Dreaming Matter: Pina and AI as an Oracle of Forms and Absences

Rodrigo Ferrarezi
University of São Paulo | São Paulo, SP, Brasil
ct.roferrarezi@gmail.com

translation Caroline Spitzner
Radboud University | Nijmegen, Netherlands
carolspitzner@gmail.com

technical review Joaquim Pereira de Almeida Neto
University of São Paulo | São Paulo, Brazil
Joaquim.almeidaneto@yahoo.com.br

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In recent years, I have been developing a series of artistic objects called Πίνα (Pina), whose creation process establishes a structural co-authorship between "machine thinking" and human manual skills. Initially, I compiled a set of approximately 600 images of sculptures belonging to the collection of the Pinacoteca de São Paulo, covering works from the 16th century to the present.[1] To ensure a certain consistency of the input data, the images were subjected to a standardization process: uniform cropping and scaling, background removal (converting it to transparency), and resolution optimization. The goal was to minimize external interference and ensure that the neural network[2] interpreted exclusively the formal characteristics of the sculptures, without prior thematic or curatorial bias.

[1] The Pinacoteca do Estado de São Paulo is one of Brazil's most important art museums. Its collection, which largely covers the history of Brazilian painting from the 19th and 20th centuries, is one of the most representative of Brazilian art. [Translators note].

[2] What I call neural networks are computational models inspired by the functioning of connections between biological neurons. They are composed of multiple layers of processing units that receive, transform, and transmit information, allowing the system to learn patterns from large data sets. In the context of the works discussed here, networks were used to analyze the sculptural ensemble and generate new formal arrangements based on the detected regularities and absences.

With the dataset prepared, I implemented a *Python* code[3] in the *Jupyter Notebook*[4] environment, using image interpolation and image fusion techniques. The algorithm operated iteratively, progressively combining the sculptures with each execution. It is worth noting that, in this process, the AI didn't perform a semantic reading of the works, but rather analyzed them strictly visually based on pixel-by-pixel data, color distribution, contours, and contrast levels captured in the photographs. In the first runs, the generated outputs still maintained a considerable proximity to the original forms of the sculptures in the Pinacoteca's collection. However, as the code continued to run, and interactions accumulated and recombined, the formal patterns began to progressively distort, resulting in increasingly amorphous visual compositions.

After seven iteration cycles, I finalized the algorithm's approach and programmed it to operate in a reductive synthesis, reducing the initial set of 600 images to approximately 20 final compositions. At this stage, I implemented a second process using artificial intelligence to refine the final images. This step aimed to capture from these visual abstractions the traces of structural organization that evoked sculptural language, even if these were already profoundly transformed in relation to the works that originated the process. The result of this process, therefore, consists of a virtual interpretation that occurs in two distinct moments: first, through the code that generated the interactions and reorganizations of the images; and subsequently through AI that refined and consolidated this information, establishing a new formal lexicon detached from the original sculptural images but still echoing their underlying characteristics.

The process developed thus far placed me in the position of artist-programmer, but once completed in a virtual environment, I was then able to materially engage in the conception of this body of work, now in the condition of artist-sculptor. My practice as an artist finds in ceramics perhaps its primary means of expression, and this materiality takes on an expanded dimension here. In the Pinacoteca de São Paulo collection, the predominant sculptural mediums are bronze, plaster, and wood, while ceramics occupy a marginal position, with an extremely small number of examples. Choosing ceramics as the medium to materialize the 20 final works establishes a dialogue with other series in my body of work that utilize this technique, while simultaneously making a symbolic gesture of reintroducing ceramics to the institution's sculptural repertoire.

The process of sculpting Pina's works occurs largely intuitively. Unlike the virtual stage, where decisions were mediated by the algorithm, at this moment, the free will returns to the artist. The construction of the pieces begins with my interpretation of the images generated by AI, seeking to translate their textures and forms into the material universe of ceramics. Surfaces that evoke the shine of metal can be achieved through the

[3] *Python* is a programming language created in the early 1990s, known for its simple and readable structure, which facilitates its use in fields such as data science, artificial intelligence, and computer art. Its widespread adoption is due to the wide variety of libraries and tools available, enabling everything from complex mathematical operations to the generation of images and sounds through algorithms.

[4] *Jupyter Notebook* is a platform that allows you to organize, in a single document, executable code, images, graphics, and explanatory texts. It is widely used in research, art, and algorithm experimentation contexts, as it enables the user to visually monitor and document creative processes mediated by programming.

raku technique—a low-temperature firing that results in iridescent finishes; elements reminiscent of stone are materialized through high-temperature firings combined with the use of engobes and washes. This interplay between image interpretation and the search for technical equivalences capable of producing specific effects is what allows ceramic materiality to incorporate the visual qualities suggested by the digital output.

If a digital body can be understood as a locus of creative agency, the nature of this cognition becomes interesting: is it autonomous or an automaton? In "Hyper-Hybrid Humans," professor and researcher Lucia Santaella (2021) offers us clues to this proto-animism by resorting to the concept of digital twins (or algorithmic twins), entities formed from the continuous traces each user leaves when feeding the digital platforms they frequent. A digital twin, bringing Gell's (2018) discussion on activity-passivity here, is not limited to being a passive reflection; it is a predictive and intervening entity that projects itself onto the individual in multiple temporalities—past, present, and future—anticipating or even suggesting their actions based on the accumulation of data.

This perspective brings to light a final frontier of work: that of the authorship of the whole. Under what conditions can we consider the existence of a born-digital whole with its own creative agency? We consider two fronts here: (1) when the creative parts operate toward a final cause, which transcends the individual operation of each of them, and (2) when a creative act is conceived and conducted entirely by artificial intelligence, without direct human guidance. For example, when I provide a prompt (command) for an AI to reinterpret images of works from the Pinacoteca, my initial action triggers a process, but the AI does not act as a passive tool — its response is the result of intrinsic algorithmic processing done "behind the scenes" that autonomously reorganizes data and references previously fed to it, within the parameters I establish.

As the philosopher of technology Yuk Hui argues, a material system – such as an algorithm – is simply what it is at the moment of its observation, without any organicity of its own. This resonates with the way the AI in Πίνα absorbs sculptural patterns and returns them in an amorphous synthesis of signs. His system reorganizes data based on statistics and recurring patterns, lacking the sensory experience that historically underpins sculptural craftsmanship. However, by providing the basis for physical works from these outputs, Πίνα challenges precisely this dichotomy by allowing the system's gestures to return to the material realm and interact with human sensibilities.

Πίνα operates in a liminality which challenges the distinction between machine and organism. If AI appears to function only within the limits of what it was trained for, its work suggests that it can also produce something that escapes this determinism, especially when its outputs are reintroduced into the realm of physical sculpture. Acting in this field of form transfiguration, the machine operates simultaneously as a dreamer without interiority and an oracle without intention. Its predicted "dream" is not a fruit of subjectivity or desire, but of an intermittent calculation that dissolves and recombines sculptural features, generating compositions that never existed—yet derived entirely from reality. In the role of dreamer, the AI reorganizes fragments of visual memory into unprecedented structures, scrambling the formal and historical recurrences of the

Pinacoteca's collection until they become something else—a state of algorithmic delirium where matter seems to hesitate between permanence and dissolution.

While dreaming, the AI also oracles. Its logic is not inventive in the human sense, but rather revelatory: its formal syntheses expose patterns parallel to that of the collection, highlighting both the persistence of certain sculptural tropes and the voids that impose themselves as structural absences—as exemplified by the underrepresentation of ceramics within the Pinacoteca collection. Like the oracles of antiquity, it does not provide direct answers, but rather produces enigmas that can be read as symptoms of an artistic canon, of its repetitions and exclusions. AI, in this sense, not only simulates forms—it witnesses the formation of an aesthetic translation and, in doing so, returns us specters.

From a broader perspective, ceramics can be considered one of the earliest forms of sculptural modeling known in human history. Using it as a complementary means to a process of digital origin implies establishing a productive paradox: a dialogue between one of the most primordial methods of giving form to matter and a brand-new image generation technology based on artificial intelligence, in an encounter that advocates continuities and ruptures in sculptural practice, but which above all unites different temporalities in a simultaneous operation within the creative process.

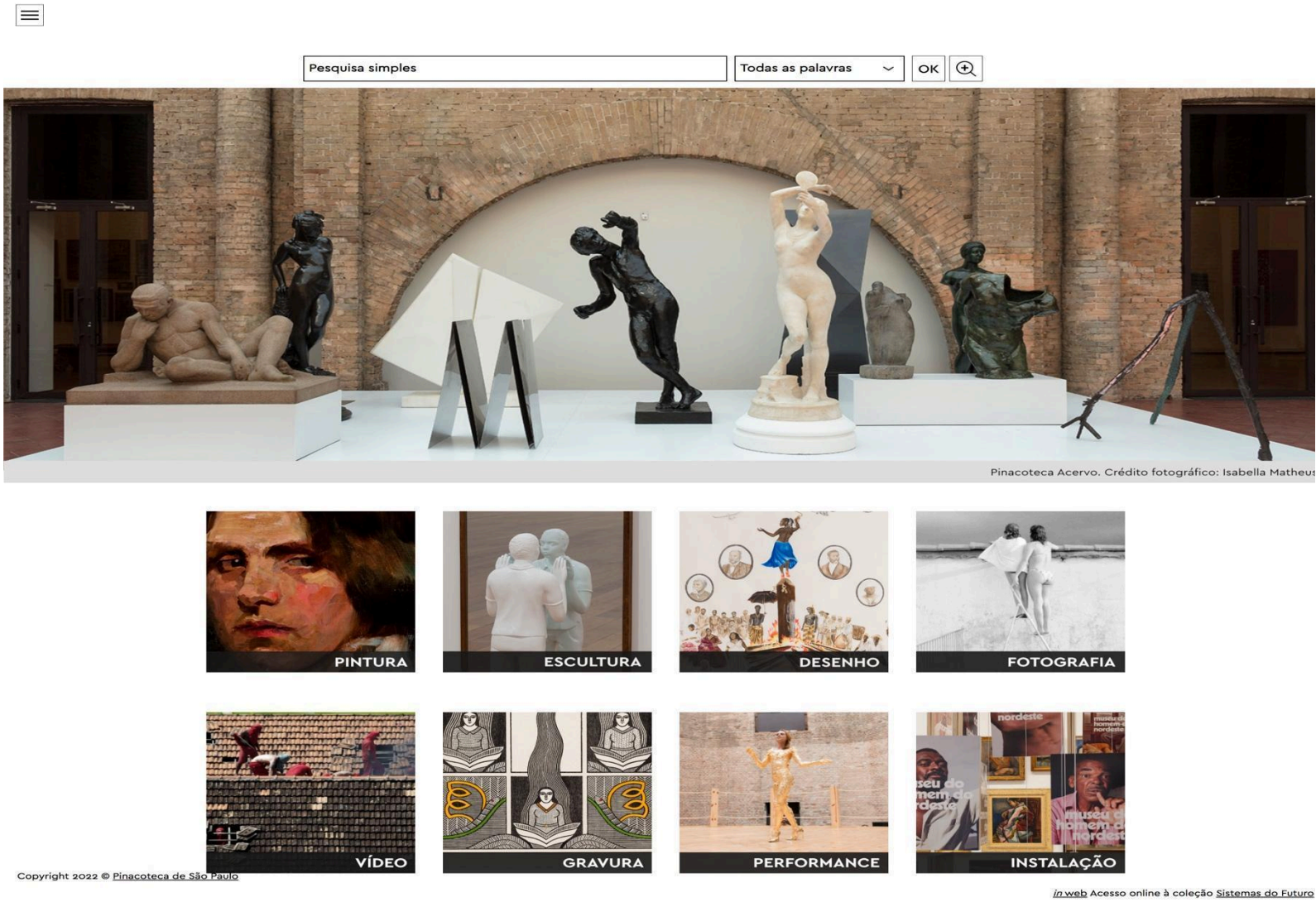

Figure 1. Browser tab of the open collection of the Pinacoteca do Estado de São Paulo.

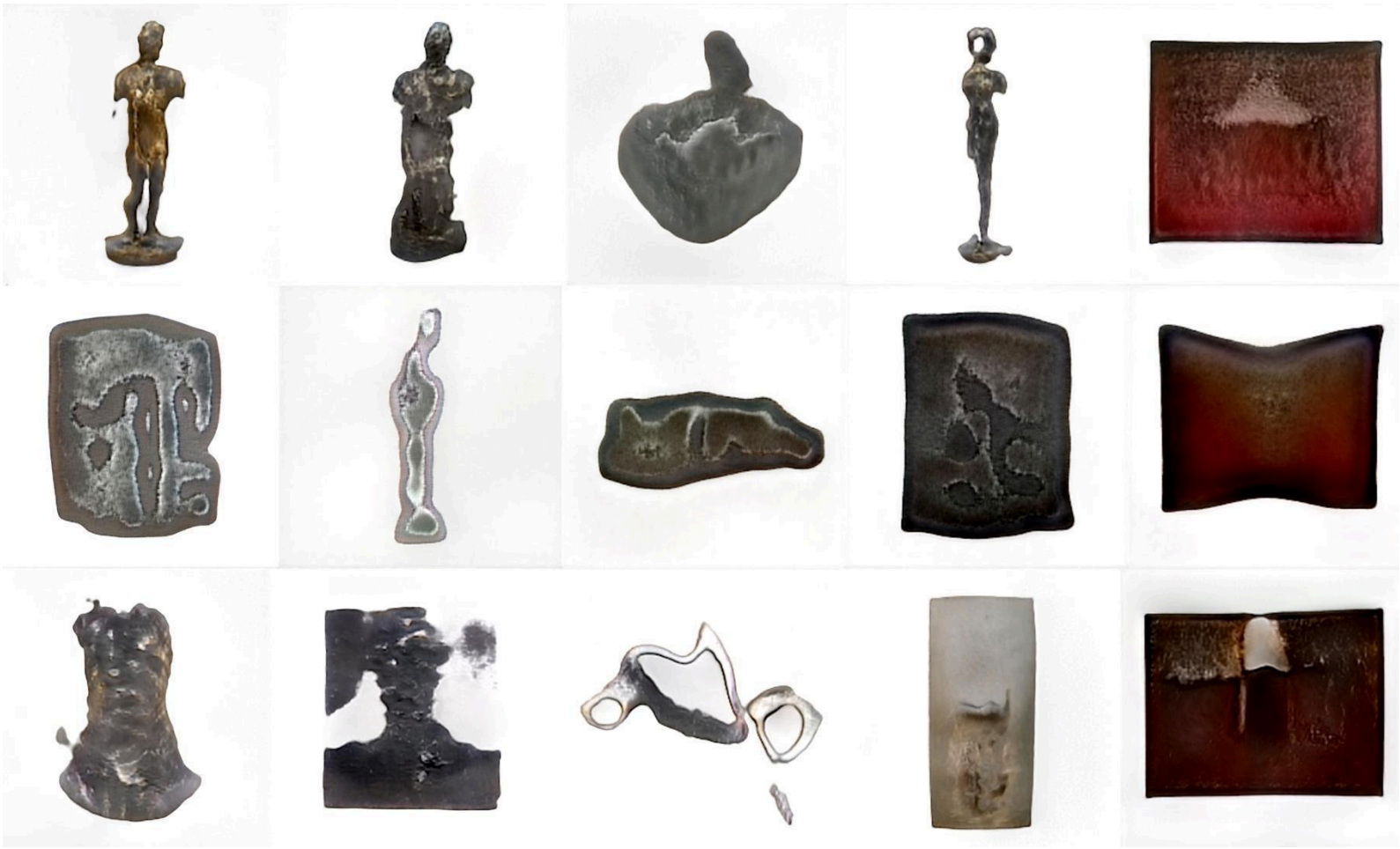

Figure 2. Evolution of interactions between images in the collection, generated by machine learning. Note the progression of interactions.

Figure 3. Final output of interactions, refined in high resolution by artificial intelligence.

Figure 4. Πίνα (Pina), 2023. Reduction of copper oxide on raku-fired ceramics. Various dimensions.

Figure 5. Final output of interactions, refined in high resolution by artificial intelligence.

Figure 6. Πίνα (Pina), 2023. Oxide wash on terracotta piece. Varied dimensions.

Figure 7. Final output of interactions, refined in high resolution by artificial intelligence.

Figure 8. Πίνα (Pina), 2023. Glazed ceramic. Approx. 35 x 21 x 17cm.

Bibliographic References

GELL, Alfred. 2018 [1997]. *Arte e Agência*: *uma teoria antropológica.* Trad. Jamille Pinheiro Dias. São Paulo: Ubu Editora.

SANTAELLA, Lucia [2021]. *Humanos hiper-híbridos*: *linguagens e cultura na segunda era da internet*. São Paulo: Paulus.

HUI, Yuk. [2019]. *Recursivity and Contingency*. London & New York: Rowman & Littlefield International.

about the author

Rodrigo Ferrarezi

Multidisciplinary artist-theorist, pursuing a master's degree in Visual Poetics at School of Communications and Arts (University of São Paulo) under the supervision of Professor Dr. Hugo Fortes. His work focuses on the concept of 'language hybridity' and co-poiesis, employing the co-authorship of biological agents, physical-chemical processes, and artificial intelligence in a body of work that draws on dissident languages such as ceramic sculpture, installation, and intermedia art. Since 2016, Ferrarezi has participated in national and international exhibitions, notably "Húmus" at Espaço das Artes (2025), "Olhos da Pele" at MAC-USP (São Paulo/2023), and "Ela: As Imagens" at Pinacoteca de São Bernardo do Campo (São Bernardo do Campo/2018).

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