

The Role of Computers in Art

Mario Verdicchio

University of Bergamo, Italy

The beginnings of Computer Art can be traced back to the 1960s, when three computer scientists began, almost at the same time and independently from one another, to use their computers to create geometrical designs: George Nees at Siemens in Erlangen in Germany, Michael Noll in the Bell Labs in New Jersey, and Frieder Nake at the University of Stuttgart, Germany. There had been already other similar experiments in the previous decade, but we consider these computer scientists to be the true initiators of the discipline for at least two reasons: they were the first to use digital computers (whereas the devices used before were analog systems combined with oscilloscopes) and, most importantly, their works were the first to be shown not in the laboratories where they were created, but in real art galleries instead. The works of Nake, for instance, were shown together with some works by Nees in the gallery “Wendelin Niedlich” in Stuttgart in November 1965. This can be considered as the first contact between an output of a computer system and the so-called Artworld, that is, the non-official worldwide institution comprised of artists, experts and gallerists [1], and the reaction was rather dismissive.

According to Nake [6], most of the criticism came in the form of a specialized version of the Lovelace objection, according to which one should not expect any originality from a computer because it can execute whatever one is able to order it to execute, but it is not able to anticipate any analytical relation or truth. This position was reprised by Turing in his ar-

ticle “Computer Machinery and Intelligence” [9]: anticipating criticism based on the above-mentioned objection against his vision of future machines able to converse like human beings, Turing affirms that Lovelace would have changed her mind had she been exposed to the possibilities of Computer Science in the 20th century. Actually, it might have been Turing himself to change his mind, had he been still alive, seeing Computer Art pioneers challenged by the same objection he had already dealt with. To be more precise, a typical complaint moved against early Computer Art was as the following: since machines simply follow orders, one cannot expect any creativity from them, hence the works of “algorists” (i.e. artists who work with algorithms), if they are the result of a creative process, must entirely come from the algorists’ minds; algorists are mathematicians or engineers (there were no official “computer scientists” at the time) but not artists, so their works are spawned from a process that is not artistic and thus cannot be considered artworks.

Although debatable (can mathematicians not make art?), today such an objection in any case no longer holds because many artists use computers to create works shown in galleries and museums, that is, it seems like computers have entered the Artworld in full effect. Still, this new practice (new with respect to “traditional” art, which dates back to the Paleolithic) has not been accompanied by an adequate expansion of Art theory to accommodate it, which leaves the door open to criticism

in the Artworld about whether computers are relevant and constitute an actual step forward in the field or are simply a fad.

This work analyzes the reply of algorists, Nake in particular, to the criticism against early Computer Art in the form of three considerations: (a) the novelty of generative procedures by means of pseudorandom numbers; (b) the evolution of authorship thanks to code parametrization; (c) a recognition of the key role of the audience in the creation of artistic experiences. By means of examples from modern art [2] and from contemporary art [4] we will show that (a) and (b) only refer to procedures that are indeed made more efficient by the use of computers, but do not need these devices to exist, whereas (c) seems to shed light on a field that is essentially based on today's computing technology, namely, Interactive Art.

Interactive Art has quickly gained a primary role in the artistic landscape: art historians like Katja Kwastek have recognized its potential for a significant support to the search of an adequate art theory and proposed an ae-

sthetic of interaction with digital instruments [3]; philosophers of art like Dominic McIver Lopes have even promoted the concept of interaction to an essential and definitory characteristic of Computer Art in general [5]. In spite of the problems in recognizing universal criteria that define Art, Interactive Art, with its focus on technology and persons, seems to be the discipline that embodies the zeitgeist best, and it surely has the remarkable merit of having given us, on the foundations laid by the pioneers of mid-20th century, a new kind of artworks that are not achievable in any other way than the most recent computing technology. Still, there is a critical issue that philosophers of Art must face with respect to Interactive Art: What distinguishes an interactive artwork from a computer game? Among the researchers in favor of viewing games as artworks, we find avid game players [8], or theories that present some conceptual shortcomings [7], whereas philosophers with more solid theories on Computer Art assume a more agnostic position when it comes to games [5].

References

- [1] A.C. Danto, "The Artworld", *Journal of Philosophy* LXI(19), 1964, pp. 571-584.
- [2] H. Janssen, F-W. Kaiser, M. Mühlring, *Mondrian De Stijl*, 2011, Hatje Cantz.
- [3] K. Kwastek, *Aesthetics of Interaction in Digital Art*, 2013, MIT Press.
- [4] M. Malone, *Chance Aesthetics*, 2009, University of Chicago Press.
- [5] D. McIver Lopes, *A Philosophy of Computer Art*, 2010, Routledge.
- [6] F. Nake, "Construction and Intuition: Creativity in Early Computer Art", in J. McCormack, M. d'Inverno (eds.), *Computers and Creativity*, Springer, 2012, pp. 61-94.
- [7] S. Romualdo, "Videogame Art and the Legitimation of Videogames by the Art World", in A. Clifford, M. Carvalhais, M. Verdicchio (eds.), *Proceedings of the 3rd International Conference on Computation, Communication, Aesthetics and X (xCoAx 2015)*, 2015, pp. 151-167
- [8] J. Sharp, *Works of Game: On the Aesthetics of Games and Art*, 2015, MIT Press.
- [9] A. Turing, "Computer Machinery and Intelligence", *Mind* LIX(236), 1950, pp. 433-460