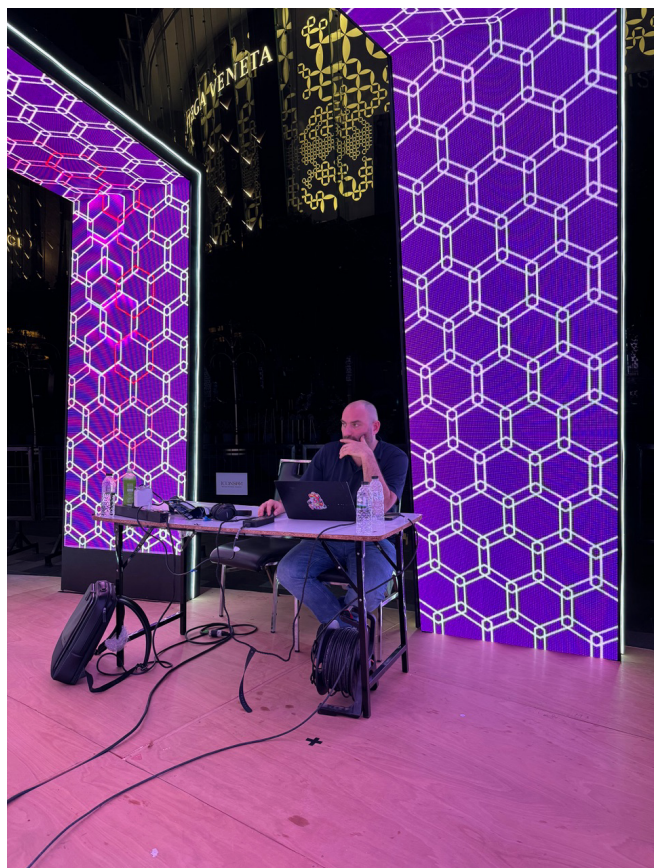# Interview with Nicolas Gaudelet, technical director of Miguel Chevalier's studio and Voxel Production

Chiara Giulia Toscani

Chiara Giulia Toscano: How long have you been collaborating with Miguel Chevalier? When did you discover his work? How did you get in touch and what was the first work you created together?

Nicolas Gaudelet: I met Miguel in May 2005. I was doing an internship in a gallery called Numeriscausa and that gallery was presenting *Sur-natures* within its space. Numeriscausa had a long-term relationship with Miguel because the gallery owner Stephane Maguet was also part of the development team behind Sur-Natures. Before knowing Miguel's name, I have already seen some of his work few years before (https://miguel-chevalier.com/work/intersecting-networks-2003). At the end of my internship the gallery Stephane told me that Miguel was looking for an administrative assistant. I started to work with Miguel while continuing my studies at Sorbonne university in October 2005. My job title was "exhibition organization assistant". On my first day I told Miguel that I was interested in computers and projectors and that I had already experimented during my studies. Two weeks later Miguel had an exhibition in Korea, and the team of developers were not available to take care of the technical side of this project. He asked Stephane to teach me the software Sur-Nature configuration, and I flew to Asia for the first time to install an interactive artwork (https://miguel-chevalier.com/work/Ultra-Nature-2005).

Chiara Giulia Toscano: What is your specific role within Miguel Chevalier's creative lab, and how do you contribute to the creation of his works? Do you consider yourself a technocreative or an artist? How does the collaboration between you and Miguel Chevalier unfold when developing an immersive installation? Could you describe the creative and technical process? Have you created specific software for your installations? Are there any particular devices that are essential to your work?

Nicolas Gaudelet: My role is producer and technical director. My role is quite similar to what a producer is in music or cinema. My mission is to provide to Miguel Chevalier, all the necessary resources to create his work. While Miguel leads the artistic and creative direction, I support him in all technical, logistical, and organizational aspects. I keep a permanent monitoring on new technologies, new equipment and software advancement in order to propose Miguel technological advancement. We are a very small permanent team: daily studio life involves Miguel, Emilie Lesne and me. For exhibitions like Pixels or Digital Beauty in Korea there can be 10 to 15 people working under Miguel and my supervision: scenography, assistants, projection technicians, electricians, Carpenters, etc. From the artistic idea to the exhibition, I would split my work in the following steps:

> Step1: software development:
> All software programs displayed in exhibitions are proprietary, exclusive and developed by Voxels Productions with help of 3 persons who are not fully part of Voxels but works on projects under my coordination.
> When Miguel wants to work on a new theme, he does some artistic research to give a direction and references of what he wants to create. Together we discuss with the software developers (most of the time Cyrille Henry and Claude Micheli).
> Miguel has his visual request (aesthetic, animation, mechanics) and I have the technical requirements (how I will set it up: multi-projections, hardware restraints…).
> Once a software is ready enough to test in the studio, we work together to test all possibilities.
> Miguel designs with it (flowers, patterns, etc..).
> Each artwork series uses a different generative software, and we have full control on it.
> All software programs are always in progress, and we need new features all the time, either for a specific space configuration or whenever Miguel has a new idea to add.
> The first software programs I saw created from scratch was *Fractal Flowers*. We started in 2007 and since then it is still evolving.
> For interactions we use another software we developed with Antoine Villeret. It's common to all interactive installations and runs in parallel on the computer.

Step 2: exhibition project
When we work on an exhibition, we usually discuss together what is possible and how to make it happen.
We receive plans and photos of the location.
Some projects might require preliminary site visits when spaces are big or complex.
Based on that we both discuss what would be artistically interesting and if it is technically possible.
Based on that discussion I prepare plans by calculating projections sizes and projectors positions. Deciding equipment needed.
Miguel works on rendering or simulation.
I make a budget and technical riders.
Budget can be an estimation of the exhibition fully provided by us: the museum or festival provides space and money and we take care of everything.
Or we can split the workload and bring part of the equipment and ask the festival or museum to provide requested equipment: structures, projectors, constructions etc…
For large exhibitions like *Pixels* in Grand Palais Immersif we also collaborate with designers and architects to help design the exhibition and all presentations of work.
Project management also involves a big part of administrative tasks I take care of:
- planning;
- invoices to pay or edit;
- forms to prepare before a construction works: legal forms, safety training and regulations acknowledgment.
-I write some of the contracts based on an agreement model defined with a lawyer.
For large exhibition or commission, I work directly with the lawyer to write an agreement or review terms and conditions of the client

Step 3: Technical productions
Depending on the project, I take care of ordering and buying equipment.
We always provide our own computer in order to guarantee good stability.
Since 2008 I have worked on specific Linux distribution prepared and updated every 4 years
In collaboration with Cyrille Henry.
This Linux is optimized for our own usage.
We also provide our own interactive system: sensors and infrared cameras.
We work with industrial cameras to also guarantee the best stability.
We also have a small stock of large screens and video projectors from 3 000 to 20 000 lumens.
Outsource equipment rental is very costly and Art space rarely has the correct equipment for our exhibitions so in many case we rent our projectors or screens to the Art space.
We work with outsourced equipment for short exhibitions outside of France or when it is too big to be handled by Voxels' stock.
Apart from virtual artworks I also work and coordinate part of the production of physical artworks along with Miguel.
For printed artwork I prepare files.
I also prepare the video Artworks.
For this I can help working on complex workflows and unusual video files.
I can also help working on 3d printing and robot drawings.
Finally, production is also to organize framing of artworks and construction of pedestals or any wooden accessories.

Step 4: installation.
Each artwork is prepared in the studio as close as possible to the real size.
all software programs are installed on computers and runs a few days at the studio before shipping.
We pack and organize transport of equipment and artwork.
We come on site for all installations.
Miguel and I go together for small projects (like Chiostro del Bramante) or with an extended team for larger installations.
We install our equipment and set the software programs depending on each individual space.
For larger installations we rely on independent audiovisual companies or on our extended team of freelancers.

Step 5: maintenance
While an exhibition is running or for permanent artwork. I provide basic troubleshooting instructions or make remote intervention.
In rare cases equipment replacements.
With all exhibitions running at the same time, good preparation is crucial.
I don't want to waste time with maintenance.
We never release software with known issues.
The only issue we got are hardware failures due to electrical problems or dust creating overheating.

Step 6: Communication.
We all work together on preparing the communication: photos, videos, social media posts, newsletters, websites and catalogues.

Chiara Giulia Toscano: How do you address the technical challenges of creating site-specific installations in unconventional spaces?

Nicolas Gaudelet: This question depends on the case. We have done a lot of mapping before generic mapping software programs appeared. On one hand creating our own software programs gives us the flexibility to adapt to many situations but on the other hand we have limited resources and time. For complex architectural projects like churches, we have travelled with our software engineers to adapt software programs on site.

Chiara Giulia Toscano: How does collaborating with experts from other fields, such as astrophysicist Fabio Acero for Digital Supernova, influence the content?

Nicolas Gaudelet: There are not so many collaborations like that. With Fabio Acero, the idea was to have someone who can explain to us what a supernova from a research point of

view. He proposed also to integrate images made by his laboratory or from laboratories he works with to enhance the project.

Chiara Giulia Toscano: What was the most technically complex installation you have worked on, and what innovative solutions did you implement to overcome the challenges?

Nicolas Gaudelet: One of the most technically complex installations I worked on was at the *Dongdaemun Design Plaza* (DDP) in Seoul. The project posed multiple technical and logistical challenges: the building's architecture was massive and complex, with an aluminum surface that made projection more difficult, and the urban environment was filled with streetlights and large LED screens that added significant ambient light. The project also faced tight deadlines and budget constraints, which meant we couldn't develop our own software solution. Instead, we had to adapt to the local technical team's software (Pixera), which involved an unusual workflow: capturing the videos from Miguel's software, then warping them on the building's 3D model using Cinema 4D. For just 15 minutes of video, the rendering process took 15 days on our most powerful workstation. To avoid any issues related to the tight deadline, I had anticipated this risk by setting up seven computers (five in Paris and two in Seoul) to accelerate the rendering process if necessary. During the first tests on site, we realized that the initial video didn't fully meet our expectations or those of the client. The next morning, we reworked the content by designing a new "virtual garden" with flowers and colours that would produce a better result on the building's complex aluminium façade. After a few hours of work, we launched the renderings on the seven machines and were able to deliver a result that met the project's artistic and technical goals.

Chiara Giulia Toscano: How do you see digital art evolving in the coming years, and what technological innovations do you think will have a significant impact on your work?

Nicolas Gaudelet: When I read questions like this, I always want to make clear that I make a distinction between The Digital Art made by Artists and what everybody calls "Digital Art" but made by companies which called themselves creative studio. These companies create "immersive experiences" everywhere but are very different to what an Artist studio is. I

don't really know how Artists will evolve in the next years: Today AI has a big impact for some of them and a big rejection for the other parts. Especially when i talk to our interns or young artists or students, AI is like cheating. AI is a new tool which offer lot of possibilities, but which is also very new and not so developed yet and it requires time to work with AI and manage to go further the default Aesthetic. I think also with all "immersive experiences" around, like it was when mapping started to appear everywhere artists want to be original and not be mixed all together. In the Case of Miguel and what we tend to develop together is to create a balance between virtual and material. Miguel has always been interested but making Projections and physical Artwork. We don't try to make a projection with a record number of projectors, but we tend to offer a variety of sensation. Miguel experiments with 3D printed ceramic, machine embroidery, robot drawing, etc... Today we can afford an industrial Robot arm to get in the studio, and we plan to work on live drawing in exhibition.

Chiara Giulia Toscano: Nature is increasingly returning to the centre of research for many digital artists and their studios, including yours. In your opinion, why this interest in plants, and in particular flowers? (We are referring in particular to the exhibition *I fiori nell'arte*, currently on at the Chiostro del Bramante in Rome, which presents works by Chevalier.)

Nicolas Gaudelet: Nature has always been a recurring subject in Art, I won't do an essay on how historians and philosophers have interpreted that. Miguel has been working on Nature for many reasons: He is passionate and fascinated by nature, landscapes, and flowers. It inspires him. He also likes to work a continuity in Art and Nature and flowers bring him more inspiration than any other subject. When starting with *Sur-Nature* flowers were a good way to work on artificial life with a process simple enough to work (flowers are more easily simulated than animals and humans) and yet it offers a lot of aesthetical possibilities. When working on generative and infinite Art I guess artificial life is also very understandable to the public.

Chiara Giulia Toscano: When did you start using AI in your work? Why did you choose to use it? Are technologies like video mapping outdated, or do you still use them?

Nicolas Gaudelet: We have started using Chat GPT before it was public we have tried to replace the herbarius text generator from 2009 with GPT2. It was good but not as good as what we have previously done with Jean-Pierre Balpe. When Mid-journey arrived, Miguel started to use it as a sketchbook. He didn't intend to use it to create artworks, but he used it as a tool for research. Then he started to use midjourney to create new kinds of textures used on his other software like Meta-Nature AI. The Trans-NAture Serie uses real texture which Miguel has collected from photos or drawing and mapped on 3D models of flowers. With Mid-journey Miguel could see a new potential to get a wider texture variety. You can ask for a leaf with a snakeskin or an x-ray rendering, an iridescent flower. Things which were possible but took lots of time. And for Trans-Natures we need to get a big variety of texture in order to not create a redundancy feeling. When Pixels exhibition started to be planned in July 2024 the curators asked if Miguel had worked with AI. I realized Miguel has created more than 20 000 images of his AI sketchbook and I suggest him to show this. And I showed him that new software programs arrived which can make animation based on still images. So, Miguel selected part of his previous images, and we made the Artwork you have seen in Grand Palais Immersive with 24 screens with each one a different video. It was a way to show the profusion of images made by Miguel because Artificial intelligence let him work faster. Mapping is not completely over but every city in the world has now their festival, their Christmas mapping. It is less creative than before and again Companies take the place of real artists to do the same thing again and again: bricks falling apart, fire, ornament of architectural details, in a ten-minute show. Today Miguel is less interested in that kind of projection unless a really specific building could inspire him. Miguel is more orientated today toward Museum exhibition where you can see projection and other of his creations.

Chiara Giulia Toscano: The use of immersive environments is increasingly becoming a commercial tool. What distinguishes the creative and artistic aspect from the commercial one?

Nicolas Gaudelet: I feel like most immersive spaces made by "companies" are soulless. Some might be interesting or impressive or well done technically but we don't see the work of an artist behind. Most of the time these spaces offer nothing more than an elaborate Slideshow based on artwork of famous dead artists, and when it is not a slide show, it's a copy of Refik

Anadol or other real artists. Grand Palais Immersif has proposed to Miguel to work on video immersion only. But Miguel Immersion in Art doesn't resume a flat moving image on every wall. You can immerse yourself while walking between sculptures, structures and paintings. To me Immersion is having your body reacting to an artwork and my body has more reaction in front of Anish Kapoor or James Turrell Artworks than seated in front of a slideshow. When I worked in Chiostro del Bramante, I went to the Vatican Museum for the first time. Without any technology, "the Stanze of Raphael " was the best immersive space I saw in my life.