

# Confusions and Corrections: Complexism and Generative Art Theory

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## Premise

In previous years the author has contributed a number of publications, some for this very conference, that address generative art theory. In this work complexity science serves as a context for art theory.

This theory work led to additional publications offering a broader critique of contemporary culture, also inspired by the field of complexity science. This non-scientific theorization has been collected under the invented term “complexism.”

Since their initial publication these writings have gained reasonable traction, but have also come under fire by some of those who see things differently. In this paper some of those concerns are addressed. It is suggested that these disagreements are mostly the result of misinterpretations of the original publications. Various correctives and commentary are offered here to reinforce the validity of both bodies of theory.

## 1. Background

In a paper from 2003 I introduced a theory of generative art using scientific complexity theory as a context, and based on the notion that the one, and perhaps only, thing all generative art has in common is the way it is made. All other issues such as the aesthetics of the work,

the reason for employing generative systems, social or political or other content, can vary from artist to artist and from artwork to artwork. [1]

In 2008 this look at generative art through the lens of complexity science inspired a new pursuit, the development of a broader cultural theory, worldview, or philosophy called complexism. [2, 3]

### 1.1 Generative Art Theory

While a definition of generative art will not include all that can be said about generative art, it should put forward an implied theory of generative art. The following definition from that initial 2003 paper has been usefully cited hundreds of times.

“Generative art refers to any art practice in which the artist uses a system, such as a set of natural language rules, a computer program, a machine, or other procedural invention, that is set into motion with some degree of autonomy, thereby contributing to or resulting in a completed work of art.” [1]

Some initial confusions have now been, for the most part, corrected in published discourse. First, generative art is not a subset of computer art. In fact, I’ve argued that generative art is as old as art itself.

Second, the term “autonomy” as used above is not meant to engage the deep sense of the term invoking philosophical

issues such as consciousness, agency, and free will. Rather, “autonomy” here is used as in robotics to indicate the generative system is not steered by remote control, but rather proceeds on its own without moment to moment guidance by the artist.

Third, generative systems are not limited to software and natural language rules. A “procedural invention” can include physical systems of chemistry, biology, mechanical devices, smart materials, and so on.

Finally, not all rules-based art is generative. Often the rules used are not complete enough to execute autonomous construction, and merely constrain or inspire choices made by the artist. [4]

## 1.2 Complexism

While complexism was first introduced in 2008 [3], as this paper is being written the current definitive discussion is found in a long article published more recently. [5] However, even at the outset complexism was presented as something much more than a form of generative art theory. Complexism is nothing less than a higher synthesis attempting to reconcile the current contradictions found between the modern culture of science with the postmodern culture of the humanities. A full explanation is beyond the scope of this paper, but is broadly summarized in the chart below. The first two columns summarize the contradictory views offered by modernity and postmodernity. The third column suggests a higher synthesis that reconciles these contradictions.

Modernism	Postmodernism	Complexism
Absolute	Relative	Distributed
Progress	Circulation	Emergence and Coevolution
Fixed	Random	Chaotic
Hierarchy	Collapse	Connectionist Networks
Authority	Contention	Feedback
Truth	No Truth	Statistical Truth Known to be Incomplete
The Author	The Reader	The Generative Network
Pro Formalism	Anti Formalism	Form as a Public Process Not Privilege

Table 1 – Complexism summarized

Even though complexism has been presented as a large tent for all manner of cultural theory, it has been at times mischaracterized as something smaller; a kind of enthusiasm for the use of complex systems in generative art. As will be seen, this has contributed to a number of confusions on the part of commentators.

## 2. Confusions

Before reviewing a number of specific confusions in generative art theory and the distinct realm of complexism, a few general concerns are worth mentioning.

### 2.1 The Principle of Charity

Sometimes in the rough and tumble of academic debate, and not unlike life in general, people become so attached to their own ideas that their goal in discourse is no longer to discover the truth wherever it may be found. Instead, “winning” the debate becomes an unchecked ambition.

This does not typically serve scholarship well. One result is that strawman arguments are sure to follow. Whether due to a kind of unconscious confirmation bias, or a more cynical form of conscious sophistry, a given writer may misstate the meaning another writer intended, thereby setting up an easy but irrelevant counterargument.

To maintain a good faith debate and fruitful exploration, those in philosophy and other disciplines follow what is called “the principle of charity.” “Charity” here does not mean pulling one’s punches to give an opponent the gift of an unearned advantage. Rather it means that there is always room for interpretation, and one should assume that the strongest possible interpretation of the author’s written words is indeed the intended meaning. [6]

The result may be that fashioning a response will be more challenging than otherwise. But it also means that in the end the strongest ideas will be in competition, and whatever the conclusion, it will not have left unexplored the most viable options.

Fortunately, the academic objections I’ve encountered are not cynical, but rather are good faith disagreements even if ultimately based on honest misinterpretations. One might wish that when readers interpret a text in a way that is obviously weak, that they would search for a stronger interpretation intended by the author. But ultimately, it’s the responsibility of the original author to write a text that is clear and unambiguous. It is hoped that this paper will help clarify what was apparently not clear in the original texts.

## 2.2 Political Reductionism

In previous writing I’ve discussed three forms of reductionism. In casual use in the humanities the word “reductionism” is often used in a vague sense to denote the explanation of complicated phenomena in fewer simpler terms. Such use often comes with the connotation that a given reductionist explanation is flawed due to oversimplification, especially since a dominant theme in the humanities is the need for endless deconstruction and the instability of texts. However, my use of the

term is more technical and specific. As noted in previous writing:

“Ontological reductionism posits descriptions of hierarchical being such as, for example, the common scientific understanding of matter as molecules made of atoms which in turn are made of subatomic particles and so on. Methodological reductionism suggests a parallel activity and mode of exploration whereby large systems are iteratively broken into smaller systems until one finds a set of simple systems that can be understood and explained. Theoretical reductionism refers to any attempt to describe and explain a field of study solely within the paradigm of another, possibly incommensurable, field of study.” [7]

So, when I speak of reductionism in traditional pre-complexity science, I’m making a specific reference to the kind of hierarchical ontologies found in science; e.g. molecules are made from atoms, atoms are made from subatomic particles, etc. It also refers to the corresponding methodological reductionism practiced via the scientific method to explore those hierarchies level by level.

But as will be seen in the following, some writers practice a form of theoretical reductionism where complicated issues in one discipline become mere examples for a meta-critique of that discipline from the point of view of another, often incommensurable, discipline.

As will be seen, a specific flavor of theoretical reductionism, call it “political reductionism,” is not uncommon in the humanities. It is an impulse inherited from both Marxist analysis and post-structural analysis such as theories of power expounded by Foucault. Such reductionism has been applied to both my work in generative art theory, as well as my development of complexism. While those who want to reduce these distinctly apolitical points of view to politics may

have their reasons for doing so, it's highly questionable as to why politics must be the implicit paradigm from which all understanding and meaning must emerge. In fact, such a move appears to me to be the embodiment of a category error. It leads to some of the confusions that will be outlined below.

### 3. Generative Art Confusions

While some of the early misinterpretations of my complexity-based generative art theory have been fully addressed, other confusions have been slower to recede. In particular some writers will mistake a desirable option as being absolutely required or superior to all other options. For example, Cham and Johnson [8] note:

“By insisting that all artwork is generative Galanter, like many other writers, negates the medium entirely which allows him to insist that generative art is “ideologically neutral”. Generative art, like all digitally interactive artifacts are not neutral but rather ideologically *plural*. “

Even a cursory reading shows I do not claim all artwork is generative, and I go to great lengths to differentiate between generative and non-generative art. Further, Cha and Johnson mistake a theory as to what is and isn't generative art, with the question as to whether generative art can deliver an ideological message. This confusion of medium versus content continues in some of the examples below.

In a similar way Richter [9] takes a point too far when he states:

“The interest in analyzing the algorithmic process of digital art-making is from both a computational and an artistic point of view. The rationale for the latter is that art-theoretically and following an

argument of Philip Galanter, in generative art the artistic work in itself is not seen as important as the artistic process. In a reminiscence to the art movement of “truth to material”, generative art may focus on “truth to process.”

While it's true that I coined the phrase “truth to process” to capture a generative art option, and a powerful option at that, I've never argued for the exclusive or definitive importance of that option. For example, in animated films generative methods can be used purely for their pragmatic value, and the underlying technology should be the last thing on the audience's mind.

#### 3.1 Kalonaris et al. and beauty as an anachronism

The problem of computational aesthetic evaluation is closely related to that of generative art. Generative systems that can create form (sound, etc.) cannot improve and develop unless they receive or execute an evaluation of their own output. This feedback loop can allow generative systems to improve over time. Examples include the use of a fitness function in systems based on evolutionary computing, or more recently as generative adversarial networks. [10]

But Kalonaris et al. [11] seem to object to beauty as a useful consideration in art, including generative art:

“While some (...) persist in associating aesthetic evaluation with “normative judgments related to questions of beauty and taste in the arts” (...), we recognize that “artworks, especially modern ones, are appreciated for other reasons besides their aesthetic qualities or beauty” (...). We thus distance ourselves from anachronistic interpretations of aesthetics, and suggest that the notion of beautiful music is obsolete and irrelevant to a current discourse in aesthetics and the

arts, and we hope that this can be acknowledged in the field of computational creativity.”

This suggested grand narrative is problematic in a number of ways. First, there is a strawman aspect. I've nowhere stated that computational aesthetic evaluation should be limited to issues of beauty. In fact, I've noted that style identification is also an aesthetic evaluation task. Art tends to proceed by a process of accretion, and while new considerations may be added, older considerations such as beauty tend to persist. Nowhere have I argued against exploring additional forms of evaluation.

Second, the impulse to discard beauty is not widely shared. On a worldwide basis, and on a time scale from our earliest human records to present, the consideration of beauty has been almost universally associated with art practice. It is a rather insular, narrow, and short-term view of art that considers contemporary western art as being the only conversation worth having. And it's actually contemporary western art that is the outlier here. Conceptualism, minimalism, and other twentieth century influences have driven some contemporary western art in directions other than beauty. Others might say these influences have merely changed our understanding of beauty. This situation in esoteric contemporary western art may or may not be a permanent change. But to privilege same by declaring a kind of western art exceptionalism seems arbitrary at best.

Finally, the exploration of beauty in art is hardly complete. Those doing research in the realm of neuroaesthetics are scientifically exploring the neurological basis for the human aesthetic response, and more speculatively, the aesthetic response in other animals. Taking the evaluation of beauty off the table before we understand the basis for beauty is premature. If we don't yet understand the

underlying mechanisms behind beauty, how can we reject beauty as being unimportant?

### 3.2 Soderman and Howe on Surprise

In an article providing a critique of surprise in generative art, Soderman and Howe confuse defining generative art as a way of making art with value judgements implicit in the specific content of given works of generative art. They note:

“At the end of his influential essay “What is Generative Art?” Philip Galanter claims that “Generative art is ideologically neutral. It is simply a way of creating art and any content considerations are up to the given artist.” [1] Such a claim undermines critical perspectives that take into account particular historical periods and neutralizes ideological analysis itself. The post-historical generative artist can simply “make art” without worrying that her choices are motivated by unconscious ideologies or influenced by her historical period.”

The distinction between ideology intrinsic to a medium versus ideology as a matter of content is important. And it is generally well accepted in the realm of non-generative art. Consider the question "what is painting?" Early man might have said "painting is a way to teach people how to hunt", or "painting is a way to gain favor with the spirit world." In the western medieval period some might have said "painting is a way to glorify God" or "painting is a way to teach the Bible to the illiterate." In the modern period some might have said "painting is a way to express the inner turmoil of the psyche."

Obviously painting can be all of these things and much more. If one is looking for an all-inclusive definition of painting, painting must simply be defined as a way of making art. For example, "painting is a

way of making art by applying a suspension of pigment on a canvas or other flat support." Anything less will inevitably cast legitimate paintings aside as non-paintings.

Defined this way painting as such is nonideological. And note that it's painting's very neutrality that allows the medium to transmit virtually any content. It is in this sense that I've said generative art is simply a way of making art without an intrinsic ideology. And because generative art as such is nonideological, it can transmit virtually any ideology as content.

But contrary to Soderman and Howe, defining painting or generative art as a way of making art, rather than the practice of this or that ideology, in no way relieves the artist from awareness and responsibility in terms of the content of their own work. It's a fallacious leap from a way of making art being ideologically neutral to the (mistaken) inference that the content of that art therefore should or must also be nonideological.

Soderman and Howe also seem to miss a turn in their pursuit of surprise in generative art. They say:

"Though surprise is not mentioned, it is still essential for Galanter, who correlates it with information theory, stating that "the more 'surprise' a given communication can exhibit the more information it contains."

This is not my notion of surprise. This is the notion of surprise as per Shannon's information theory and his notions of complexity. The notion of complexity my generative art theory is built on is Gell-Mann and Lloyd's effective complexity.

Braxton and Howe offer a corrective to Shannon that is similar to what is already essentially present in effective complexity. They suggest considering Langton's

Lamda as a measure of surprise in Wolfram's cellular automata.

In discussing his Lamda measure, what Langton describes as "quiescent" Gell-Mann and Lloyd call "simple, highly ordered, and highly compressible". What Langton calls "chaotic" Gell-Mann and Lloyd call "simple, highly disordered, and resistant to (lossless) compression." Finally, and in between, what Langton calls a "balanced region of emergence" Gell-Mann and Lloyd call "complex, and a mix of disorder and order."

So Braxton and Howe are incorrect in shackling my generative art theory to Shannon's notion of surprise and complexity. It is explicitly rejected as a basis for generative art theory. And their suggested corrective, Langton's notion of balanced emergence, is already present in the stronger form of Gell-Mann and Lloyd's notion of effective complexity.

Braxton and Howe go on to further critique Shannon's notion of surprise by linking it to the quantification and production of novelty, and ultimately neoliberal ideology. But this should not apply to my effective complexity based generative art theory.

However, even leaving that aside, the association is fallacious. One can argue whether capitalism, or specifically neoliberal economic policy, requires the production of novelty. And one can argue whether generative art requires the production of novelty. But even if both require the production of novelty, they have no mutual causal relationship. In other words, it does not mean generative art entails neoliberal ideology, or vice versa.

## 4. Complexism Confusions

The primary confusion in related commentary is that complexism is not complexity science, nor is it a kind of

enthusiasm for complexity science, nor is it science at all. Complexism is the projection of insights from complexity science into the non-scientific problem-space of the humanities. Equally problematic is the targeting of complexism for political reductionism.

#### **4.1 Cogdell and Complexism Misdefined**

In a paper for a conference session dedicated to the topic of complexism, Cogdell seems to misdefine the term, and thus embark on a misguided discussion. She says:

“Charles Jencks’ links postmodern-complexism (I am conjoining these two terms that Galanter separates) to Jacobs, Venturi and the influence of contemporary science, as well as to the all-important role of the computer in the science and mathematics of complexity theory and in architectural design. He acknowledges that postmodernism (PM to Jencks) turned into “PoMo” and in the process lost much of its founding theorists’ complexism sensibility.” [12]

Here Cogdell implies that complexism and postmodernism are similar enough to be treated as synonymous. This is a fundamental misunderstanding. Complexism is a response to the contemporary conflict between modernity and postmodernity, and the response is synthetic and specific. For example, where modernity embraces progress, and postmodernity embraces circulation, complexism offers emergence and coevolution. And where modernity embraces the fixed, and postmodernity embraces the random, complexism offers deterministic yet unpredictable chaotic systems. And so on. These are ideas not contained in Jencks or other postmodern critics, nor do those authors have what could be called a “complexism sensibility.” Postmodern critics have a postmodern

sensibility, and that is something complexism intends to leave behind.

Because she doesn't seem to recognize the thesis-antithesis-synthesis relationships between modernism, postmodernism, and complexism, this leads Cogdell to think complexism offers little that is new.

“I am not promoting complexism to become the new reigning paradigm; I think it already is. When mainstream financial institutions like HSBC use “emergence” and “self-organization” to advertise their services in an international airport [...], it implies they think the ideas are compelling and familiar enough to their intended audience to mark them as authoritative foreseers of the future. ... Self-organization and emergence are core concepts for complex systems theory, which since the 1990s has been infusing theoretical developments across the arts, sciences and social sciences. ... Complexism has come of age both as a scientific paradigm and, in my opinion, as an ideology.”

Complexism is not a scientific paradigm, and it mostly addresses non-scientific issues even while being science-inspired. The new contribution complexism makes is not a sense of enthusiasm for complexity science. Complexism looks to complexity science for useful ideas, but it's ultimately about the reconciliation of the modern and the postmodern, and (correspondingly) the reconciliation of science and the humanities. For many complexity science is indeed already the reigning scientific paradigm. But complexism is a new cultural paradigm quite unlike a general enthusiasm for complexity science.

#### **4.2 Crano and Supposed Neoliberalism in Complexism**

Perhaps the most vociferous accusation of complexism as neoliberal ideology comes from Ricky Crano. [13] The very title of his article proposes placing complexism in a political context. As a point of entry Crano notes:

"Whereas what Galanter loosely refers to as "reductionist" science treats the observable world as something transparently knowable and capable of coming under full human control, complexity science is founded on the premise that we humans might be better served by a hands-off approach, allowing some "natural" processes to unfold, in the words of complexity theorist Stuart Kauffman, "unguided by any intelligence" and "without careful crafting"

Crano packs a number of confusions into this sentence. First, as noted earlier, "reductionist science" is specifically science as practiced by using methodological reductionism to explore the universe from an ontological reductionist point of view. This is in contrast to complexity science where the point of view is reversed, and the universe is built-up rather than broken down. The fundamental point is that complexity science can explain phenomenon as emergent properties that would be difficult to explain via reductionism.

But neither reductionist science nor complexity science describe the universe as being "transparently knowable" or "under full human control." Indeed, science provides ample evidence that the universe is inherently beyond human control or even prediction. And both scientific practices require rigor and significant effort to extract sharply focused theory from clouds of fuzzy data.

And complexity science does not posit what will and won't serve man well. To be sure, most scientists believe they are serving humanity. But value judgements like these are not the stuff of science.

When scientists say things like "science must serve man," at the time they are saying that they are not practicing science. They are making a value judgement in a way similar to non-scientists. Science can report on facts that surround questions of value, but ethical statements as to what man should and shouldn't do cannot be translated into propositions that can potentially be falsified via empirical experiment. I.e. they escape the realm of the scientific method.

However, Crano goes further. He says that from complexity science we learn that man should allow some "natural" processes to unfold." This is not so. Complexity science simply shows how such processes do, as a matter of fact, unfold. It has nothing to do with what man allows or should allow. Science makes statements as to what is, not what should be.

For example, the sub-topic of chaos from complexity science explains why weather prediction can never extend indefinitely into the future. [14] Complexity science doesn't say our finite predictive capacity for weather is good or bad, or something we should allow or disallow. We actually have no choice about it. Weather prediction is simply finite in principle regardless of what we think about it.

But once on a mistaken path where complexity science supposedly advocates a moral principle of laissez faire, Crano leaps even further observing that this is somehow equivalent to endorsing political and economic neoliberalism. Finally, from this already flawed view of complexity science, Crano sees complexism as inevitably inheriting an allegiance to neoliberalism as well.

This is, again, akin to a category error. The empirical observation of emergent properties in complexity science in no way compels us to accept any particular political agenda whether liberal,



conservative, neoliberal, neoconservative, communist, etc.

In addition, Crano seems to think that complexism is presented as an ideological motivation for the pursuit of generative art. He seems to hold this despite the fact that in all of my generative art theory work I've made it clear that generative art is simply a way of making art that has no intrinsic ideology. And while it's true that Gell-Mann and Lloyd's "effective complexity" provides an inclusive schema for classifying forms of generative art systems, those making art using generative systems have no common motive for making art that way. [15] Some are exploring complex systems for quasi-scientific purposes. Some are focused on digital culture. Others are motivated by potential biological solutions to ecological or other health threats. Some are motivated by purely pragmatic reasons to "get the job done" in filmmaking or game-making.

But Crano ignores the clearly stated scope of complexism, both in terms of what it is and what it isn't. He attempts to leap from the use of complex systems in generative art to the political and economic thinking of F.A.Hayek as developed decades before complexity science even existed.

"Complexist artist Galanter's work and writings supply a glimpse of just such a world, one where self-organizing and largely unpredictable patterns, usually driven by computer algorithms, take the place of human inventiveness and perception and, in the process, dismiss some of the most urgent ethical and political problems presented by neoliberal capitalism in the twenty-first century."

This is mistaken. Simple observation will affirm that generative artists exercise inventiveness and perception in their work. And the content of specific works of generative art can address anything the

artist would like. This could include ethical and political themes, but also romance, the beauty and power of nature, the wonder of mathematics, the comedy and tragedy of human existence, and so on. But the nature of generative art, that is to say what is intrinsic to generative art, is not the content but rather the way the art is made.

One of the symptoms of true believers such as political reductionists is that they believe others are obliged to address their obsessions. Their ideology cannot be ignored, it can only be embraced or opposed. And so even if their ideology isn't explicitly opposed, a non-embrace is interpreted as opposition regardless of the author's intent. Crano clearly illustrates this tendency in saying:

"The politics of generative art, like the politics of neoliberalism, can be summarised as a politics of depoliticisation."

Crano commits a category error in viewing generative art as a political practice. And that renders his detailed commentary about complexism as being irrelevant. Crano here is practicing political reductionism where any issue, scientific, aesthetic, or otherwise, is deconstructed to reveal the underlying political machinations of institutional power and material wealth.

Unfortunately, Crano's understanding of complexity science, let alone his understanding of my non-scientific synthesis called complexism, is lacking. Here Crano mistakenly presents complexism as an art movement or theory. As I've noted, it is much more than that. Crano writes:

"Against this trend, I argue that for all the leverage the tools and terms of complexity science supply to complexist art, the concept of complexity itself remains surprisingly vague and shorn of any

historical sensibility."

First, while the history of science is an interesting topic, science itself does not turn on human history per se. Science posits a reality that would be nearly identical if man had never existed. Science exercises an epistemology of empiricism. It takes as a given that the evidence science turns on is invariant across time, location, and culture. It is assumed that equally intelligent creatures on other planets could practice science with identical results. "Historical sensibility" has no place in science as science.

Second, and contrary to Crano's misunderstanding, the "concept of complexity" is not vague. Reasonable people can have varying opinions as complexity science is a work in progress. But there is a consensus among complexity scientists as to what typifies complex systems, and thus complexity. In previous writing I offered this typical list of characteristics found in complex systems.

**"Components:** Complex systems are collections of smaller scale components or agents.

**Local Interactions:** Within the system the components or agents only have interactions with nearby components or agents.

**Scale:** The collection of components exhibits emergent behavior at a larger scale.

**Feedback:** The dynamics of complex systems are often driven by feedback, i.e. various outputs of the system are reintroduced as inputs.

**Non-linearity:** The dynamics exhibited by complex systems are frequently non-linear, increasing or decreasing exponentially.

**Deterministic Chaos:** Complex systems can be unpredictable in principle and despite following strict cause-and-effect determinism. This is because feedback in the system will amplify tiny variations in initial conditions.

**Self-Organization:** Complex systems create emergent structures that appear all over without centralized direction.

**Network Topology:** Complex systems can be modelled as networks, and an understanding of network growth and topology can explain otherwise mysterious system behavior." [5]

In that same text I note that complex systems include:

"... the stock market and economic systems in general, ant colonies and other animal societies, the brain, the mind, the evolution of species, autocatalytic chemistry, the weather, fluid mechanics and turbulence, political systems, social movements and ecosystems of all sizes."

What is truly remarkable is that this very specific notion of complexity can apply across such a varied list of phenomena. But that, in fact, is the primary point of complexity science. Complexity science finds regularities and commonalities across apparently disparate complex systems.

Crano mistakenly notes:

"In the last couple of decades, artists working under the banner of complexism have sought, with the help of digital computers, to allow such complex self-organizing formations to manifest within spaces of installation, performance, and video art."

First, I know of no other artists who use the term "complexism" to describe their work. This is not surprising. It's true that I

first used the term “complexism” in a manifesto-like chapter about evolutionary art. [3] But even in that initial publication I made it clear that complexism includes so much more. It is there that I first note the historical precedent of C. P. Snow’s “The Two Cultures” lecture. [16] I go on to describe how some in the humanities have attacked science as part of the “science studies” movement and the subsequent “science wars” of the 1990’s. A section titled “Complexism – A New Science-Friendly Paradigm for the Arts and Humanities” describes complexism this way: “My proposal is that complexism is that which comes after postmodernism. Complexism is, in a sense, the projection of the world-view and attitude suggested by complexity science into the problem space of the arts and humanities. Complexism does this by providing a higher synthesis that subsumes both modern and postmodern concerns, attitudes, and activities.”

A description a number of years later [5] is consistent:

“Complexism seeks to embrace complexity in its fullest bloom. Complexism is not a scientific theory, but it is informed by contemporary science. As a point of view suggested by the spirit and content of complexity science, complexism is put into practice as a form of qualitative cultural study. The goal here is not to present complexism as a fully formed and completed work, but rather as a research frontier already sufficiently rewarding enough to encourage further development.

Without any specific commitment to literal Hegelian philosophy, complexism’s reconciliation of modernism and postmodernism can be best understood as the next stage of a thesis-antithesis-synthesis process. The apparently irreconcilable differences between modernity and postmodernity, and the

cultures of science and the humanities, can be subsumed into the twenty-first century synthesis of complexism.”

There can be disagreement as to whether this promise will be fulfilled, but there should be no disagreement about the intent. The science wars may have settled into a ceasefire, but the foundational contradictions are as present as ever. Rather than warring, the two sides now simply ignore each other as if they live in two different worlds.

But there is only one world, and complexism is an attempt to reflect that in a single unified world view. Complexism lays out ways to overcome disagreements regarding progress and truth. Complexism offers a unique new theory of authorship, and from that, an answer to the question “when is a computer truly an author?” In the realm of aesthetics complexism offers a path to revitalizing formalism. At the same time, it rehabilitates the Futurist concept of dynamism, and leaves any unfortunate political connotations behind.

Complexism provides a new view of networks, and disputes models provided by Cilliers [17], Galloway [18], and Deleuze and Guattari’s notion of the rhizome.

To view complexism as merely an artistic fascination for neoliberal modes of production is not only wrong, it is a missed opportunity for a much more productive set of discussions.

## 5. Conclusion and Going Forward

My generative art theory development seems to be completed. That’s not to say others won’t have new ideas worth talking about. But between the “big tent” definition where generative art is simply a way of making art, and the short catalogue of

“problems in generative art” [19] which invites multiple points of view about content, quality, and criticism, I feel my best contributions towards generative art theory have already been made.

Work on complexism, however, continues. As some of my writing has hinted, the complexism world-view seems to point towards a process philosophy approach to ontology. And there are areas ripe for application such as ethics, artificial intelligence, and the mystery of consciousness. I hope to address these in future publications.

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