

Drawn music

Exploring digital technologies to transform freehand drawing into a collective performance instrument

Abstract

The article narrates the experience of the Drawn Music workshop, carried out in different cultural spaces, in which the dynamics of collective drawing are based on a playful and interdisciplinary approach, and improvisations are developed where the lines are projected and animated in real time, in dialogue with the language of music. At the same time, it is explained how the development of this workshop is part of a research project that encompasses different teams and work networks, and is related to different experiences carried out in socio-educational programs and in the framework of public schools of primary and initial education.

Keywords: live drawing, real time animation, music, collective drawing, software libre



Figura 1: Taller “Música dibujada” en el Festival La Ballena Azul, Centro Cultural Kirchner, 2015

Questions to Weave the Dialogue

_ Do you like to draw? For those who said they don’t draw because they “draw badly,” who told you that you draw badly? Who can say that your drawing is good or bad? Who decides whether you know how to draw or not? Is there only one way of doing things? Is knowing how to draw the same as knowing how to copy? Does anyone enjoy drawing by imagining without copying, for example? Or starting by copying and then transforming that image? Or in any other way that comes to mind?

These kinds of questions open the workshop *Drawn Music*. The path the class takes varies depending on the answers, on the dialogue that unfolds. We seek to reflect on what it means to know how to draw and, without dismissing drawing as copying, to embrace the different ways of drawing, underlining something fundamental in arts education: there is not just one way of doing things well.

_ And regarding the different ways of drawing, have you ever drawn in a group? Did you like the experience? Has anyone painted murals? How did you organize yourselves to draw together on murals? For those who never drew in a group, would you like to try?

After reflecting on what it means to know how to draw and on the many ways of doing it, we explore one of the workshop's core elements: collective drawing. The questions aim both to learn about each participant's experience and to discover their desire, imagining together the possibilities that open up. In *Drawn Music*, we explore collective drawing by taking music as a starting point.

_ To draw in a group, how can we look to musicians for inspiration? How do they manage to play together? How can we listen to one another and pay attention?

The first point of contact between drawing and music emerges through group practice. We try to move away from the common view of drawing as an individual practice, and instead ask what it would mean to draw collectively, the way a band creates a song together. Listening is key to talking about dialogue. To listen is not only to hear, but also to pay attention and perceive. We approach collective drawing as a practice where we draw through dialogue with others. I propose something with my lines, and I also respond with my lines to the proposals others make with theirs. Speaking of listening in visual language helps us think about communication, about being receptive to one another during the creative act.

_ Do you like to draw with computers, or with cell phones or tablets? At home? At school? What programs or apps do you know? Has anyone ever made animated drawings? GIFs or other kinds of animation?

From there, we begin to talk about digital drawing, about its different forms, and about animated drawing, to then introduce another core element of the workshop: live drawing and real-time animation. This means we will give movement to the drawings with digital effects while we draw them. It also gives us the chance to talk about drawing as a time-based art, where the process of making is more important than the finished result. In fact, the outcome will not be a fixed drawing, but one in constant transformation, preserved only in our memory rather than in a static image. Thus, when we say we treat drawing as a time-based art, we mean we approach it as we would music (or dance or theater), arts that unfold through transformation over time.

Drawing Like Music

Drawn Music is a workshop based on the relationship between drawing and music. Its core elements are live drawing, collective drawing, and real-time animation. The workshop uses the free software platforms *Andiamo* and *Trazos Club* to animate drawings collectively and in real time. It is accompanied by a DJ, who mixes live music and interacts continuously with the dynamics of the workshop.

One of the central aspects of the artistic practice in which *Drawn Music* is situated is approaching drawing as a time-based art. The aim is to generate narratives through the transformative potential of drawing, where the process of construction becomes the aesthetic event in itself. When developed collectively, another key element is added to this temporal condition: the need to work within a shared time, a collective time. The equivalence with music allows us to think of resources such as rhythm or melody, the importance of silence, and the importance of listening.



Figura 2: Taller “Música dibujada” en el Festival La Ballena Azul, Centro Cultural Kirchner, 2015

***Drawn Music* in Practice**

Drawn Music usually takes place in contexts such as cultural centers and festivals, lasting about forty minutes. Thanks to a carefully designed didactic sequence and its playful character, it enables participants to have, in a single session, an experience of arts education that puts the proposed core elements into practice. At the same time, it opens the possibility for the experience to continue beyond the workshop, since at the end participants are shown how to access *Trazos Club* from any device—the technological platform that makes collective drawing and live animation of strokes possible.

Drawn Music is part of a broader research process in which I have developed different workshop proposals for children, carried out mostly within public education through socio-educational programs. The core elements of this research converge in *Drawn Music*, which is why sharing this experience also gives insight into the larger investigation. This article narrates that experience while relating it to others developed within the educational sphere, in order to show the possibilities of working with children through art in an interdisciplinary and collective way, using digital technologies in integration with analog media and centered on freehand drawing.

Sharing these experiences aims not only to disseminate the research but also to propose ways of working with children through digital technologies. This can happen within a broad disciplinary field—using these resources to address diverse content, taking the arts as a transversal axis of education—as well as in a more specific field, by contributing to the contents typically worked on in schools concerning the relationships between different arts, in particular between music and drawing, through the introduction of live animation of collective digital strokes.

Drawn Music was first developed in 2015 as part of the *La Ballena Azul* Festival at the Centro Cultural Kirchner, and later presented in venues such as the Centro Cultural de la Ciencia and at the Buenos Aires 2018 Youth Olympic Games.



Figura 3: Taller “Música dibujada” en el Festival La Ballena Azul, Centro Cultural Kirchner, 2015

A Scenic Device Built with Free Technologies

After completing the introductory conversation of the workshop, we walk through the device that has been set up, explaining how the equipment is connected and where the projection will be displayed.

The device is generally composed of two computers, two graphic tablets, and two projectors whose images converge in projection. The activity can also be carried out with less equipment if there is an internet connection: by using the *Trazos Club* platform instead of *Andiamo*, it is possible to work with a single projector and tablets instead of computers. Graphic tablets are not indispensable either—drawing can also be done with an external mouse.



Figura 4: Dispositivo armado para el taller “Música dibujada” en el Centro Cultural de la Ciencia, 2016



Figura 5: Dispositivo armado para el taller “Música dibujada” en el Centro Cultural de la Ciencia, 2016

Continuing the Workshop

We continue the workshop with a brief demonstration of how the device and the program work—how we can create freehand digital strokes that, through preconfigured effects, come to life in motion.

We also talk about the music, and about the role of the DJ who accompanies us by mixing live music. The program they use, unlike those designed for recording, is created to modify music in real time, just like the program we use for drawing. As the workshop unfolds, we establish connections between what we draw and what the DJ creates.

We explain the dynamic of drawing rounds that will take place throughout the workshop, moving around the equipment. We clarify that we form a circle, not a line, and emphasize the importance of contemplation: when I am not drawing, I need to observe what others are creating, because this is a drawing in constant transformation, one in which I am actively participating.

After this demonstration and conversation, the drawing rounds begin—together with the music.

The “Musical Instruments” We Use to Draw Music: *Andiamo* and *Trazos Club*

Drawn Music is carried out with the free software platforms *Andiamo* and *Trazos Club*. Both are part of a larger project developed with an interdisciplinary team that includes the creation of free technologies, scenic, audiovisual, and installation-based artworks, as well as educational and cultural mediation projects.

Andiamo is built on the Processing development environment, and *Trazos Club* on P5.js, which belongs to the same project and is used for web development. Processing is a major free software project, widely used in artistic and educational initiatives across many countries.

Trazos Club is a web-based platform for collective drawing. Through collaborative work and the drawing of animated digital strokes in simultaneous time, it seeks to foster new and playful artistic and educational experiences. It offers wide possibilities for working with school content, while also conceiving arts education in a broad sense—embracing the everyday appropriation of expressive languages.

Andiamo is the sister technology of *Trazos Club*. Both share the possibility of real-time animation of strokes and are designed for live drawing. *Trazos Club* runs in a web browser and adds the possibility of collective drawing, sharing the canvas with others. In its current form, *Trazos Club* is the starting point of a larger project: a virtual Drawing Club, a meeting place with drawing rooms and activity proposals. Today, the platform is still a prototype, a seed of the large-scale project we aim to realize.

The real-time animation of strokes allows the effects we apply to drawings to serve freehand expression. The technologies employed have highly intuitive interfaces and are based on the gesture of the stroke, making them user-friendly and well-suited to integrating digital culture into the classroom. They allow for connections between digital and analog technologies, and help move away from common assumptions—such as the idea that working with digital tools requires highly advanced technical knowledge or complex programs.



Figura 6: “Música dibujada” en el Centro Cultural de la Ciencia, 2017

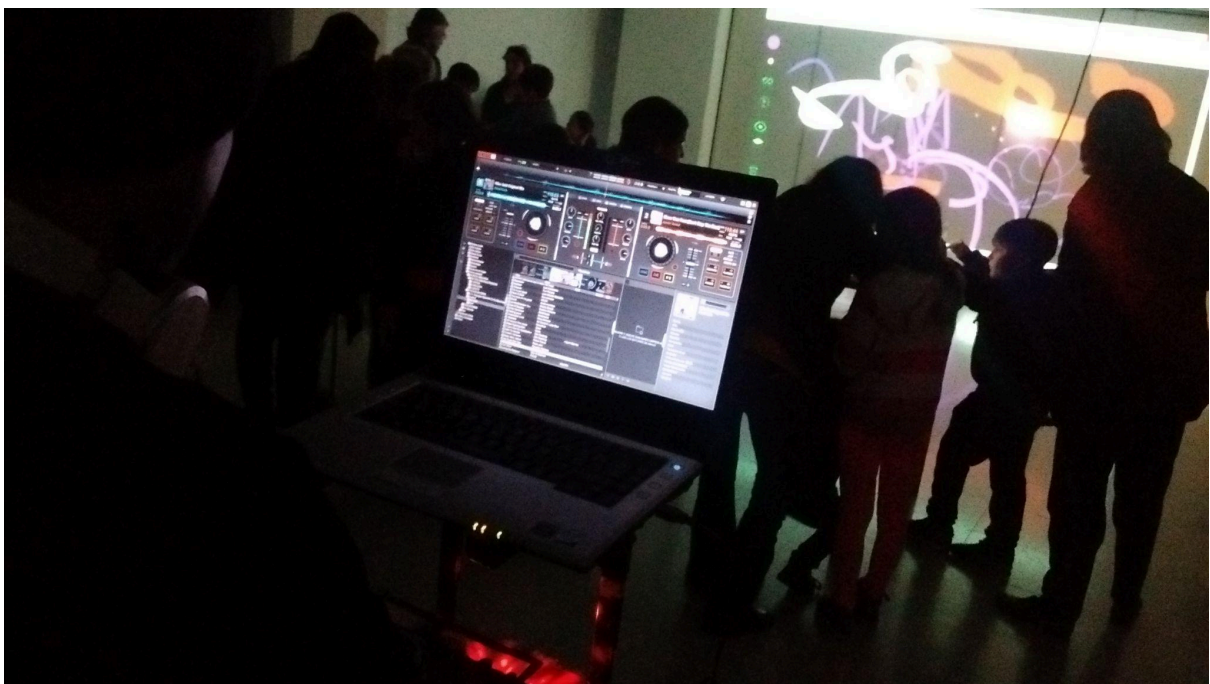


Figura 7: “Música dibujada” en el Centro Cultural de la Ciencia, 2017

Drawing Rounds

The didactic sequence of *Drawn Music* is based on playfulness and on progressively working through its core elements: beginning with ways of drawing, moving on to collective drawing, continuing with digital drawing, live animation, and then deepening the connections with music that these elements make possible, in order to explore visual language in an interdisciplinary way.

The experience is built on a dynamic of drawing rounds, which serve a didactic function but are also a resource for working with digital technologies when resources are limited. I developed these dynamics while working in public programs and in vulnerable contexts, which allowed me to strengthen collaborative work while also emphasizing that it is possible to carry out arts education activities that integrate digital culture without requiring significant resources.

The workshop begins with a warm-up round in which the music plays and we move in a circle around the computers, making just a few strokes to mark the rhythm. The facilitator narrates the dynamic, setting a pace so that the children participating can take turns as the drawer. This first warm-up round serves both to become familiar with digital drawing (for those who have never tried it) and, above all, with the resource of real-time animated drawing, where lines disappear as we draw them.

In the drawing round, participants practice group time and rhythm. The facilitator speaks about these aspects, emphasizing something fundamental to this exercise: contemplation. While waiting for my turn to draw, that waiting time should not feel like standing in line. Instead, we need to contemplate the transformation of the drawing over time, in order to continue it when our turn comes. In the construction of this collective drawing that evolves over time, the moment of drawing and the moment of contemplation are equally important.

Progressive Development of Visual Language, Technological Appropriation, and Collaborative Work

In the didactic sequence of *Drawn Music*, actions and instructions follow a progressive order to enable participants to incorporate and make the language of live, real-time animated digital drawing their own. At the same time, collaborative dynamics are also progressively developed, supported by playful strategies that encourage dialogue through strokes and help break away from cultural assumptions that naturalize drawing as an individual practice.

We begin with playfulness and spontaneity, giving prominence to the sensory aspect. As the rounds advance and participants become more familiar with the resources, we start incorporating elements of music—for example, connecting rhythm and melody with the different speeds at which lines disappear.

To understand how the program for real-time animated drawing works, we compare it to software used for live video or live music mixing, such as the one used by the DJ in the

workshop, who helps demonstrate these relationships. The key is to understand live, real-time animated drawing as an art form rooted in the present moment.

In video editing software, we work with a timeline where fragments are mixed and then exported as a final product. The same happens with animation programs or audio editing software: fragments are edited along a timeline and exported as a result. In contrast, live music or video mixing programs have no timeline—the goal is not to export a product. Instead, there are layers and a screen showing the live result of real-time combinations of resources within those layers, together with applied effects. The same principle applies to live drawing and animation programs: there is no timeline, but rather resources to combine and compose, executed in the present moment.

The workshop then continues to evolve, incorporating different ways of working—first gestural drawing, then figurative drawing. After experimenting with gestural drawing in dialogue with different parameters of musical language, we ask: what would be interesting to draw using this form of live animation? We begin thinking about things in motion, things that transform. Ideas emerge from our environment—water, plants, wind, clouds. From these questions we draw a moving landscape, accompanied by different soundscapes provided by the DJ.

A final round closes the workshop: we discover multicolored lines not used until that point, the DJ begins mixing festive live music, and we conclude *Drawn Music* with a joyful improvisation.

The Research

Through *Drawn Music* we can narrate an experience that encompasses the core elements of a research process centered on what we call *Open Drawing*. This involves the teams behind *Andiamo* and *Trazos Club*, as well as the *Open Drawing* research group, which I direct at the Universidad Nacional de las Artes. These teams are interconnected and collaborate within networks that include independent artists, cultural institutions, foundations, and various actors in educational communities, particularly within public education. More about this research can be found in the article *Open Drawing* (2021).

The research areas that appear in *Drawn Music* are also present in educational projects carried out in cultural institutions such as the Centro Cultural de la Ciencia and the cultural branch of ACUMAR, as well as in different educational contexts, mainly within socio-educational programs in public education. For example, in the Digital Education Plan of the Ministry of Education and Escuela de Maestros (Government of the City of Buenos Aires), and the CAJ Program (Youth Activities Centers, Ministry of Education of Argentina). Sometimes the workshops are conducted directly with children, other times with those who facilitate the pedagogical integration of digital resources in schools, and still other times through teacher training.

To name some examples of workshops developed in these contexts that share the core elements of *Drawn Music*, we can mention *Drawing Water*, *Digital Painters*, *The Band that Draws*, *Exquisite Corpse*, and *Drawing on Stage*.

Drawing Water is a workshop developed within the cultural branch of ACUMAR (Matanza Riachuelo Basin Authority), where collective drawing dynamics are used to address the theme of water sanitation and care with communities along the basin. It works through the relationship with music, from the gestural quality of strokes in relation to the movement of water, and from the themes expressed in song lyrics.

An experience that exemplifies the integration of digital and analog drawing and painting is *Digital Painters*, carried out with children at the Centro Cultural de la Ciencia and later shared as a starting point in various teacher training programs. It focuses on the concepts of light color and material color through examples, followed by practical exercises to explore the differences between mixing primary colors in both media. This then leads to a painting with tempera, while working with a key idea from collective drawing workshops: leaving something unfinished so that it can be continued later. In this case, the continuation is proposed with another medium, digital tools. The image is digitized and then further developed using a tablet and an application where colors are mixed again—but digitally.



Figura 9: Taller La Banda que dibuja, Plan de Educación Digital, Ministerio de Educación GCBA, 2012

Projecting the School

The Band that Draws began to be developed in public primary schools ten years ago, within the framework of the Digital Education Plan of the Ministry of Education (Government of the City of Buenos Aires). Before having the possibility offered by *Trazos Club* to animate drawings live, we worked with collaborative drawing programs to draw synchronously. Although the strokes did not move, temporal guidelines were suggested to develop the visual narrative, accompanied by a chosen song to guide the activity. The central idea of the workshop is to use the internet to draw simultaneously on the same canvas, and through the didactic sequence, guide the organization so as to dialogue live in a group, as if it were a musical ensemble. In this workshop I developed, through digital technologies, many of the collective drawing dynamics I had been experimenting with analogically for more than ten years.

Another workshop developed within the same program is *Exquisite Corpse*, which re-creates through digital technologies the traditional technique of group drawing that hides part of the drawing and gives way to a playful experience based on automatism. The classroom layout is rearranged in circles so that the computer screens cannot be seen by the people sitting on either side. Each participant begins a drawing and then hides it, leaving only one line visible, using the zoom and scroll options of the drawing program, so that the next person has a clue to continue from. Participants rotate, moving from one seat to another, and the drawing ends when everyone returns to their starting place. At that moment, the complete drawings are revealed and shared in the group. A key aspect of this experience is the introduction of bodily movement. Though very simple, it is highly effective for breaking away from the common assumption that computer-based activities must be done in a static position. The simple modification of classroom space also motivates participation, and the element of hiding processes enhances the surprise factor—always so important in creative processes.

A third workshop developed in the same context of the Digital Education Plan is *Drawing on Stage*, carried out across different educational levels, and which gained strong impact in early education with the introduction of *Trazos Club*. In this workshop, the experience centers on the possibilities of animating freehand strokes live and projecting them into space. Like in *Drawn Music*, the focus here explores the potential of drawing directly onto physical space. The use of a black background facilitates projection onto architectural space, objects, moving bodies, or flat surfaces such as drawings or murals. This experience, which combines live drawing with languages like music, theater, and dance, opens possibilities for activities such as school events, celebrations, and commemorations, allowing direct intervention in school spaces and heritage. It also enables the development of live drawing alongside oral narration, which offers many possibilities, since both languages share the capacity to build a story in a processual way. This relationship is explained by Juan Garff (2009) in reference to the play *Animated Tales*: “The images have a singular artistic quality but also a dreamlike

theatricality, linking the characteristics of narration—in fact, of personal reading—with the dynamics of scenic representation. (...) The technological resource thus becomes an artistic tool. And the animated journey through the stations of storytelling becomes at once an unprecedented and familiar experience, because it evokes the imaginary world of tales in their very process of formation.”

Networks

The possibilities opened in recent years through live animation of drawings with digital technologies reframe Norman McLaren’s definition of animation, the pioneer of experimental animation: “Animation is not the art of drawings that move but the art of movements that are drawn.” Among his many explorations, McLaren carried out experiments in which he created animations and sound simultaneously by manipulating film material. Today, we can animate drawings live, simultaneously with musical performance, and literally draw movements from the gesture of the stroke itself.

The context of the practices narrated in this article is mainly informed by the Processing project mentioned earlier, as well as by Zach Lieberman’s (2007) research on generative art and his contributions to live animation, and projects such as the Tagtool platform, which links live animation and performance. Also relevant are projects related to opening the practice of drawing, such as the *Club del Dibujo* and the pedagogical experiences developed within it by Claudia del Río. Furthermore, live animation is connected to the tradition of experimental animation, currently fostered and disseminated by the Animation School of Rosario, founded by artists trained under animator Luis Bras, himself a disciple of McLaren.

A historical and contemporary overview of these practices, with further references, can be found in the paper *Drawing on Stage* presented at the First UNA Arts Congress.

Conclusions

Drawn Music brings together different elements related to an expanded disciplinary field of drawing. It creates a space for constructing a visual imaginary through freehand drawings that take on movement in dialogue with musical language.

Drawn Music demonstrates the possibility of carrying out, within the short timeframes of cultural spaces (with occasional audiences in circulation), an experience that encompasses broad content, offering a space for experimentation while also leaving a door open for children to continue exploring that language further. This is made possible both by the methodologies of appropriation and by the accessibility of *Andiamo* and *Trazos Club*, the free software technologies that make the practice viable.

The experience also serves as a starting point for deepening these languages in schools. This is sustained by the fact that the simplified didactic sequence is the result of long-term projects developed in educational contexts, working with diverse communities, and within a wide range of cultural spaces.

Sharing the process of *Drawn Music* in this article stems from the desire to inspire new experiences and to nourish the network through which we enrich each other. For me as a practitioner, carrying out this workshop many times has brought the gratification of witnessing participants' enjoyment and learning through a sustained drawing workshop in a scenic setting. Above all, the greatest reward is creating a different kind of time. Through my work as a scenic drawer and educator, I find a clear connection between scenic time and the particular time of the art workshop: a shared time in which we are present only in the construction of that collective imaginary.

References

- **Book:** Del Río, Claudia. *Ikebana política*. (2016). Editorial Iván Rosado, Rosario.
- **Website:** Garff, Juan. "La payasa que provoca risas de felicidad." 2009. *La Nación*. <http://www.lanacion.com.ar/1170835-la-payasa-que-provoca-risas-de-felicidad>
- **Article:** Rapallo, Marcela. *Open Drawing*. (2021). *Revista Sonda: Investigación en Artes y Letras*. Universidad Politécnica de Valencia. <https://revistasonda.upv.es/portfolio/6339/>
- **Conference Paper:** Rapallo, Marcela. *Drawing on Stage*. (2014). *I International Congress of Arts, Universidad Nacional de las Artes*. <https://congresointernacionaldeartes.una.edu.ar/files/actas/0333.pdf>
- **Book Chapter:** Sánchez, América and Chávez, Norberto. (2000). *Manifesto of the Drawing Club*. In: *Haciendo dibujitos en el fin del mundo*. Rosario: Centro Audiovisual de Rosario.

Web References

- <https://andiamo.live/>
- <http://trazos.club/>

- <https://processing.org/>
 - <https://vimeo.com/44601359>
 - <https://www.oma.at/tagtool/>
 - <https://lucian.uchicago.edu/blogs/mediatheory/keywords/animation-2/>
-

Images / Alternative Texts

- **Figure 1:** Children circling around a setup with computers and graphic tablets; in front, the projected drawings, and behind them the space where the DJ is located.
- **Figure 2:** Children in front of projected drawings.
- **Figure 3:** Poster of the *Drawn Music* workshop within the image of the whale representing the *La Ballena Azul* Festival.
- **Figure 4:** Front view of the *Drawn Music* setup: in the foreground, the table with projectors, computers, and graphic tablets; behind, the DJ preparing their workspace. A screen displays the interface of the live music mixing program.
- **Figure 5:** Rear view of the *Drawn Music* setup: in the foreground, the DJ's table with audio equipment, console, and computer showing the interface of the live music mixing program. In the background, the table with projectors, computers, and graphic tablets, and the projection of the Processing environment running *Andiamo*.
- **Figure 6:** Rear view of participants drawing in front of the projection during the *Drawn Music* workshop.
- **Figure 7:** Rear view of participants drawing in front of the projection during the *Drawn Music* workshop, with the DJ's screen in the foreground displaying the interface of the live music mixing program.
- **Figure 8:** Scene from *The Band that Draws* workshop: children in white school coats sitting at a table; their school computer screens show the same drawings.