

Article

Elliptical Forms: Abstract Algorithmic Objects

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Abstract: Contemporary systems painting directly engages with the material of contemporary culture, not necessarily the technological substrates of computation, social media, the Internet, and artificial intelligence, but the concept of the algorithm and the circulation and patterning of information at the limit of human apprehension. Systems painting emerged as part of the wider category of systems art in the 1960s—a heterogeneous collection of artists who were focused on the exploration of social, ecological, and technological systems, and the processes that underpin them. These systemic fields increasingly define and shape our lifeworld in the 21st century, producing an excess of algorithmically generated information. It is, therefore, appropriate to consider the role system painting plays in addressing the conceptual, aesthetic, and affective aspects of information derived from computational, algorithmic, and rule-based processes. This paper discusses the practice of the contemporary systems painter James Hugonin and his series of paintings *Fluctuations in Elliptical Form* (2015–2021). Karl Popper’s theory of three worlds is introduced, and the concepts of ‘concrete’ and ‘abstract’ objects are described and applied to Hugonin’s painting as a way of understanding the role externalised rules and internal intuitive decisions play in the construction of these complex and visually mesmerising paintings.

Keywords: systems art; systems painting; algorithm; abstract objects; James Hugonin; Karl Popper



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1. Introduction

Contemporary systems painting directly engages with the material of contemporary culture, not necessarily the technological substrates of computation, social media, the Internet, and artificial intelligence (AI), but the concept of the algorithm and the circulation and patterning of information which both reflects and shapes what and how we think.

This paper discusses contemporary systems painting and specifically the work of James Hugonin and his series of paintings, *Fluctuations in Elliptical Form* (2015–2021). Hugonin’s work and methods have been discussed in four key publications. The first publication, *James Hugonin* (Davey 2010), discusses Hugonin’s work regarding colour, their iridescent quality, and their subtle relationship to the Northumbrian landscape. The second publication, *James Hugonin A Year in the Making Untitled XVIII* (Sharpe 2010), is a documentary film recording the production of the painting, *Untitled* (XVIII), which is the last painting in a series which began in the 1980s. The third publication, *James Hugonin-Binary Rhythm. Paintings 2010–2015*, discusses the series of paintings entitled *Binary Rhythm*, produced between 2010 and 2015 (Ingleby and Ingleby 2015). The final publication, *Fluctuations in Elliptical Form* (Ingleby and Ingleby 2022), discusses the series of paintings under discussion here, including an essay by the visual neuroscientist Anya Hurlbert on Hugonin’s use of colour and colour grouping (Ingleby and Ingleby 2022, pp. 17–29), and an essay by Chris Yetton on the evolution of Hugonin’s practice (Ingleby and Ingleby 2022, pp. 73–81).

These documents are valuable records documenting Hugonin’s working practice, which is itself a form of documentation and extrapolation of painting decisions. This paper brings further focus to his working method to consider the nature of the communication taking place within the paintings in conceptual, aesthetic, and affective terms. Karl Popper’s

theory of three worlds is introduced, and the concepts of ‘concrete’ and ‘abstract’ objects are described and applied to Hugonin’s decision-making during the construction of these complex and visually mesmerising paintings. The central question concerns the nature of the information embedded within these paintings, which mixes two forms of decision-making: externalised production rules and internal intuition, which is translated into painterly decisions. The suggestion will be made that both forms of decision-making point to concrete but abstract objects, one externalised in the form of production rules, the second revealed through the act of painting.

Systems art emerged in the 1960s and can be understood as a form of conceptual art that deals with information, considers the morphology and outputs of a system, and can be seen as part of a broader interest in systems thinking within wider society. These systems include computational systems or cybernetic systems, social systems, environmental systems, rule-based systems, and linguistic systems. Although there are a diverse range of systemic practices, there is an underlying engagement with conceptuality and the exploration of processes, systems, and the circulation of information. The term ‘systems painting’ is employed here to refer to painting practices in which rules, processes, and seriality are employed in the investigation of the materials and the formal and conceptual concerns of painting.

Systems painting shares characteristics with the broader field of generative art, as they both emerged from or were influenced by systems art in the 1960s. There are, however, some fundamental distinctions. Systems painting can trace its history and concerns back through the evolution of painting from mimetic or representational art to Modernism, abstraction, and minimalism (Greenberg and O’Brian 1988). The concerns of this work, although procedural and rule-based, are still grounded in painting. In contrast, the broader category of generative art concerns actions, such as randomisation, evolution, and real-time computation (Paul 2016, p. 150). Philip Galanter notes that not all rule-based art is generative art, arguing that the key criterion is whether the artist cedes ‘control to a functionally autonomous system’ and gives the example of the jacquard loom as both the precursor of generative art and computation (Paul 2016, pp. 150–53). The focus, therefore, of this discussion is painting, where the artist develops, deploys, and deviates from rules in the production of paintings.

2. System Painting

There has been a widespread reappraisal of early systems art since the millennium, with several significant conferences, publications, and exhibitions. There have also been several texts which have reassessed early systems art, each text offering a new perspective which moves beyond the techno-centric and cybernetic characterisations of the field. Firstly, Pamela M. Lee’s *Chronophobia, On Time in the Art of the 1960s* (Lee 2006), considers the attributes of systemic art, including temporality, proceduralism, and seriality. Secondly, James Nisbet’s *Ecologies, Environments, and Energy Systems in Art of the 1960s and 1970s* (Nisbet 2014) reasserted the ecological foundations of systems thinking. Thirdly, Eve Meltzer’s *Systems we have loved* (Meltzer 2013) demonstrated that far from being cold and machinic, systems art channels emotion and affect. Finally, Johanna Gosse and Timothy Stott offer an expansionist reassessment in *Nervous Systems: Art, Systems, and Politics since the 1960s* to ‘disentangle systems art from the technophilic biases of most of its chroniclers to date (Gosse and Stott 2021, p. 9).

A detailed history of systems art and painting is beyond the scope of this text, but it is sufficient to highlight several significant artists who have engaged with systems thinking and practices over the past fifty years and acknowledge the wider influence of systems thinking within contemporary art. This is seen in Daniel Buren’s site-specific work and Hans Haacke’s ‘institutional critique’, and the political and textual-based work of Jenny Holzer and Barbara Kruger. While Nicolas Bourriaud’s *Relational Aesthetics* (Bourriaud 1998), championed the work of Liam Gillick, defining artistic practice as a social act, an articulation of systems art in all but name. More recently, Olafur Eliasson and Tomás

Saraceno have explored complex environmental systems, and Pierre Huyghe and Hito Steyerl have critically reflected on the nature of contemporary systems and the circulation of information.

From a painting perspective, there has been a continued interest and focus on investigating rules, processes, and seriality within painting. Richard Diebenkorn, for example, spent twenty years, starting in the late 1960s, creating 145 paintings of his *Ocean Park* series (1967–1987). Throughout the 1970s and 1980s, Frank Stella evolved his systems-based practice and developed several painting series which employed rules in their production. These include the *Polish Village* (1970–1974), the *Circuit Series* (1982–1984) and the *Cones and Pillars Series* (1984–1987). Agnes Martin emerged in the 1950s, and although initially associated with abstract expressionism, Martin's work from the 1960s–1990s exhibited a deeply meditative focus on structure and employed drawn grids to contain the colours drawn, in part, from her environment in New Mexico. Emerging in the 1980s, Sean Scully's painting combines the order and structure of systems painting with the more intuitive processes of painting found in earlier abstract expressionism. This is seen in *Wall of Light*, developed during the 1990s and early 2000s, a series of paintings constructed from bands of vertical and horizontal overpainted colour. Likewise, Gerhard Richter is not traditionally categorised as a systems painter but has produced a large body of work which employs production rules and strategies. The 'Color Chart' paintings (1966–2008), for example, are a series of colour field paintings containing blocks of colour laid out following a grid and are reminiscent of a commercial paint chart and follow clear production rules. Richter's second example is the process-oriented series of abstract works, or 'Abstraktes Bild', which emerged in the 1980s and are constructed from layers of thick paint which are manipulated and sometimes removed using large paddles or squeegees.

Contemporary artists who explore systems, structures, and processes through painting include Callum Innes and his quiet process of paint application and dilution, Ian Davenport and his poured drip paintings, Odili Donald Odita and his razor-like geometries, Julie Mehretu and her exploration of systems of mapping and architecture, and Tomma Abts and her iterative exploration of abstract systems of measurement. The definition of painting has, of course, expanded in the 21st century, and Cory Arcangel and his 'Photoshop Gradient Demonstrations' series and Tauba Auerbach and her exploration of digital patterns, scans, and gradients, and Wade Guyton's inkjet paintings explore the role of systems and processes in technology-mediated painting.

3. Fluctuations in Elliptical Form (2015–2021)

A significant contemporary systems painter is the British artist James Hugonin (born in 1950). Like Martin, he lays down lightly drawn grids and lines to create complex patterns of colour applied in cells. Like Diebenkorn, there is something topographic and a focus on abstract atmosphere and light. Diebenkorn captures the light of Santa Monica, California, and Hugonin captures the sharp light of Northumberland, the Cheviot hills, and the North Sea (Davey 2010, p. 19). However, these are not landscape paintings but abstract works that draw from science, mathematics, and the structure and indeterminacy found in the music of Morton Feldman, Arvo Pärt, and Steve Reich (Ingleby and Ingleby 2022, p. 78). To structure the paintings, Hugonin produces a complex set of production rules documented in his notebooks, which designate the colours and give direction on their placement. The colours and the underlying structure are then carefully encoded by Hugonin and his assistants over many months until the rules reach their denouement, and the remaining cells are completed by Hugonin as he reflects on the emerging composition. The paintings are, therefore, a fascinating mix of externalised coding, documented in his notebooks, and decisions drawn from painterly judgement, intuition, and chance. It is this convergence of external systems thinking with the hidden internal aesthetic and abstract thinking of the artist which will be explored in this text.

The paintings under discussion, *Fluctuations in Elliptical Form* (2015–2021), are a series of eight colour field paintings, which can be seen as the culmination of forty years of

concentrated practice focused on the grid. Each painting follows the same rules and the same painterly freedoms, and each is created with the same set of 89 grouped colours. See Figures 1–5. Hugonin employs a systemic or algorithmic approach whereby he employs ‘pre-determined rules’ which are counter-balanced with intuition (Ingleby and Ingleby 2022, p. 7). This tension between rules and painterly decisions is expressed by gallerist Richard Ingleby.

These are systems-based paintings that accept, indeed celebrate, the human fallibility that is at their heart. The system is essential, but it is never in complete control, so that the closer you look the more individual, and indeed hand-made, they become (Ingleby and Ingleby 2022, p. 7).



Figure 1. James Hugonin *Fluctuations in Elliptical Form* at Ingleby, Edinburgh. Photograph by John McKenzie.

The externalised rules can be understood as an ‘algorithm’, which is a set of instructions to describe a task or solve a problem. In computational terms, Thomas Cormen succinctly defines the algorithm as a ‘well-defined computational procedure that takes some value, or set of values, as input and produces some value, or set of values, as output (Cormen et al. 2009, p. 5). The terms algorithm and code are employed in this text to describe the explicit rules Hugonin has defined, documented, and implemented in the creation of the paintings. These complex guidance instructions or algorithmic codes are transcribed in his notebooks and are only fully comprehensible to the artist. Crucially, these rules do not, however, dictate the exact placement of each colour or each strategic move in the painting process but offer structure to Hugonin’s decision-making process. Anya Hurlbert observes that the notebooks ‘provide only scaffolding, a net of principles, not every individual colour block. The inspired moves come into play as tiny deviations, jitters around the basic pattern.’ (Ingleby and Ingleby 2022, p. 28). There is then a tension between the codified rules and the subjective selection of colours and the chance and intuitive decision-making, and the completed paintings exhibit both forms of decision-making. This vibrancy is manifest in their shimmering surface, which exhibits, in semiotics terms, an indexical and iconic relationship with the underlying structural morphology as the paintings are indexically connected to both the algorithm and painterly decisions.

Whilst in iconic terms, the distribution of colour directly represents the synthesis of these decisions (Sebeok 2001, pp. 50–55).



Figure 2. James Hugonin *Fluctuations in Elliptical Form* (VI), 2020–2021, (left). *Fluctuations in Elliptical Form* (VII), 2019–2020, (right). Oil and wax on wood; 200.5 × 178.8 cm (each work) at Ingleby, Edinburgh. Photograph by John McKenzie.

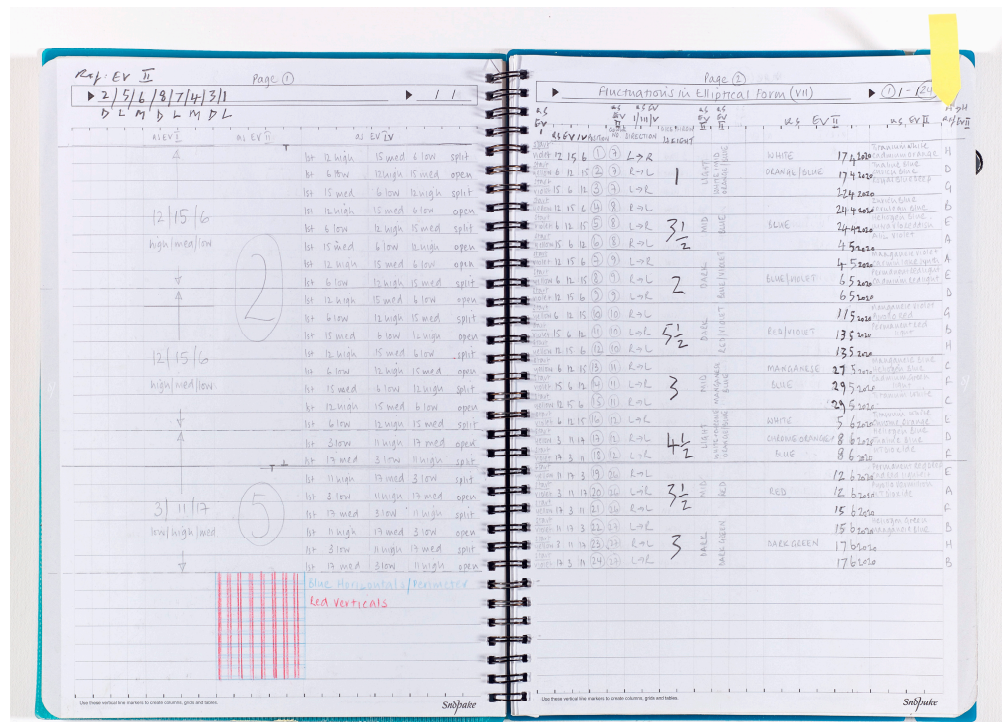


Figure 3. Notebook for the painting *Fluctuations in Elliptical Form* (VII). Photograph by John McKenzie. Each of the eight paintings in the series has its own book, all written in 2015 before the paintings commenced.



Figure 4. Colour chart for the paintings series *Fluctuations in Elliptical Form* (details). Photographs by John McKenzie.

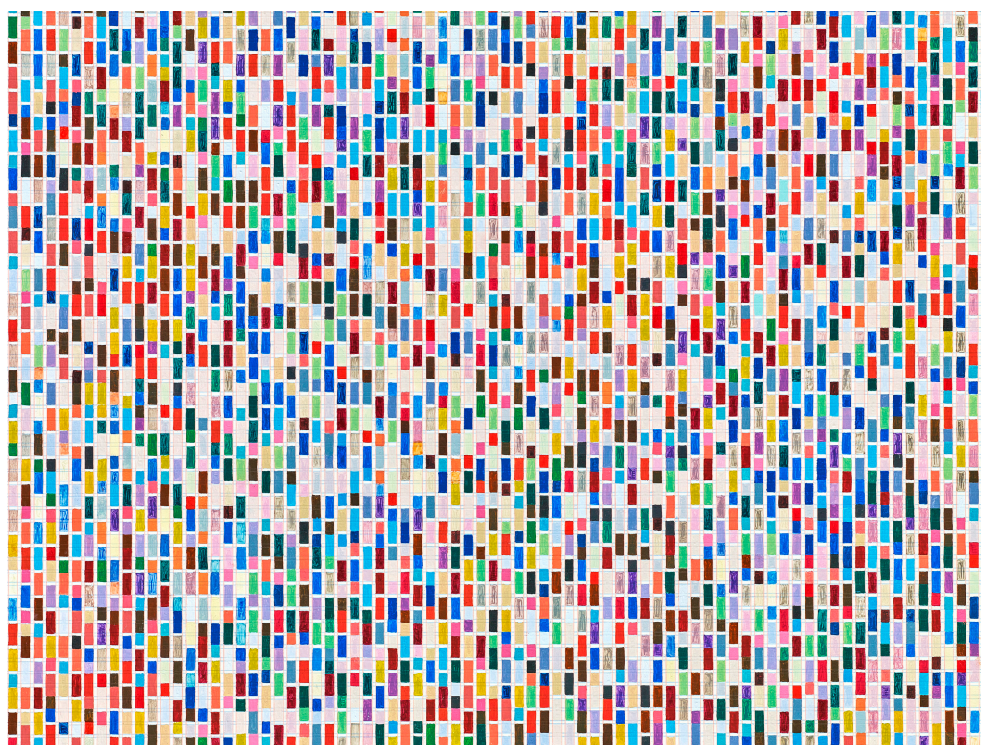


Figure 5. *Fluctuations in Elliptical Form* (VII), 2016–2017 (detail). Oil and wax on wood, 200.7 × 178.8 cm. Photograph by John McKenzie.

One of the exciting aspects of Hugonin's practice is that the articulated system exhibits different forms of causation between the rules and actions, which lead to the emergence of patterned complexity. Causality is the relationship between cause and effect and is

observable in biological, environmental, social, and technological systems. Upward causation is the effects of small actions or processes which build to create a more complex structure. Downward causation is the effects of the overall system on the individual parts. Both upward or bottom-up and downward or top-down causation lead to unanticipated results or emergence whereby new forms of pattern, structure, or complexity are revealed through these actions (Capra and Luisi 2014, p. 133). This points to the dialectical nature of causation or ‘cyclic causality’, which is the interplay between upward and downward action (Capra and Luisi 2014, p. 205).

Upward, downward, and cyclic causality can be applied to the production of artworks and particularly works that foreground rules, systems, and processes. Firstly, an artwork created from production rules demonstrates upward causation, with the rules acting like DNA or an algorithm implemented to generate the work. Through this process, patterns emerge from the rules, and the artist may intervene to reinforce or disrupt the emergent patterns. This intervention can be understood as downward causation, and the feedback mechanism between rules, the emergent artwork, and the artist can be understood as cyclic causation. This can be observed in Hugonin’s process. Firstly, there is the underlying algorithm employed in the production of the work, which creates wonderfully complex, emergent patterns. They are emergent in the sense that Hugonin could imagine the set of production rules but not anticipate the results due to their complexity. As the system emerges, the algorithm leaves cells empty which require a colour decision from Hugonin. These decisions are arrived at through intuition or a subconscious understanding of the painting’s emerging structure, which are translated into painting decisions. This process, the resultant paintings, and the ontological status of the information they channel are now considered in more detail.

4. Abstract Objects in Systems Painting

Niklas Luhmann in *Art as a Social System* (Luhmann 2000) suggests that art can be understood as a unique form of communication as it ‘makes perception available for communication’ within the larger social networks of communication, (Luhmann 2000, p. 48). Luhmann argues that art has the potential to present information from our interior world—things we picture in sensuous, holistic, and prelinguistic terms—as art communications within the wider social system. To consider the unique qualities of art communication, we need to disaggregate reality into three areas: external reality, our internal reality, what Luhmann calls the *psychic system*, and external descriptions of reality.

To unpack this perspective further, we need to accept that there is an external reality which exists beyond the mind. Whether external reality is understood as multidimensional and operates in relation to the observer or is universal and independent of observation, it exists beyond and cannot be fully apprehended by our senses, mind, or tools. We interact with this external reality through our senses, bodies, and mind. However, we also access the world via shared descriptions, models, and tools such as language, signs, science, and art.

These three areas: external reality, our internal experience of reality, and our externalised descriptions of the world and our experience of it align with Karl Popper’s realist description of the *Three Worlds* (Popper 1978), in which he articulated reality in terms of three interacting spheres or worlds. Popper described *World 1* as the world of matter consisting of ‘physical bodies: of stones and of stars; of plants and of animals; but also of radiation, and of other forms of physical energy’ (Popper 1978, p. 143). Information exists in this world, such as the mass and arrangement of atoms of an object, and this is independent of our senses and mind (Bates 2016, p. 7). DNA, for example, shaped life for millions of years before being ‘discovered’ in the 1860s by Johann Friedrich Miescher. In contrast, *World 2* is the world of ‘subjective experience’, and the term subjective is employed here in two interrelated ways. Firstly, it means the experiences are necessarily grounded in the subject’s mind. Secondly, although the mind can describe objects of Worlds 1 and 2, it is qualitative and relational, meaning access to these worlds is mediated by the body, mind,

and wider experiences, which shape and distort perception in relation to the *World 1* reality. Popper describes *World 2* as follows.

The mental or psychological world, the world of our feelings of pain and of pleasure, of our thoughts, of our decisions, of our perceptions and our observations; in other words, the world of mental or psychological states or processes, or of subjective experiences' (Popper 1978, p. 143).

Luhmann's *psychic system*, the interior world of sensations and holistic sense-making, aligns with *World 2*. In contrast, *World 3* is according to Popper 'the products of the human mind', which have been externalised and therefore circulate within culture. He includes 'languages; tales and stories and religious myths; scientific conjectures or theories, and mathematical constructions; songs and symphonies; paintings and sculptures' as *World 3* objects (Popper 1978, p. 144).

World 3 is, then, the world of things we have created as vessels to communicate information about reality, such as scientific theories to describe the material world or visual art, literature, and music to describe the lived experience. However, the *World 3* object is not necessarily the physical artefact but the conceptual, aesthetic, or affective information it communicates. If there is a single artwork, and Popper gives the example of Michelangelo's sculpture *The Dying Slave* (1513–1516), then the physical object of *World 1* may contain the communication of *World 3* (Popper 1978, p. 144). In a second example given by Popper, William Shakespeare's play *Hamlet* (1599–1601), physical copies of the text are distinct *World 1* objects. Likewise, each performance of the play 'are embodied, or physically realized' *World 1* objects (Popper 1978, p. 145). However, the essential *Hamlet* and the underlying 'truths' regarding the human condition, such as the portrayal of desire, narcissism, and psychosis, are *World 3* objects which operate within culture and are autonomous of any material or performance instantiation. We cannot, therefore, point to the object *Hamlet*, but we recognise it when we read the text or see it performed. Far from eroding the play's objecthood, the various and extensive theatrical translations and adaptations bring the essential qualities of *Hamlet* into focus. Popper concludes this categorisation by suggesting that *World 3* objects are 'abstract objects' whilst the 'physical embodiments or realizations' of the artworks of *World 1* are 'concrete objects' (Popper 1978, p. 145).

This understanding can be unpacked in relation to Hugonin's *Fluctuations in Elliptical Form*, as there is an underlying algorithm which underpins the production of each painting in the series, and this creates a fascinating triangulation between the three worlds. As discussed earlier, the painting series starts with a set of production rules which are translated and filtered through the intuitive, aesthetic, and conceptual decisions Hugonin makes in the creation of the paintings. The final paintings are, therefore, a synthesis of the original production rules and the painterly decisions which take place in the studio.

Considered through the lens of Popper's three worlds, the paintings are concrete objects (*World 1* objects), as they are a physical embodiment of the algorithm and the painterly decisions. Whereas the algorithm is a *World 3* object as it is an externalised product of the human mind, and the painterly decisions are *World 2* objects as they are drawn from Hugonin's painterly instincts, but they may also refer to a *World 3* object which is being articulated through painting. There is, however, a difference between the codified decisions and the more intuitive painterly decisions, as the algorithm is carefully planned and described in Hugonin's notebooks, and these transcriptions are evidence of the algorithm's *World 3* status. The algorithm exists before the production of the paintings and operates as an abstract object, independent of its materialisation as an artwork.

In contrast, the painterly decisions emerge from Hugonin's *psychic system* as he responds emotionally and affectively to the durational act of painting and the emergent patterns of colour. These patterns express a deeper system or model of the world, which is being pulled up from Hugonin's subconscious and made material across the series of paintings. As Hurlbert suggests, Hugonin may hold or store 'millions of chromatic configurations' and the aesthetic understanding of what will 'work' (Ingleby and Ingleby 2022, p. 28). The paintings externalise patterns and complexities apprehended at a sub-

conscious level in the mind (*World 2*) and are made concrete in the painting (*World 1*) and revealed as an extended system across the series of paintings. The completed paintings are, therefore, a synthesis of the underlying formal algorithm and the thousands of subtle and unprogrammable (due to their infinite complexity and prelinguistic nature) painterly decisions. As Luhmann suggests, art is a form of communication and ‘art tends toward system formation’, and the painting process reveals the system’s underlying operations (Luhmann 2000, p. 49).

The paintings are, therefore, more than the externalised conceptual information and exhibit the subliminal or intuitive information contained in the embedded affective mark-making, but also the subconscious and intuitive decisions which operate in excess or parallel to the algorithm. This is the case with Hugonin’s series, *Fluctuations in Elliptical Form* (2015–2021), which are richer than the externalised algorithm in three essential ways. Firstly, the rules employed by Hugonin are infinitely complex on a structural and combinatorial level. To be present with one of the paintings is to feel the sensations of structure on an aesthetic level, and its deconstruction into formal language or code is beyond human apprehension. The underlying production rules, the conceptual information, cannot be exhausted as they will never be fully understood or assimilated by the viewer due to the painting’s scale and emergent complexity. Secondly, they are the product of the intuitive painting decisions Hugonin made as he completed the grid, painting the cells with colours not specified by the algorithm. Thirdly, the paintings are not solely the product of the underlying algorithm and colour selection decisions but the product of painting as both medium and process—as they are material-embodied objects which have been imbued with the many thousands of conscious and subconscious decisions of the artist in the application of paint. See Figure 5. The painting, therefore, is more than the designation of colour as a machine-learning tool trained on the series of paintings could theoretically decode the emergent patterns, the sum of the algorithmic and intuitive decisions, but could not reproduce or add to the series of paintings. The machine cannot paint, and it cannot channel human affect via the application of paint in the production of these complex works, which teem with embedded information.

Marcia Bates, the eminent information scientist, defines ‘embedded information’ as the ‘pattern of organization of the enduring effects of the presence of animals on the earth; may be incidental, as a path through the woods, or deliberate, as a fashioned utensil or tool’ (Bates 2016, p. 43). From this perspective, the marks and patterns of paint left on a studio drop cloth are an example of incidental embedded information. In contrast, the paint deliberately applied to the painting is intentionally embedded information. There is, therefore, intentional information embedded in the paintings derived from the algorithmic codes, and subliminal information, which is derived from the deeper model Hugonin holds in his subconscious and intentional and unintentional information embedded through the act of painting.

Turning to the subconscious information and decision-making, there is a more complex unarticulated patterning and understanding which is not contained by the algorithm but held in the subconscious mind of Hugonin, and the paintings are drawing this higher level of structural complexity to the surface. The nature of this more concealed complex system, which exceeds the structure of the external code written in his notebooks, is revealed to the artist and committed viewer as they experience the completed paintings. Thus, a durational act of observation is required as time spent with the paintings will allow the patterns which dance across the surface of the paintings to be revealed or experienced on an affective or aesthetic level. The paintings are the span and height of Hugonin with his arms outstretched, which he has described as the proportions of Leonardo da Vinci’s ‘Vitruvian Man’. Thus, their scale and visual complexity are not readily conveyed in a photograph, and the paintings must be experienced durationally as physical objects. What initially may appear as randomness will coalesce into a complex structure.

As noted, the algorithmic code does not directly ascribe a colour for each grid cell but leaves space for Hugonin to make painterly decisions which draw from the subconscious or the interior model of the painting to elicit the underlying spatial rhythms. However, the

extraordinarily complex patterns, whether derived from code, chance, or intuition, do not point to a randomly configured colour field but what Sha Xin-Wei describes as ‘the hovering of patterned material [...] at the limit of measurement, and therefore observation’ (Marks 2013, p. 104). Hugonin may experience and understand this intuitive decision-making as abstract painterly decisions, but these may also refer to the interior model or a withdrawn *World 3* object, which describes a structure or pattern hovering at the limit of apprehension for the artist.

5. Conclusions

In summary, the paintings are patterned, information-rich objects as the conceptual information embedded in the work from the *World 3* objects (the algorithm) is exceptionally complex, whilst the remaining cells are completed through chance, randomness, or intuition. These decisions add complexity to the final paintings and may refer to a more complex *World 3* object, which is being sensed aesthetically (*World 2*) and externalised in the painting (*World 1*). From this perspective, the paintings express unlimited conceptual and aesthetic information due to their structural complexity and the durational attention they demand. The consequent relationship between the painting and the artist and the painting and the viewer is dialogical and processional, alluding to Gilles Deleuze and Félix Guattari’s concept of becoming, which describes the relationship between things as one of perpetual change, whereby the subjects and objects temporarily merge together (Deleuze and Guattari 2013). The foundation of the paintings may be the externalised and explicit production rules, but they meld together with the intuitive painterly decisions to produce the completed works, creating an intensity whereby the viewer has an experience which exceeds the underlying algorithms and measurement.

The paintings are stable aesthetic objects, but the experience is one of transformation and multiplicity, as each encounter offers new patterns, movement, and durational sensation. The relationship, therefore, between the viewer and the painting is necessarily relational and a process of continuous transformation as the act of being with the painting is durational—these paintings require time. This creates a triangulation between the fixed but immensely complex painting and the changing body and mind of the viewer through time. Thus, the vibrancy of this experience has its foundation in the stability and conceptual and aesthetic inexhaustibility of the artwork, highlighting the passage of time for the viewer. Hugonin’s paintings offer a glimpse of infinitude and a stable ground to observe the changing self.

Art is a strategy to locate things which are perceptually out of reach or difficult to access using other tools such as language and science. In the process of art investigation, concrete (*World 1*) art objects are created which exhibit sensual qualities which may point to the underlying withdrawn (*World 3*) or real objects—a reality beyond the senses. From this perspective, the employment of rules, algorithms, systems, and seriality can be understood as strategies to pinpoint certain patterns, truths, or control mechanisms that underpin their structure. Thus, whilst the paintings in the series *Fluctuations in Elliptical Form* are themselves objects rich in conceptual, aesthetic, and affective information, one can argue that the primary object under consideration in Hugonin’s practice is not the individual artworks or the series of paintings but the withdrawn *World 3* object or meta-algorithm, which would describe and accommodate both the explicit and subconscious rules which describe these exceptionally complex patterns. Essentially, how Hugonin sees and orders the world.

Hugonin’s practice is important for contemporary culture as it reasserts the enduring human capacity to imagine abstract ideas and bring them into the world as concrete objects. His exquisite paintings require a painstaking embodied commitment to the act of painting and, as such, contrasts with the proliferation of digitally generated cultural objects which lack the direct mediation of the human eye, hand, and mind. Culture is increasingly dominated by such disembodied objects, which may be rich in aesthetic information as they offer both sensory stimulation and unintended allusions or illusions of beauty or

ugliness, but whose provenance is unknown, having been generated by computational processes. The underlying morphology of such technological or algorithmic objects is obscured due to the hidden, complex, or distributed nature of their production, circulation, and consumption. This is particularly true in relation to machine-learning algorithms and AI, and the ‘black box’ approach to creativity whereby spectacular objects are created via processes which exceed the comprehension of the user. ‘Black box’ is a computational term that describes systems and processes that are not explicitly articulated or comprehensible to the end user due to their complexity (Pasquale 2015).

As these tools proliferate, the authorship of conceptual, aesthetic, and affective objects will be further distributed across human and machine activity: the machine-learning tools, the developers, and owners of these tools, and the data they are trained on to generate new text and image-based objects. As Thilo Hagendorff notes, the ‘black box society’ will lead to issues of ‘explainability, transparency and accountability, massive zones of non-transparency’ derived from ‘the sheer complexity of technological systems’ (Hagendorff 2020, p. 110). AI image generation, for example, uses machine-learning algorithms to generate images based on the analysis of pre-existing photographs indexically connected to the subjects, human-made images, such as drawings and paintings, human-machine-generated images, such as digital photographs or computer graphics, and second or third-generation AI images, whose authorship is predominantly machinic in nature. Such objects challenge the nature of authorship and the role of the artist.

From this perspective, systems painting and the practice of James Hugonin confront what remains human in the face of algorithmic infinitude. His devotional painting practice reveals both the algorithm and the explicit rules of production, and the deeper and more profound glimpses of the abstract or real object which a lifetime of focus brings to the surface. Marcel Proust believed that art has the potential to reveal the true essence of things, which operates beyond surface appearance, and the role of the artist is to access and channel this to the reader or viewer of the work (Shattuck 2014). The artwork acts as both a lens to see beneath the surface of things and glimpse the abstractions, rules, and processes which shape material, time, and the universe, and a mirror to reflect on one’s relationship to such revelations. In the age of the algorithm, Hugonin’s series *Fluctuations in Elliptical Form* operates as both a lens and mirror and reasserts the human scale and span of time and perception.

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