allowing students to interact with the audience, answer questions relating with their projects or provide additional information about their process. To complement the information about the exhibition and the course, a brochure was designed and distributed at the opening.



Fig. 8. Images of the opening of the exhibition Open Studio / Estudio Abierto. May 25th, 2014, © Photos by Isabel Restrepo and Alexandra Tabares.

### EVALUATION

The evaluation of the entire experience was done in a rural campus of Universidad de Antioquia in the East region (El Carmen de Viboral). The students were asked to answer some questions in a written paper followed by a group debrief. In general, students highlighted as positive aspects of the course the intercultural exchange among students and professors, the possibility of developing practical projects that relates with contextual concerns, the opportunity to find new venues for their careers and the involvement that they developed for the projects, independently of a grade. Some of the comments of the students were:

Savanah Mick (Purdue): "On this trip I learned a lot about how Colombian culture differs from American and learned to appreciate and admire different ways of life."

Ryan Walker (Purdue): "I learned a lot about Colombian culture, became much more confident with Spanish and made several new friends. I learned how to wash clothes by hand too. In general, there are too many things to list on a single piece of paper."

Alex Stamm (Purdue): "In general the immersiveness of the experience is what taught me. The fact that we were forced into

new exciting experiences forced us to learn. Intensive experience brings intensive learning."

David González (UdeA): "This has been an incredible experience for me. Although in the moments previous to the beginning and during the first and second day it was somewhat stressful because of the language issue and uncertainty about the working methodology, I feel that I was able to couple with this process and to become more comfortable through the days. I found that our classmates from the USA were really nice and humble, they were engaged with the process, hard workers with lots of interesting ideas and knowledge that I hope to achieve with time."

Diana Zuluaga (UdeA): "When I heard about this project, I was very interested on the idea of being able to meet with students from another country and culture. Although the communication was difficult, smiles and gestures became the unifying bridge. It was a very positive and enriching experience in which the intensity and the complexity of the teaching did not impede interaction. I learned a few words and sentences in English, so learning to speak it like them is going to be my objective from now on."

As instructors, we wanted to finalize the course in a meaningful way by providing a space for collective reflection and feedback. This experience was very informative to us as it helped us to realize that this experience had a much greater impact on the students than we originally imagined. Overall, we were impressed with the quality of the projects, but mostly with the personal growth that each student had. After becoming aware of cultural differences, students grew into empathetic, respectful and compassionate global citizens.

### SPREADING AWARENESS

The socialization of the experience has been an ongoing process that includes material in different media. The first step was writing a report that was socialized with the directors of Universidad de Antioquia and Purdue University. During the realization of the course, press articles were written in the webpages of Universidad de Antioquia. Some of the professors and students were interviewed. Additionally, some information can be found in the Facebook account of the research group Hipertrópico (comunicaciones Hipertrópico). Along with this, the professors have shared the experience in different academic events, to share, discuss and analyze the meaning of this type of experience. Our goal is to continue providing this experience on a yearly basis.

### CONCLUSIONS

From the analysis of our planning, methodology, realization and outcomes of the open studio experience, we found great results on allowing students drive their own learning experience. In this way, students were motivated to have an active role in the creative process: they picked themes of interest, means for developing projects and the appropriate teams to work with. The theme of the course was a good excuse to invite the participants to explore

the city as well as learning technical aspects through the exploration of open source software.

Based on the results of the projects, the reflections and the affect of participants' decisions for future development, we feel that our experience was successful. Through this project we were able to bridge cultural and academic perspectives. Being part of a multicultural classroom facilitated a unique environment for learning that enhanced meaningful discoveries that broaden the perspectives of all involved. This exchange activated the emergence of creative thinking and artistic explorations through the convergence of art and technology.

## REFERENCES

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2. *Ibid.*, 82.
3. Lize Mogel & Alexis Bhagat, *An Atlas of Radical Cartography* (Los Angeles: The Journal of Aesthetics Protest Press, 2009).
4. John Maeda, "Foreword," in *Processing: a programming handbook for visual designers and artists*, ed. Casey Reas and Ben Fry (Cambridge: MIT Press, 2007).