

From Abstract Art to Abstracted Artists

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ABSTRACT

What lineage connects early abstract films and machine-generated YouTube videos? Hans Richter's famous piece *Rhythmus 21* is considered to be the first abstract film in the experimental tradition. The Webdriver Torso YouTube channel is composed of hundreds of thousands of machine-generated test patterns designed to check frequency signals on YouTube. This article discusses geometric abstraction vis-à-vis new vision, conceptual art and algorithmic art. It argues that the Webdriver Torso is an artistic marvel indicative of a form we call mathematical abstraction, which is art performed by computers and, quite possibly, for computers.

KEYWORDS

Rhythmus 21; Geometrical Abstraction; Webdriver Torso; Mathematical Abstraction; László Moholy-Nagy; Sol LeWitt; Frieder Nake; Conceptual Art; Algorithmic Art.

1 | INTRODUCTION

Featuring a succession of shapes in black, white and grey, Hans Richter's famous piece *Rhythmus 21* (1921) is considered to be the first abstract film in the experimental tradition (Michaud, 2013). Throughout its runtime of approximately 3 minutes, the constituent spatial elements of the work are comprised exclusively of the interaction of simple geometric forms, thereby drawing attention to the material properties of the medium of film: light, movement, and the screen as surface (Figure 1).

The Webdriver Torso YouTube channel consists of over 500,000 videos [1] all comprised of plain red and blue rectangles randomly changing location, proportion and size. An asynchronous soundtrack of piercing, high-pitch pulse tones accompanies these. When these videos first appeared, their purpose was unclear, as was the identity of the channel's operators. Various rumours circulated the Internet and Webdriver Torso attracted thousands of subscribers

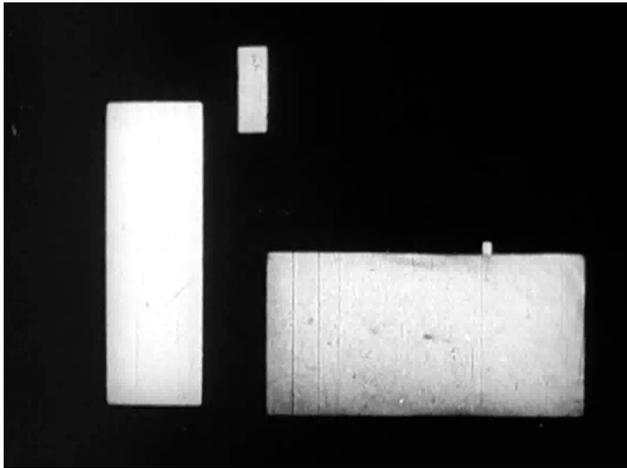


Figure 1 | 1. A still from the film 'Film Ist Rhythm: Rhythmus 21' (1921). Hans Richter.

and millions of views. It was then discovered that Google engineers, purportedly using it to test the technical quality of image and sound on YouTube, operate the channel. The videos, in other words, are nothing but chroma and frequency test patterns (Figure 2). It was also revealed that the videos are all automatically generated and are automatically uploaded onto YouTube.

The differences between these aesthetic phenomena are easily discernible. To start, *Rhythmus 21* was created almost a century before Webdriver Torso was launched. It also goes without saying that Hans Richter was human, as were the viewers of his film (then and now). Furthermore, Richter pre-mediated *Rhythmus 21* as an artwork. On the other hand, the numerous videos in the Webdriver Torso channel were created by computers and not by humans. Likewise, they are designed for 'viewing' by computers rather than by humans. Finally, (and perhaps most crucially), they were not designated as artworks. Thus, according to traditional aesthetic criteria, *Rhythmus 21* can be understood and categorized as a work of art whereas Webdriver Torso cannot. How then should it be understood and categorized? Is it anything more than an endless series of meaningless technical information?

The aesthetic affinities between *Rhythmus 21* and the Webdriver Torso videos are in many ways quite damning, possibly to the extent that even a trained viewer might be fooled into believing that Webdriver Torso videos belong to an obscure genealogy of (man-made) abstract film. This, we argue, is not entirely wrong. Thus, while considering certain

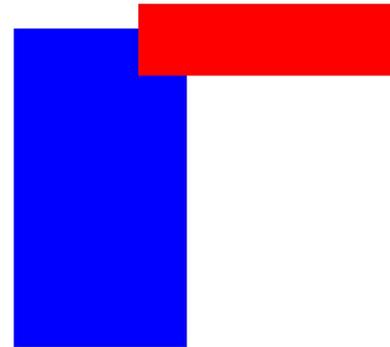


Figure 2 | A still from the Webdriver Torso Youtube Channel. Accessed on November 10th, 2016. <https://www.youtube.com/channel/UCsLiV4WJfkTEHH0b9PmRkw>

necessary conditions, we draw a lineage connecting these heretofore-unrelated aesthetic phenomena.

2 | ABSTRACTION

Rhythmus 21 is a work of geometrical abstraction, a work whose pictorial language is based on the use of simple geometric forms placed in non-illusionistic space and combined into non-objective compositions. The lineage we draw emerges from further processes of abstraction that nowadays condition human communication. This lineage problematizes familiar definitions of agency and intentionality and their relation to artistic production. In this vein Webdriver Torso can be defined as an artistic phenomenon emerging from what we name Mathematical Abstraction. Arguably, even if mathematical abstraction does not yield artworks in any traditional sense, it does mark a new set of circumstances that, at the very least, challenges fundamental definitions of art. The persistence of these circumstances suggests that the framework they operate within will be the *avant-garde* of art tomorrow.

However, before we delve into the locus of our inquiry, a few words about early modernism are now in order. There are several traditions of abstraction echoing a variety of philosophical, political and aesthetic positions. Nevertheless, no matter the particular tradition, or how one understands the positions it grew from [2], the underlying principle of all traditions is one. It is the desire to gradually strip away from the artefact (and henceforth from art) the visible traces of reality until all discernible elements of worldly phenomena are eliminated. Put differently, abstraction

is a process of reducing expression into its quintessential forms. It is thus possible, even appropriate, to name reduction, removal and elimination as the core concepts of modernist abstraction – common to all its lineages and differentiating them from 19th century realist painting.

Importantly, the artistic goals of what we nowadays call modernist abstraction are simultaneous and comparable with many cutting edge scientific quests that took place around the turn of the century. Physics, chemistry, experimental psychology, and other sciences were all similarly engaged in the deconstruction of the inanimate, biological and psychological realms into simple, further indivisible elements. Thus, it can be easily established that the gradual move toward abstraction in art echoes the same zeitgeist, as Lev Manovich convincingly argued (2007). Just as physicists, chemists, biologists and psychologists strived to break reality down into its basic constituents, so too did the artists of the time. They too attempted to articulate the basic elements that constituted their field of inquiry. Using motion as his means of investigation, Hans Richter contested the cinematic experience by applying musical principles to it. Arguably it is the “music” created by the transition of its elements that lends Rhythmus 21 its geometrical abstract quality [3]. In fact, abstraction in this film is more than a successful attempt to do away with a mimetic image of the world. The disavowal of the direct connection to the external world and the elimination of narrative establish this piece as a self-sufficient, closed ecosystem. Or, to use Philip-Alain Michaud’s words:

“everything that appears on the screen proceeds from the shape of the screen itself: the rectangles that grow or shrink are screens parallel to the screen; the lines sweeping horizontally or vertically across the projection’s surface are screens perpendicular to the screen. There is thus no more difference between the nature of the screen and the nature of the images projected onto it” (2013, p.45).

However, if we define abstraction as a mode of strict restraints, then arguably it is not its outcome that deserves attention but its methodology. In this case; not the actual film but rather the filmmaking. For

Rhythmus 21 abstraction may indeed be spiritual (a search for ‘essences’) but it is also procedural – the technological breaking of action into constituent, operative components. In other words, it is the reinvention of artistic expression as a series of operations that are (or can potentially be) streamlined. We shall demonstrate how, once these operations are notated, they can form new matter or new information. Take for example, telephone paintings, surprising new sculptural forms from dull-looking cubes and machine made art.

Rhythmus 21 is, similar to Kazimir Malevich’s black square, an investigation into the circumstances and conditions of its own existence. These are: material (the screen as surface), cognitive (the movement and transition of elements on that surface and their “imprint” on human eyes and minds) as well as ontological (the logical transformation of world into rhythm). For the time of its creation, this gesture was radical – an attempt to undercut the suspension of disbelief that usually underpins the cinematic experience, and, concurrently, the revolutionary suggestion that some aspects of that reality may be replaced by code.

The videos posted on the Webdriver Torso channel also examine and expose their own conditions of production. In that sense they are a link in a chain that dates back to the early 20th century. Webdriver Torso is therefore descended from similar concerns to those that yielded Rhythmus 21 and manifests them in new structures (This argument is in stark contrast to Manovich’s wherein contemporary forms of abstraction make evident “the sciences of complexity.” (Manovich, 2007, pp. 345-346)). Thus, the inclusion of Webdriver Torso in the tradition of abstract art is, in our view, a foreseen stage in the transformation of art from visible, to procedural, to conceptual, and then to the exclusively algorithmic. This transformation is easily delineated with László Moholy-Nagy’s so-called ‘Telephone Paintings’ and with the artist manifestos of Sol LeWitt and Frieder Nake.

3 | ABSTRACTION TO MACHINE

In 1922, in one of the first-ever attempts to utilize telecommunications technology for the production of art, Moholy-Nagy ordered 5 porcelain enamel

paintings from a Berlin sign factory. This is how Moholy-Nagy described his *oeuvre*:

"I had the factory's color chart before me and I sketched my paintings on graph paper. At the other end of the telephone, the factory supervisor had the same kind of paper divided into squares. He took down the dictated shapes in the correct position. (It was like playing chess by correspondence.) ... Thus, these pictures did not have the virtue of the 'individual touch', but my action was directed exactly against this overemphasis" (1947, pp. 76-80).

The resulting paintings, contrary to other artworks made by Moholy-Nagy, are somewhat unremarkable. They are perhaps generic, technical and even bureaucratic. Moholy-Nagy's methodology however, in sharp contrast to its end-state, is remarkable. For it reinforces a question raised by Marcel Duchamp, not long before: who is the author? Who exactly is the "I" in the statement quoted above? It is, contends Louis Kaplan, a manifold authorial "I": an "I" "who orders and dictates from a sign factory, sketches on graph paper, studies, plays, and hears criticism". But there is also another "I", argues Kaplan, "one who gave up signing, who prefers anonymity, who eschews the virtues of the "individual touch" (1993, p.165). By giving up and renouncing the "I" that paints and signs the painting, Moholy-Nagy also crossed out the "I" who writes so that our attention shifts to an "I" that is autonomously written and constantly over-written.

The 'Telephone Paintings' are the connecting and, consequently, the disconnecting link between Moholy-Nagy and his diminishing authorial agency, until he slips into anonymity. From dictating to dispatching and transmitting signals, with the dispensing of the author, the romantic conception of the artist has been challenged: "Smoothly, facilely, with the greatest of ease, the telephone has turned Moholy-Nagy into an operator for feeds and for feedback" (Kaplan, 1993, p. 165). At the same time this calls into question the concepts of the creative genius and the original artist. This scenario, concludes Kaplan, posits a world where an anonymous phone call, a telephone painting or a biographical experiment in de-familiarization (and the risks these pose to authority) would not automatically be called a practical joke nor considered

obscene (Kaplan, 1993, p. 168). Moholy-Nagy's 'Telephone Paintings' are artworks that herald the growing ephemerality of the artist.

The Webdriver Torso videos also break away and make redundant the overarching principles of what we have become accustomed to identifying as art. In an article discussing the development of test patterns on different media, Adam Rothenstein suggested that the Webdriver Torso videos promote a "new aesthetic test pattern for contemporary technology" (2014). And so, even if the videos call to mind artifacts belonging to the tradition of geometric abstraction (which were all carefully conceived by human artists, as well as crafted by them), labeling them as art objects still requires extreme caution and a modest leap of faith. This is due to the utter lack of authorship here, and the overall indifference towards their ontological standing. Another important trait of Webdriver Torso videos is that they are not only virtual and immaterial, that is to say almost-entirely independent of location or time, but that their "channel" also exists, and will continue to exist, regardless of whether it ever has an "audience" to "view" it and irrespective of whether that audience is comprised of humans or machines.

This characteristic of Webdriver Torso places (or rather abandons) complex questions on the doorstep of art. For while we know that the creator of these videos was not human, we do not know the ratio of human (as opposed to machinic) viewers. This, to reiterate, is an entirely new phenomenon. Furthermore, the fact that an open channel of quality assurance has become a modest attraction, in and of itself, reveals the extent to which the workings of the post-industrial technical apparatus (which underlies most artistic production today) are, to most of us, entirely opaque and unknowable. Otherwise, as Daniel Rubinstein and Katrina Sluis note, why is there an ongoing tendency to refer to them with bucolic metaphors such as clouds, shadows, streams, farms and flows? (2013).

Earlier we explained that the abstinence that produced modernist abstraction was closely linked to the dominant scientific paradigms of its time. We shall now direct our attention to the broader symbolic actions, or layers of asceticism, that gave rise to these paradigms. These, we argue, are still the backdrop for the scientific paradigm of our time. This will support

the claim that some autonomous computer-generated media outputs are, in many ways, a radical manifestation of the same conditions that, at least since the mid-twentieth century, have defined art.

To do so we now turn to the late media philosopher Vilém Flusser who consistently dissected and discussed the evolution of humanity in terms of abstraction. The symbolic role of sculpture, argued Flusser, was to abstract the four-dimensional continuum of space and time into a three-dimensional sign. This sign then stood for the continuum but, because of its dimensional reduction, it could also be manipulated. Some early such examples are gravestones, the pyramids and obelisks of various cultures. A further symbolic (or ascetic) act consisted in signifying a three-dimensional scene, object or sign through a two-dimensional surface-sign. This way a dying person or an existing gravestone, could be signified by a painting of a Pietà, for example. This provided even more room for manipulation. A third symbolic act according to Flusser was the replacement, or denotation of the two-dimensional through the alleged one-dimensionality of the written text. Linear writing, as Flusser often referred to it, thus represents a further recession into the non-concrete, into the form of code we call “the alphabet”. Importantly, it also endows humans with a new capability, the capability of “conceptual thinking” (Flusser, 2011a, 2011b).

Then came the fourth symbolic act, which was the replacement of the one-dimensionality of linear writing by what Flusser and also Friedrich A. Kittler identify as the “zero-dimensionality” of numbers or bits. Flusser calls this zero-dimensionality “the universe of technical images”. Kittler calls it “the world of the machine” (2012). Either way, and no matter which terminology one opts for, the movement of human communication towards extreme abstraction, can, according to this overarching narrative, be alternatively defined as the gradual cultural abolishment of all natural dimensions.

What all the phases described in the previous paragraph have in common is what Kittler called the $n-1$ dimensional signifier (Kittler, 2010, p. 227). What we must bear in mind in this context is that the $n-1$ dimensional signifier does not only reduce one dimension in every phase. More importantly, it conceals, disguises, and distorts the signified, that is,

the n dimension. Thus, the last 40,000 years of man can also be defined as the process by which all human modes of expression have been abstracted, ephemeralized and finally replaced by electronic modes of code.

We shall now go one step further to propose that not only modes of expression but also other cerebral functions can be, and in fact have been, replaced by electronic functions. By “other cerebral functions” we mean the human penchant for mysticism that is commonly called creativity – in other words the desire to “make” art. But in order to claim that an algorithm that automatically spits out ready-to-air videos is “artistic”, or even “an artist”, we shall have to postpone discussion of the inner contradictions of Flusser and Kittler until a different occasion. Instead we shall briefly define the “art” in “computer art” to bring the arguments of this paper to a close. This will be done with ideas that are by now familiar from another form of art that similarly appeared after the emergence of electronic code.

4 | MACHINE

It is all-too-rarely acknowledged that early computer art had much in common with other art forms that emerged around the same period: high-modernist hard-edged abstraction and, more importantly, conceptual avant-garde art (Taylor, 2014, p. 14). The brotherhood between these artistic genres, both born around the 1960s, a time of turmoil and calls for social change, is marked in the immanence of concepts.

In fact, Moholy-Nagy may have had more than a little to do with the origins of conceptual avant-garde art, as well as with the development of its thinking. Regardless of this contested point, conceptual art is nowadays understood as having completely nullified traditional artistic values (or what was left of them after Duchamp and Moholy-Nagy). The most notable ousting is of the manual craft once required for the physical execution of an individual work of art. Rather conceptual art tended to emphasise the process and the ideas that govern it. In fact, Sol LeWitt, in his seminal 1967 text *Paragraphs on Conceptual Art*, argued that the execution of an artwork is but a “perfunctory affair” (p.79) because planning and decisions can be, and ought to be, made beforehand.

LeWitt referred to art that isn't conceptual as perceptual, meaning appealing only to the sensation of the eye (in case of visual art). Furthermore, since the functions of conception and perception are contradictory (one pre-production, the other post-production) any artist, believed LeWitt, would mitigate his idea by applying subjective judgment to it. To work with a plan or preset, he argued, is one way of avoiding subjectivity. Conceptual art thus engages the mind of the viewer rather than their eye or emotions. Therein physicality of (three-dimensional) objects often becomes a contradiction to its desired non-emotive intent. LeWitt declares: "Any idea that is better stated in two dimensions should not be in three dimensions. Ideas may also be stated with numbers, photographs, or words or any way the artist chooses, the form being unimportant" (p.81). With this in mind, forms are of very limited importance; They become little more than the grammar for the total work: "In fact, it is best that the basic unit be deliberately uninteresting so that it may more easily become an intrinsic part of the entire work" (p.80).

The ideological similarity between conceptual art and computer art is made apparent and accessible in another manifesto published in 2010 by Frieder Nake – a mathematician, semiotician and pioneer of computer art. Significantly, Nake's Paragraphs on Computer Art, Past and Present borrows its style from Lewitt's Paragraphs on Conceptual Art. The earlier title is acknowledged, quoted and some of its core principles are elaborated.

In the latter manifesto, Nake names 3 great principles of computing machinery. These are: computability, interactivity, and connectivity. Computability, he argues, appears in the arts as algorithmic art, Interactivity appears as interactive installation and connectivity appears as net art or software art. We shall utilize some of his intriguing arguments on algorithmic art to support our definition of mathematical abstraction.

Computer art is "art from a distance" argues Nake (2010, p.56). The computer is necessary for the art process by mediating and fulfilling the artist's ambition. It then automates the production of the perceivable, material component of the work. In algorithmic art, artists can potentially create (in fact they must create) an entire class of art works (not just

an individual work). The artist thus works in the realm of possibilities and potentialities, not just in the realm of realities. The work of art in algorithmic art is, in other words, the description of an infinity of possible works.

"Computer art is conceptual art," states Nake, but insists that concepts in computer art are somewhat different from concepts in conceptual art. In computer art concepts appear as operational descriptions. This is significant because algorithms are descriptions: "finite descriptions of infinite sets" (p.57). Moreover, algorithms are descriptions of dynamic processes. However, these descriptions have a unique standing: they are operational and executable. That is, they are text and machine, at the same time. To recall, LeWitt proposed that in conceptual art "the idea becomes a machine that makes the art" (1967, p. 80). Here the machine is the text and the text is the idea – idea and artwork become one. Nonetheless, it is important to clarify that computer art is conceptual art insofar as it describes an idea and does not show the material work. Since its description must be operational or computable, the concept can be carried out immediately without mediating media. If the conceptual artist ever wanted to realize his description of an idea, he would need an appropriate kind of media to do so.

Nake's underscoring of the process of reduction as elemental for conceptual art is especially relevant to our argument because it makes clear that conceptual art was another step in the continued reduction of human expression (Kittler's n-1 dimensional signifier). This reduction reached the point of the concept or idea itself. There can now be no work of art without a concept at its root. In conceptual art, the concept is considered more important than its realization but algorithmic art takes this yet one step further: Ideas and their descriptions in algorithmic art must be codes. This code is incorporated into their own execution. Whereas in conceptual art there is an inherent delay between concept and the production of the artwork, algorithmic art immediately delivers the conceptualized piece and could go on realizing the same concept ad infinitum. That is, there is no separation between art process and artefact and therefore the algorithm is perhaps the artistic concept in its strictest form of description - the final form of art in times of industrial and post-industrial production.

5 | CONCLUSION

Does it matter then that a particular algorithm was never intended for artistic purposes? Probably not. If we take art as a form of perceptual magic we can see that it changes through time. When forms of perceptual magic change, so do the material conditions of living generally, and technologies and modes of representation, more specifically, all must change too. In time these changes teach us to think in particular ways appropriate to them. That is, they condition us, their makers. This holds true for drawings, written words, technical images and algorithms. Put differently, the incorporation of mathematical procedures into artistic creations was, from its outset, bound to change the definition of art. For if predetermined probabilities are determining the visible aspects of the work of art, then what difference does it make if these probabilities are calculated by humans or machines? After all, we humans, the pinnacle of natural creation (as we once believed ourselves to be), also rose through repetitive calculation and transmission of pre-programmed information. And what difference does it make if these probabilities are observed by machines and not by humans?

It ought to now become clear that information processing before transmission can unleash a plethora of intriguing artistic possibilities. This is why genetic engineering and artificial life can be taken as art forms, and artificial organisms should be considered works of art. Down the road, such processes, and others like Webdriver Torso, may lead to unexpected results. The unexpected of course poses a threat but also constitutes a promise for an evolution of art by means of mathematical abstraction - the expansion of its operational possibilities into more senses, channels and manifestations. The proposition we wish to present here is not that these 500,000 videos are necessarily art, but that they lure us to explore the new avenues provided to art by the apparatus, the algorithm and the program. "The idea becomes a machine that makes the art" wrote LeWitt almost 50 years ago. This is especially true today, given that some machines can create what some of us take to be art.

ENDNOTES

- [1] As of October 2016, hundreds of videos are added daily.
- [2] There are various historical roots and philosophical presuppositions that eventually lead to the gradual rise of abstraction in various places in Europe. Accordingly, the emergence of 'pure' abstraction in the 1910s is narrativized in several ways, but most often with one of three protagonists: Kazimir Malevich, Wassily Kandinsky or Piet Mondrian.
- [3] Of course similar concerns can be identified not only between separate fields of inquiry but also within them. In other words Hans Richter obviously took inspiration for the title and theme of his film from other abstract artists who similarly titled their works with musical terms - for example Kandinsky or František Kupke.

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