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FCJ-125 From Representation to Sensation: The Transduction of Images in John F. Simon Jr.'s 'Every Icon'

Troy Rhoades
Concordia University, Montreal.

> *Perhaps the peculiarity of art is to pass through the finite in order to rediscover, to restore the infinite.—Gilles Deleuze and Félix Guattari, What is Philosophy? (Deleuze and Guattari, 1994: 197)*

Science and Art

When encountering John F. Simon Jr.'s software artwork Every Icon (1997) on his website, it can be difficult for viewers to know whether they are seeing the visual execution of a mathematical theorem or experiencing a work of artistic expression. [1] This is because they are presented with a stark white and black thirty-two by thirty-two square grid on the right side of the website and three statements that read like a mathematical theorem on the left side. They state:

> *Given: An icon described by a 32 X 32 grid.*
> *Allowed: Any element of the grid to be coloured black or white.*
> *Shown: Every icon (Simon, 1997b). [2]*

But before viewers even take notices of these three statements, their attention is immediately drawn towards the upper left corner of the grid where a rapid flicker is occurring.

Once the grid's flickering corner has captured the viewers' gaze, they notice that a series of black squares emerge from this flicker, moving across the top row of the grid towards its right side. These black squares continue shifting to the right, column by column, away from the flicker until the leading black square stops moving. Then all the squares in between this now static black square and the flicker gradually change from white to black. Once all of the squares from the static black square to the flicker are black, the static black square then moves to the right, occupying the square in the next column and all the squares to its left suddenly change to white. At this point, another series of black squares emerges from the flickering left corner, which move towards the static black square.

If viewers continue watching Every Icon for a few more minutes, they will notice that the flicker occupies only the first five squares on the left side of the top row. Although these five squares seem quite chaotic, the orderly change of the squares from white to black is generated from this intense flickering. Viewers also experience a movement that seems to only be taking place in the top row of the grid. Change appears not to be occurring elsewhere in Every Icon. The squares in the lower thirty rows, which are all white, look to be completely static. The second row from the top has a few black squares on the left side, while the other squares in the row are white.[3] Like the lower thirty rows, the second row from the top also appear to be motionless.

Despite the fact that the top row of the grid tends to draw much of the viewers' attention because of the flickering that is generated by squares oscillating between white and black in the left corner, it is not the only thing presented on the website for Every Icon. There are also the three statements on the left side. When viewers read these statements, the actions occurring on grid begin to make some sense. The first two statements set out the parameters for what is taking place on the right side of the website. The first statement mathematically describes the size of the grid as measuring thirty-two by thirty-two. [4] The second statement establishes which colours will be found within each square on this grid: white and black. The final statement is a proposition that states this grid will present every possible icon using the parameters set out in the first two statements.

These three statements complicate how the grid is to be understood and perceived because these statements can be interpreted both mathematically and aesthetically. It becomes difficult to know whether viewers are looking at the visual execution of a mathematical

theorem or the emergence of a work of art. Are viewers watching a sophisticated abacus as it slowly and successively counts out every permutation available to it? Or are viewers watching a rapidly changing abstract animation? Does Every Icon propose to visually represent a demonstration of a numeric theorem? Or does it propose an aesthetic experience? Simply put, when viewers encounter Every Icon, are they perceiving images that emerge from the work of science or, as Simon presents it, the work of art?

Gilles Deleuze and Félix Guattari state that when one discipline begins to interfere within the realm of another, the methods and techniques of that interfering discipline need to be followed. For them, 'the rule is that the interfering discipline must proceed with its own methods' (Deleuze and Guattari, 1994: 217). The methods and techniques that are used in one realm cannot be transposed onto the other. Accordingly, when art begins edging into the realm of science, it must proceed aesthetically. Deleuze and Guattari give an example stating that when discussing the beauty of a geometrical figure, like a square or a triangle, 'so long as this beauty is defined by criteria taken from science, like proportion, symmetry, dissymmetry, projection, or transformation, then there is nothing aesthetic about it' (1994: 217). Any scientific operation or technique used in or for the production of an artwork must be approached from the purview of art. 'There are indeed technical problems in art, and science may contribute toward their solution, but they are posed only as a function of aesthetic problems of composition that concern compounds of sensations' (Deleuze and Guattari, 1994: 196). If a particular work of art tries to proceed by scientific analysis, then the artwork risks being disregarded as art and instead could be deemed the work of science. Conversely, if an artwork is the object of scientific study or experiment, then it cannot be analysed aesthetically. Science must operate under its own standards and with its own methods and techniques, otherwise it could potentially be condemned as art.

There is a potential risk that the images viewers experience in the encounter with artworks that use or incorporate cutting edge technologies and work with scientific theories will be dismissed as the visual results of a scientific experiment, rather than producing something of artistic merit. Yet, without science, many innovative works of art may not have been able to generate the images that viewers experience today. Consider painter and architect Leon Battista Alberti's development of linear perspective in painting during the early Renaissance, which used geometry as its foundation; or the pointillist painting technique developed by George Seurat during the 1880s, which was influenced by the optical and colour theories of chemist Michel Eugène Chevreul and physicist Ogden Rood; or finally, Woody Vasulka's metamorphic video works from the 1970s and 1980s, which used some of the earliest digital imaging technologies (some of which Vasulka invented himself). [5] When viewers encounter these past works or more contemporary artworks categorised as digital, internet, or software art, or under the ubiquitous rubric 'new media art,' such as Simon's Every Icon, it is often the case that the images that are perceived cannot be clearly differentiated when it comes to art and science. Are they emerging from a scientific experiment or an artistic practice?

A Question of Technique

In order to make any possible differentiations between science and art in artworks like Every Icon, the techniques of these two realms need to be further addressed. This is because what constitutes a scientific experiment or an artistic practice is a question of technique. According to Erin Manning, techniques 'are processes that work with the relational potential of that which is already underway' (2009a: 99). Techniques enable latent relations to arise for the experiencing as that experience is taking place. They do not create relations out of or from nothing. Rather, techniques are compositional processes that utilise the potential immediately available to it for the gathering and emergence of relations. For Bruno Latour, what is interesting about composition is 'that it underlies that things have to be put together (Latin componere) while retaining their heterogeneity' (2010: 473-474). Techniques enable that which is available for experiencing to generate relations and compositionally emerge into a novel encounter in the midst of that experiencing moment.

For science, there is a need for techniques to become tools for the production of reliable and repeatable result. A scientific experiment is circumscribed to a definitive outcome that judges its consistency by the repeatability of the very outcome it generates. The particular techniques it uses manifest themselves through their reliability to produce the same relational compositions every time they are called upon. The techniques science uses become specific scientific tools when there is a sense of predictability attributed to them as they repetitively generate dependable outcomes. Science would not use a particular technique if the outcomes did not have some form of anticipated accuracy to an intended outcome.

For instance, the technique of addition is scientific because when two or more quantities are combined, their relational composition generates the sum of these quantities, producing a result that can be repeatedly obtained. The repeatability of the technique then creates an expectation that the outcome will always be the same. If two plus two did not consistently generate a sum that equals four, but some other value like five, ten, or a billion, then the technique of addition would be deemed too unreliable for scientific use. Similarly, in optical colour theory, when two complimentary colours, such as green and magenta, are either combined or come within close proximity, they produce the colour white. [6] This technique of combining complimentary colours would not hold scientifically if it did not repeatedly produce the same outcome.

Science's need to focus on repeatable outcomes requires that some form of closure occurs in order to limit the activity of the techniques it uses. If these limitations were not put in place, then the process these techniques activate could potentially never end, making it difficult for

science to assess a particular technique's ability to generate a repeated outcome. For Brian Massumi: 'Science generates results by imposing controls designed to close its contents as much as possible' (2002: 235). The technique of addition, for example, could continue adding more quantities together, infinitely creating ever-larger sums. Likewise, the technique of combining optical colours could proceed to engage in an endless practice of colour fusion, infinitely generating every possible hue available to vision. At some point science requires that the process of activation must either be momentarily paused or completely stopped so that an evaluation of the results a particular technique has yielded can be conducted. Science needs to set restrictions to a technique's process of activation because stopping or limiting the process a specific technique activates enables science to assess a technique's consistency and repeatability. Without this closure, there would be no possible way for science to repeat a particular technique's process of activation in order to verify its consistency.

The techniques that activate art differ from those used in science. The aim of art is not to follow science in producing repeatable, consistent results drawn from the relations these techniques enable; instead, art focuses on generating an experience that leaves the outcomes it manifests open to ongoing relational encounters. The specific techniques that art uses draw relations to the forefront of attention by composing a novel experience for perception, while leaving this novel experience open to allow further relational encounters to emerge. This is why it is not unusual to experience a new flicker of colour when gazing at a painting or digital image, or another layer of sound when listening to a musical composition. Encounters with art tend to generate new experiences for perception because the techniques it utilises allow for changes to emerge in the midst of that encounter. A technique's compositional process of gathering relations in art continues after the work emerges, enabling the potential for new relations to emerge and affecting how the emergent artwork is experienced and ultimately perceived.

In art different techniques can potentially yield similar experiences. For example, in order for viewers to perceive a particular colour when they encounter an artwork, such as blue or red, artists do not need to use the same technique to generate these colours. There are several different techniques available that can activate a particular colour perception. Heinrich Wölfflin points to two techniques for activating colour that have been used throughout painting's history, which he calls the linear and painterly styles. The linear technique renders depictions through the use of lines, which distinguish and separate each depicted object and their details. The perceived colour is then filled between these lines. In contrast, a painting composed in the painterly style is only constituted by colour itself. There are no lines bounding colour to a specific detail or object that is depicted. Instead, the relations that occur among the colours within a painting activate it as such.

When using the linear style of painting, each of the depicted objects is coloured using a mixture of pigments based on the local colour of that specific object. Wölfflin gives an example stating that a 'painted blue cloak obtains its effect by means of the same material colour as the cloak had or might have in reality' (1950: 51). If there are areas of the blue cloak that appear lighter or darker, possibly from casts of either sunlight or shadows, then the painter will mix the blue pigment chosen to represent the cloak with either a brighter colour like white or a darker colour like black. It is from these distinctly rendered and locally coloured objects that the linear technique activates the painting. The fine, clearly rendered details of this technique further enable the potential for new relations to emerge with each encounter, generating something new to see.

Painters who use the painterly technique emphasise the relations among the colours, blurring the distinctions between any fine details. This is because the painterly technique 'aims at that movement which passes over the sum of things' (Wölfflin, 1950: 19). By using relations of colour, the painterly technique attempts to capture an overall impression of the depicted scene, instead of activating a painting from clearly rendered details found in the linear style. Wölfflin gives an example, stating that when a red cloak is painted using the painterly style, 'the essential thing is not the red of the natural colour, but the way in which the colour, as it were, changes under the eye of the spectator' (1950: 52). Brighter and darker areas of the red cloak in the painterly style may contain a variety of other colours that are not actually found locally, such as blue or yellow. This is because, when using the painterly technique, pigments do not need to be blended to imitate the local colour of the objects being depicted. Rather, pigments are mixed together in order to give the appearance of a particular colour. As long as the painting activates a seeing in which the colours emerging from it parallel those of the actual things being depicted, it does not necessarily matter what coloured pigments are used to achieve this. As well, because emergent colours activated by the painterly technique can use a variety of coloured pigments to achieve the visible outcome, there is the potential for other unintended colours to emerge from the same use of this technique. There is no definitive result that this technique activates.

Both the linear and painterly techniques used in painting are capable of activating experiences of colour that appear to be similar. Although these two techniques go about generating this experiential activity differently, they both can achieve similar outcomes that are open to further relational encounters. Examples of more contemporary techniques used in art, which are more closely aligned to Simon's Every Icon, are the vector imaging technique and the raster or bitmapping technique, which activate digital artworks. Like the linear and painterly techniques in painting, both the raster and vector techniques in digital art are capable of generating an encounter that yields similar outcomes, while simultaneously remaining open for new relations to gather as an encounter is occurring.

The vector imaging technique activates a digital artwork through the relations that gather from data that 'is recorded mathematically in terms of geometric shapes, points and lines called primitives' (Reed, 2006). The relations occurring among these mathematically generated points and lines activated by this vector technique enable images to emerge by differentiating and dividing a particular space. Similar to the linear technique in painting, objects and their details are rendered with a series of lines that produce shapes, which are then coloured to the intended hue. Because the vector technique is based within a mathematical structure of lines and points, the encountered images that emerge from this technique have the ability to be activated at a variety of sizes without any visible degradation. A digital image activated by the vector technique can easily be made ten times as large without any perceptible loss of detail by making a proportional calculation among the points and lines. If a red rectangle is rendered measuring four centimeters wide and three millimeters high, then when this rectangle is made ten times larger, it will still be proportionally the same. The width to length ratio will still be four to three. The red rectangle will simply be forty centimeters long and thirty centimeters high. This means that there is no particular outcome that is generated when a digital artwork is activated by the vector technique, leaving the work open to potential new relations.

The other technique used in digital artworks, raster imaging, activates relations with a grid comprised of squares, or pixels, and 'assigns data to all of the squares in the grid based on their color and location' (Reed, 2006).[7] Encountered images emerge from this technique through the relations that occur among the pixels, unlike the vector technique that activates artworks through a series of lines and points. The data that is assigned to each pixel activates a specific colour within it. This data is based on a sampling of the primary additive colours red, green and blue. The colour of each pixel is always comprised of a proportion of these three colours. Once the colours of the pixels is established, they then begin to gather into relations, affecting each other like the colours of the pigments used in paintings activated by the painterly technique. As these coloured pixels interact, there is the potential for new colours to emerge from their activity. These new emergent colours are what viewers come to see as the images generated in the encounter with the digital artwork. The relations among the coloured pixels continue affecting each other as the image continues to be encountered, enabling minute fluctuations to emerge in the seeing. The seen image persists in remaining open to the emergence of subtle nuances of colour activated by the raster technique.

A Composite Practice

The raster and vector techniques are particularly interesting because the data that these two techniques use to activate digital artworks comes from the realm of science. These two techniques use scientific methods for artistic outcomes. On the one hand, the vector technique

enables relations to gather among the measurements of points and lines that the scientific techniques of mathematics and geometry activate. On the other hand, the raster technique gives the means for relations to come together among colours in each pixel of its grid. Precise proportions of red, green and blue that the scientific technique of primary additive colours determines generate these colours encountered within the pixels. These precisely measured colours are then positioned within a set of mathematical coordinates that is the grid. These two techniques used in digital artworks produce an overlap that slides between the realms of art and science because the artworks emerge from the relations occurring among data, which in turn is produced by scientific techniques.

The overlap of art and science that emerges when encountering many digital artworks such as photographs, videos and websites also occurs with Every Icon. This is because Simon's work is activated by the raster technique. Viewers can easily discern the grid and black and white square pixels that the raster technique uses in order to activate this artwork, generating the images they come to see. As well, Simon proclaims his use of the raster technique in the first two statements presented on the left side of Every Icon's website, stating the actual size of the grid and the colours to be found within that grid. The use of the raster technique in digital art is not particularly unique. It is the most widely used imaging technique in digital image. This is because, according to Stacy Reed, this technique is 'easier to manipulate, and can record data of photos [as well as videos and websites] with more accuracy than vector can, capturing subtle shifts in hues and values' (Reed, 2006). But what specifically differentiates Every Icon from the many artworks that use the raster technique is that it directly engages in the overlap of science and art. The scientific techniques informing Every Icon's raster technique appear to be the content of the work itself. This overlap of science and art in Every Icon is so subtle, Deleuze and Guattari would state 'that we find ourselves on complex planes that are difficult to qualify' (1994: 217).

When looking more closely at how science is involved in the activation of Every Icon, it is clear that this work's use of the raster technique as well as new technologies (for its time), such as java applet software to generate the seen imagery and the internet as a distribution and exhibition platform, are not what solely generate it as such.[8] Rather, Every Icon is activated by a composite of scientific and artistic techniques, which is in keeping with how most of the world is actually encountered. Deleuze explains that, 'things are mixed together in reality; in fact, experience itself offers us nothing but composites' (1988: 22; emphasis added). Simon's very method for activating Every Icon is to take scientific and artistic techniques as composites that enable the images that viewers encounter to emerge. As Guattari notes:

> *I don't think that scientific and technological progress must necessarily bring about a 'schiz' in relation to desire and creativity. On the contrary, I think that machines must be used – and all kinds of machines, whether concrete or abstract, technical scientific or artistic. Machines do more than revolutionise the world: they completely recreate it (2009: 74).*

Simon's artistic practice involves the creation of a machine that interfolds the techniques and technologies of science with art for the activation of an artwork. This machine is Every Icon itself. As soon as science and its activating techniques become the composites for Every Icon, science is no longer strictly scientific; instead, it becomes a contributing composite for activating Simon's artwork. Yet as a composite for the activation of Every Icon, scientific techniques do not transform into artistic ones. Rather, science co-activates Simon's artwork with other artistic techniques.

What Simon is doing with scientific techniques and data is not what science does with them. It is not Simon's goal to become a scientist or to produce a strictly scientific work. Rather with Every Icon, he is making science do the work of art by tuning science towards generating an artistic outcome. He has an interest in scientific techniques but it is strictly for a singular artistic purpose. If Every Icon strictly did the work of science, it would generate a specific and repeatable result that would stop relations from continually gathering. Remember that science will stop or halt new relations from emerging in order to test the accuracy and consistency of its techniques to generate repeatable outcomes. However, the data that the scientific techniques produce for Every Icon—the size of the grid and the black and white colours within that grid—is not being used to generate a result that is closed to new relational encounters. Though Every Icon's use of scientific techniques, the work demonstrates how impossible it is for science to actually stop relations from emerging. According to Massumi, 'the results of [science's] own methods, the very effects its closures enables it to produce, flow back around to create a qualitative global situation that makes reopening ingress into, and interferes with, its every contextual exercise' (2002: 235). No matter how consistent a scientific technique is in producing repeatable results, there will always be the potential for new relations to gather. These relations then begin affecting the very consistency that a scientific technique is supposed to produce because they enable the intended repeatable outcome to transform into a singular event. This inability of science to completely prevent new relations from emerging is what generates the composite overlap between science and art that activates Every Icon.

The Transduction of Images

When viewers encounter the overlapping composite of science and art in Every Icon, they do not actually see a series of techniques from these two realms activating the work. What viewers experience is the work as a whole, not the techniques as such. Viewers come to see what the confluence of science and art is working towards, which for Every Icon is the emergence of flickering black and white images.

The images that emerge from the overlapping of science and art in Every Icon might be understood as a set of representations because the third statement on the left side of Simon's website explicitly proposes that every icon will be shown within the black and white grid. Yet despite this unequivocal proposition to show all the icons within the confines of a thirty-two by thirty-two grid, Every Icon actually generates something much more dynamic. Simon explains that his work 'posits a representational system where computational promise is intricately linked to extraordinary duration and momentary sensation' (Simon, 1996). Viewers do not actually see a series of visual results in the form of fixed representations activated by scientific techniques; rather, they perceive images emerging from the dynamism that is generated by the overlapping of science and art. The black and white squares on the grid exceed their mathematical coordinates and optical colour combinations, producing a movement that can only be felt in the seeing.

The overlap of science and art in Every Icon generates a dynamic movement that for Latour is compositional. Recall that Latour's understanding of composition involves elements that enter into relations in order to produce something new, while simultaneously retaining their singularity in the midst of the act of composing. The techniques that activate the black and white squares within Every Icon's grid come together and begin composing an experience. The black and white squares and the grid itself are not only singular pieces of data generated by scientific techniques but should also be considered as compositional elements. They become compositional as they proceed to enter into relations.

Because the grid and the black and white squares are compositional elements that gather into relations, the experience viewers have in their encounter with Every Icon cannot be predetermined by data the scientific techniques produce. The scientific data is transformed into compositional elements through a process of transduction that generates a dynamism viewers feel as they encounter Every Icon. According to Manning, transduction 'is a shifting between planes that requires a simultaneous shift in process' (2008a: 330). In Every Icon, transduction is not a process of translating scientific techniques into artistic ones, but

instead is a transformation that produces movement felt as the compositional elements proceed to overlap between science and art. The process of transduction alters how the scientific data that activates Every Icon is encountered. It remains compositionally open to new relational encounters, breaking with the scientific procedure of closure. This openness gives each of black and white squares within the grid the means to begin entering into relations, making them elements that compositionally participate in the encounter with viewers.

Despite the dynamic movement that is felt, the process of transduction is not actually visible. Viewers do not perceive the compositional elements entering into new relations. Instead, they see the effects that emerge from the dynamism this process generates as it moves through the interval between the realms of science and art. These effects are perceived by viewers as images. Manning explains:

> *The image we see is the activation of an incipient movement transducing an interval into form—a transduction of movement into mattering-form. Movement becomes matter in the taking hold of the now that is the event of perception. This is a taking hold not of the image as such, but of its relational coming into appearance (2008a: 337).*

The transduction of movement across science and art in Every Icon enables the incipiency of images that is experienced. In this transductive moment of movement, the emergent effects become the images viewers come to see on the right side of Simon's website in the form of the grid with its flickering left corner. These images are not a series of representations. Rather, these images are a dynamic effect that emerges from the process of transduction and have no existence or obvious reference (beyond the simple science suggested in the third statement) outside of the encountering moment shared between viewer and Simon's work.

Simon's third statement, that proposes to show every icon, expresses an inextricable relationship between science and art. From the perspective of science, Every Icon's proposition puts forward only a mathematical system of coordinates that visually represents the calculations of all the possible permutations found on the grid. Yet according to Manning: 'Propositions never attend solely to the datum' (2009b: 226). Every Icon's proposition activates more than just a variable display of black and white squares on a grid. It generates 'enabling constraints for the opening of a relational process' (Manning, 2009b: 227). [9] The enabling constraints in Every Icon are the grid and the two colours – black and white – within the grid. As will be explained towards the end of this article, these enabling constraints lure the viewers' attention by gathering potential sensations into sets of relations.

In order to follow Every Icon's transductive movement from a scientific representational system to the incipiency of flickering images, the work's scientific foundation needs to be examined. For the remainder of the article, a journey shall be taken that starts on the scientific plane of reference and ends at the artistic plane of composition. [10] The primary guides for this adventure in transduction will be Deleuze and Guattari. The journey will begin on the plane of reference, which resides within the realm of science and is populated by 'functives' and 'functions'. These functives and functions assist in demarcating limits and boundaries and set up a system that coordinates scientific data on the plane of reference. The journey will end at the plane of composition, which is within the realm of art and is populated by sensations.

Like the realms of science and art, these two planes overlap in Every Icon. They do not generate strict dichotomies because there is no clear boundary between these two planes. Rather, these two planes generate a complex continuum that enables transduction to occur. The move from the realm of science to the realm of art occurs inconspicuously, through a zone of indiscernibility. When in this zone, it is impossible to know whether the plane of reference has been completely left behind or whether the plane of composition has even been entered. It is a space 'between two forms, one of which is no longer, and the other, not yet' (Deleuze, 2003: 126-7). This indiscernible zone is where the shaping of materials and the creation of techniques occurs. This place is one of 'technical composition'.

Technical composition should not to be confused with the plane of composition as such. Deleuze and Guattari differentiate between 'technical composition', which leads perhaps from within science towards art, and the plane of composition, which is the exclusive concern of art.

> *[C]omposition is the sole definition of art. Composition is aesthetic, and what is not composed is not a work of art. However, technical composition, the work of the material that often calls on science (mathematics, physics, chemistry, anatomy), is not to be confused with aesthetic composition, which is the work of sensation. Only the latter fully deserves the name composition*
> *(Deleuze and Guattari, 1994: 191-2; original emphasis).*

If there is a 'plane of technical composition' this involves science but it is not, strictly speaking, scientific. Yet it is also not art because it is not yet doing the work of sensation. It is concerned with the materials that allow for these sensations to occur.

In what follows, the transductive path Simon lays out in Every Icon will be traced.

The Plane of Reference

In Every Icon's first statement, Simon asserts that an icon will be a grid measuring thirty-two by thirty-two. This is both a description and a demarcation of a space. It not only delimits a territory on which all subsequent statements and operations will play out. It also works to slow down the actions of chaos in order to make these actions perceptible. The grid seeks to order experience. It is the form the order takes. However, chaos here should not be understood as pure disorder, but rather as a force of infinite speed within a field of infinite size. Deleuze and Guattari state that chaos;

> *... is a void that is not a nothingness but a virtual, containing all possible particles and drawing out all possible forms, which spring up only to disappear immediately, without consistency or reference, without consequence (1994: 118; original emphasis).*

Chaos is a virtual field that cannot be perceived but it can potentially be experienced through the effects it generates. The virtual, according to Brian Massumi, 'appears only in the potentials it drives and the possibilities that unfold from their driving' (2002: 136). Viewers can encounter the virtual's incipiency in the effects that emerge from its actualisation.

Take gravity for example. When an apple famously hit Newton on the head, he did not perceive gravity directly. 'Newton did not see gravity. He felt its effect: a pain in the head' (Massumi, 2002: 160). Newton's perceived pain is the effect that gravity had on the apple's potential to fall, as gravity emerged from the virtual field of chaos. If someone witnessed the apple hitting Newton's head, then the perception they would have had in seeing the apple fall towards Newton would have been the visible effect of a particular instance of gravity's actualisation. Such actualised effects are what are visible or painful, not the virtual itself.

Because chaos is a virtual field of potential and contains all possible particles and forms moving at an infinite speed, as Deleuze and Guattari noted above, what is actually perceived through the grid's ordering principles is always a subtraction from and a deceleration of this field. Even within this, there is always more to see, smell, taste, touch, or hear because perception can never completely grasp everything that is made available to it. And once

something is actually grasped by perception, it slips back into the virtual field of potential, just as quickly as it emerged. This makes the moment of actualisation quite ephemeral. What is actually perceived is a less-than that is always rapidly exceeded by the more-than of the virtual. To reiterate, then, in order to limit the potential for perception to exceed itself, and thus quickly return to the virtual field, science proceeds to establish a plane of reference. According to Deleuze and Guattari, the plane of reference is 'constituted by all the limits or borders through which it confronts chaos' (1994: 119). It is where thresholds are determined and matter obtains position within a scientific system. It is where potential from the virtual field is actualised into specifically referential configurations.

The delimiting and territorialising actions of the grid in Every Icon assist in establishing the plane of reference. Every Icon's grid generates a controlled space that assists in the slowing of the infinitely fast movements of the virtual occurring within the field of potential. It is a space that encourages perception to emerge from the virtual field of potential, while simultaneously trying to prevent its return to that same field. The grid acts like a net that is cast into the virtual field in order to capture and position the potential that resides within it into actualised configurations and forms. Once caught, these newly actualised forms gain a reference within the grid's system of coordinates. Yet I shall demonstrate later in this article that the grid touches on compositional processes even while it is committed to constructing the plane of reference.

The referential configurations and forms that shape the plane of reference are what Deleuze and Guattari call functives (1994: 118). They explain that there are two types of functives. The first type, which are called 'endoreferential' functives, comprise of limits or variables that pervade science, which establish a threshold that cannot be surpassed. Examples of some of these unsurpassable limits are the speed of light (299,796 kilometers per second), which is the fastest speed matter can move; absolute zero (273.15 degrees Centigrade), which is the temperature at which matter stops moving; or the Big Bang, which is the beginning of time for the present universe. As well, thresholds considered to be endoreferential functives can be established by creating a set of variables, such as all rational numbers between one and nine. The endoreferential functive in Every Icon is based on a set of variables, the two colours black and white that are mentioned in the second statement.

Both limits and variables carry out a form of counting. Deleuze and Guattari state that it is these 'limits that constitute slowing down in the chaos of the threshold of suspension of the infinite, which serve as endoreference and carry out a counting' (1994: 119). Limits are the point where counting begins or ends. Variables are countable things found within a set. When a limit or a set of variables is determined, the process of counting begins. Having to count either each step as a limit is approached or every variable within a set slows an ac-

tualised configuration's return to the virtual field of chaos. What cannot be counted thus remains as potential within the virtual field of chaos and outside the purview of the plane of reference. This means that in Every Icon any colour that falls outside the set of black and white colours will not be actualised, persisting within the virtual field of chaos as potential.

The second type of functive, which is called 'exoreferential', demarcates the space where the variables or limits are placed. It is an external framing device, such as a mathematical system of coordinates. Anything that is slowed by the limits and variables is also caught within the web of a coordinate system. Deleuze and Guattari give an example:

> *A particle will have a position, an energy, a mass, and a spin value but on the condition that is receives a physical existence or actuality, or that it 'touches down' in trajectories that can be grasped by systems of coordinates (Deleuze and Guattari, 1994: 119).*

Simply put, the grid as described in the first statement of Every Icon is an exoreferential functive. The grid can track or place with some exactitude where a limit is demarcated or where variables are positioned. It situates and differentiates, on the plane of reference, what has been actualised from the virtual field of chaos.

When an endoreferential functive and an exoreferential functive are established and situated on a plane of reference, they enter into a relationship from which a third variable is determined. This new variable is called a function and it cannot exist without two or more functives connecting in some manner. According to Deleuze and Guattari, a function 'is a complex variable that depends on a relation between at least two independent variables' (1994: 122). For a function to be established one or more limits or sets of variables must be situated within a delimited space or system of coordinates. Once established, a function becomes an object of science that accounts for the state of affairs on the plane of reference. This state of affairs is presented as a scientific proposition (Deleuze and Guattari, 1994: 122).

From the three statements that appear on Every Icon's website, it can be established that there are two functives, a function, and a scientific proposition presented. The two functives are presented in the first and second statements. As stated above, the first statement presents an exoreferential functive that indicates the size of the grid, which measures thirty-two by thirty-two. The second statement presents an endoreferential functive that indicates a set containing two coloured variables will be allowed within the grid, which are black and white. With these two functives, Every Icon generates a plane of reference that clearly de-

marcates a territory and declares what will be found within that territory. By establishing this plane of reference, Every Icon is able to capture the colours white and black in the netting of the grid, wrestling them away from the virtual field of chaos.

These two functives not only establish a plane of reference for Every Icon but they also enter into a relationship and produce a function. This function is the result of a mathematical state of affairs in which all the combinations of the two variables are allowed to occur in every element found within the designated space. These elements, according to Massumi, 'can be used as the basis for comparative judgment in any context, independent of situation' (2002: 165). They are general abstract entities that can be 'seen anytime in principle, but nowhere in particular' (Massumi, 2002: 165). This is because elements that are found on the plane of reference are relative to the standards or limits established by functives. Since the grid in Every Icon measures thirty-two by thirty-two, the number of elements can be determined simply by multiplying these two numbers. This results in one thousand twenty-four distinct elements established on the plane of reference. From here, each of these elements can be one of two possible colours, either white or black. Specifically, Every Icon's functives establish one thousand twenty-four black and one thousand twenty-four white elements. Each element found within the grid is only differentiated by the colour that it keeps.

This means that in order to determine that number of possible combinations of elements on the grid, and thus Every Icon's function, a multiplication of the number two must be repeated one thousand twenty-four times. The result is two to the one thousand twenty-fourth power. This can be expressed mathematically as 21024, or it can be expressed by the power of ten as the approximate numeric value of 1.8 x 10308, which is Simon's preferred way of expressing this function (Simon, 1996; Mirapual, 1997; Baumgärtel, 1999). [11] In order to comprehend this number, imagine a one then an eight followed by three-hundred and seven zeros. If pressed to describe the number of combinations possible in Every Icon with only words, it could be said that there are approximately three googol images generated in this work, with a googol being ten to the one-hundredth power (10100).

Things

Every Icon's function, 1.8 x 10308, appears to present a well-defined system of coordinates and offers a state of affairs that reflects Simon's proposition to show every icon, as stated in the work's third statement. The function clearly indicates the number of icons that are to be shown. As well, the excessive potential of the chaos seems to be captured by the limitations of the two variables, white and black, and contained by the grid's system of coordinates on

the plane of reference. Chaos has been slowed down enough for forms to be actualised from the potential that resides within the virtual field by a process of counting that is generated by the combined efforts of the endoreferential functive (the colours) and the exoreferential functive (the grid).

However, Deleuze and Guattari point out that 'the most closed system still has a thread that rises towards the virtual' (1994: 122). Even with the soundest function on the plane of reference, there is the potential for any actualisations created on this plane to exceed themselves. Like a dam holding a large amount of water, there is always the prospect of leaks appearing within the plane of reference. When actualised forms begin exceeding the limits established by the function on the plane of reference, it is because these actualisations are applying pressure to these limits, causing cracks to develop in the plane's construction. This pressure that is being applied to the plane of reference is not physical pressure. Rather, it is the actualised forms becoming more than what the limits can actually handle. In order to plug the leaks generated by the ability of actualised forms' to exceed themselves, either new functions must be added to supplement those already present or the present function must be completely changed. These additions to the system create a more complex entity on the plane of reference. If any actualised forms completely surpasses the limits established by Every Icon's function, then the plane of reference constructed for Every Icon, like a faulty dam, will be need to be dismantled and rebuilt.

Any function that has been laid out on the plane of reference will eventually form cracks or bifurcations, which introduce the potential for different variables not originally included to alter the forms that have been actualised. These new variables can affect the operation of the established system by causing it to branch out into different directions, generating openings into what appears to be a unified whole. 'Science does not carry out any unification of the Referent but produces all kinds of bifurcations on a plane of reference that do not preexist its detours or its layout' (Deleuze and Guattari, 1994: 123). No system produced on the plane of reference is ever fully closed or completely unified.

As I have begun to suggest, when a function's state of affairs bifurcates and can no longer contain the excesses particular actualised forms generate, the addition of another function can curb an actualised form's ability to go beyond its own actualisation. This new function is formed when the older function acts in concert with one or more new functives. The older function becomes a variable, one of the functives, used in this new function. When there are two functions working together on the plane of reference, according to Deleuze and Guattari, a thing forms. 'When we go from a state of affairs to the thing itself, we see that a thing is always related to several axes at once according to variables that are functions of each other, even if the internal unity remains undetermined' (Deleuze and Guattari, 1994:

122; original emphasis). A 'thing' comes into being when one function is reliant on a new function to stop it from bifurcating and conversely when a new function is dependant on an older function for its inception. This new 'thing' works with the registers of both functions, meaning that it interacts with the state of affairs of both functions on the plane of reference. For example, a 'thing' may be comprised of a function that calculates space and another that calculates time. Both functions work on different registers, one with space and the other with time, but when they interact with each other a 'thing' appears. When a new function is added and a 'thing' emerges on the plane of reference, the bifurcation that appeared in the older function is then stopped and the exceeding actualised forms are re-contained and re-actualised once again.

Simon's proposition indirectly reveals how actualised forms exceed the limits established by the function in Every Icon by specifically indicating that all icons are to be shown. To display all of these icons and demonstrate every possible permutation on the grid, it requires more than just a single mathematical function. Time is needed to show all the icons, which is something Every Icon's function, 1.8 x 10308, does not take into consideration. This single mathematical function presents a state of affairs that expresses how many possible black and white icons can be presented on the thirty-two by thirty-two grid. Yet, in order for this function to fully express itself and show every possible icon, it needs to proceed with a process of counting. This counting process takes time, which is something that exceeds the limits of this particular function as performed.

It appears that the new variable of time has emerged as the bifurcation that exceeds the limits the state of affairs of Every Icon's function can express. This starts to unravel the present system on the plane of reference. As soon as the grid is laid out on the plane of reference and Every Icon's first icon is accounted for, some amount of time must pass before the second icon is counted. Simon chose to begin Every Icon with all the one thousand twenty-four elements in the grid coloured white, forming a completely white icon. The second icon produced is all white except for the element that is in the upper left corner, which is black. The third icon produced is all white except for the square in the second column to the left in the first row. Yet the process of counting all the icons can only continue to the end if the bifurcation opened up by time can be plugged. If the system is to be sustained on the plane of reference, this new variable needs to be captured before it unfolds with infinite speed into the depths of chaos. This requires the addition of a new function, which will prevent time from enabling the already established actualisations from exceeding the function that is currently on the plane of reference.

In order to calculate how long it will take for Every Icon to count all of the icons on the thirty-two by thirty-two grid, new endoreferential and exoreferential functives need to be

revealed to determine Every Icon's function for time. The new endoreferential functive – the limit or set of variables – is the number of icons that will be made visible. The already determined function, 1.8 x 10308, becomes this new function's endoreferential functive. But more is needed. Thus the new exoreferential functive is the rate at which these icons are shown. This functive will state how fast the icons are to be counted. Simon explains that this rate of change depends on the speed of the computer's processor that runs the software for Every Icon. He states that, 'at a rate of one hundred icons per second (on a typical desktop computer) [in 1997], it will take only 1.36 years to display all variations of the first line of the grid' (Simon 1996). Simon did not arbitrarily choose this rate of one hundred icons per second. It is the actual rate of change that Every Icon is displayed at on his website. [12]

It should be noted that at this rate of one hundred icons per second, it will take approximately six billion years for Every Icon to show all the possible combinations of white and black in just the first two lines (Simon, 1996; Baumgärtel, 1999). Nearly six billion years will be required for all the squares in the top two rows to go from displaying the colour white to all of them displaying the colour black. The Earth is estimated to be only a little more than four and a half billion years old. [13] By the time the first two lines in Every Icon appear completely black, all the species of life presently on Earth will likely be extinct or will have evolved into other species many times over.

When this new exoreferential functive of one hundred icons per second enters into a relationship with the new endoreferential functive, which is the older function of 1.8 x 10308 icons, a new function is determined. This new function establishes the time it will take for Every Icon to show all of its icons. It will also determine when the final icon will be reached. When this new function is expressed mathematically, it indicates that it will take 1.8 x 10306 seconds, or approximate 5.7 x 10298 years, for Every Icon to display every icon. This equation, 5.7 x 10298, becomes the new function that gives Every Icon its reference in time.

This means that there are now two functions on the plane of reference, one function that establishes the number of icons and the space the icons occupy, and a second function that determines the rate at which these icons are counted and the total time it will take to count them all. As was discussed above, the new function depends on the older function for its existence and, conversely, the older function relies on the new function to stop bifurcations that appear. The new function that expresses a closure of the variable of time is dependant on the older function, which expresses space, for its existence.

Because the relationship between the two functions is mutually dependent, it creates an internal unity on the plane of reference that enables a "thing" to be actualised. From the

correlation between the two functions' state of affairs, space and time, the 'thing' emerges as Every Icon's many icons. As a 'thing', the icon expresses a more complex system than any one function can alone. This is because the "thing" coordinates both space and time, whereas a function can only coordinate one of these systems. Neither space nor time can now be easily removed from the plane of reference without destroying the icon or the plane of reference itself. To do so would impinge on Every Icon's ability to fulfill its proposition of showing every icon and return any actualisations this work creates to the virtual field of chaos.

Bodies

Despite the fact that all of Every Icon's variables and limits have been clearly delineated and the icon in Every Icon can now be defined as a 'thing', Simon's proposition is not yet completely expressed. So far this article has outlined how much space the icon occupies, how many combinations of white and black Every Icon can produce, how much time it will take to show all of these combinations, and how all of these limits and variables are coordinated within a unified 'thing'. The problem now is that the icon, as a 'thing', cannot express the manifestation of every combination available to it on the plane of reference. This means that a new variable, difference, needs to be addressed. Since the icon itself cannot express difference, a new bifurcation opens up on the plane of reference, again allowing established actualised forms to begin exceeding the system's capacity to keep them from returning to the virtual field of chaos. Unlike a 'thing', the addition of a new function cannot mitigate this new bifurcation. If the difference between each distinct permutation of the icon can be demonstrated, then the bifurcation can be sealed and the proposition of having every icon shown can be fulfilled. But this requires the formation of yet another more complex system, one that builds from the foundation of the icon itself.

Deleuze and Guattari call this new system a 'body'. They explain that a 'body' appears on the plane of reference 'when the thing itself undergoes changes in coordinates…and instead of the function taking the limit and the variable as reference, it takes an invariant and a group of transformations' (Deleuze and Guattari, 1994: 122). A 'body' is a 'thing', but a 'thing' that is subject to difference. It is a 'thing' that is capable of changing itself. A 'body' 'proceeds by a cascade of actualisations' (Deleuze and Guattari, 1994: 123). In order for change to occur, one element on the plane of reference must remain unaltered. This element is an invariant, which becomes the foundation of the 'body' within the plane of reference. No matter how many permutations a 'body' undergoes, the invariant persists. Because of the enduring nature of this invariant, a 'body' can manifest a number of transformations on the plane of reference without creating bifurcations that that would otherwise enable this actual-

ised 'body' to exceed its own actualisation.

In order to show all the permutations that the icon can undergo in Every Icon, an invariant must be chosen so that a 'body' can take shape on the plane of reference. The invariant will allow the 'thing' – the icon – to undergo the enormous number of changes that was originally calculated as the first function, 1.8 x 10308. This invariant is the grid itself and not the measurement of it, as expressed by the equation 32 x 32. This is because no matter how the colours white and black are arranged within the elements of the grid, the grid itself remains constant. The lines of the grid are like steel lattices that hold firm, while the numerous combinations of white and black manifest in the spaces in between. The invariance of the grid enables changes to occur within the space and over the time, which is all coordinated on the plane of reference

By establishing the invariant, a stream of difference can manifest in Every Icon. The invariant produces an opening to difference because it enables the elements within the grid to fluctuate between the colours white and black. The gird remains constant in contrast to the cascade of actualised icons occurring one hundred times per second. Recall that Simon starts this stream of actualisation with all the elements in the grid coloured white. Changes in the grid begin one-hundredth of a second later when the element in the upper left corner immediately turns black. Following this, that upper left element returns to white and the element to its immediate right turns black. Every Icon continues in this manner moving through every possible combination of white and black in the first row of elements. After all the elements in the first row become black, they all return to being white and the first element on the left in the second row changes from white to black. As Simon mentioned above, for the elements in the first row to become entirely black takes 1.36 years. The first element in the second row will not become white again until all the elements in the first row become black for a second time. This process will continue until all the elements appear black and the last icon is shown.

The grid and all of the possible combinations of white and black, from the all-white icon to the all-black icon, constitute the 'body' of Every Icon. The invariant grid's stable presence provides the skeleton that enables the elements within it to take on the unimaginable number of differentiated forms actualised on the plane of reference. Without the different combinations of white and black successively manifesting themselves within the invariant grid, there would not be a 'body' on Every Icon's plane of reference. Without this 'body' to stop the bifurcation that was created when the variable of difference appeared, the potential extracted from the virtual field would not be actualised into a cascade of differentiated icons and Every Icon would have proceeded to unravel with infinite speed.

With a constituted 'body' on the plane of reference, Every Icon can now be represented graphically. Simon's proposition can now be demonstrated. It is possible to show every icon, as illustrated on the right side of Every Icon's website. This is because the infinite speed of chaos has been slowed down enough by the plane of reference so that forms can be actualised from the virtual field of chaos. The plane of reference restricts the movements of chaos within the lattice of the invariant grid so that it can be shaped by limits and variables, by the functives and functions, in order to actualise the icons of Every Icon. As each icon is successively actualised (at a rate of one hundred per second) on the plane of reference, viewers see the fulfillment of Simon's proposition. By proposing to show every icon, Every Icon constructs a series of functives, functions, 'things', and a 'body' in order to actualise potential from the virtual field. Each actualised icon displayed on the invariant grid with its unique configuration of white and black is one step towards Every Icon's return to the virtual field of chaos. Recall that the virtual field of chaos can never be directly experienced as such but can only be felt via the effects that are actualised. Simon's proposition, from the perspective of science, lays a path that at every turn— from functions to 'things' to 'bodies'—attempts to restrain chaos' infinite speed and prevent any actualised forms from exceeding their own actualisation on the plane of reference.

Lures for Feelings

If viewers look at all the elements that comprise Every Icon's plane of reference, they will notice that these elements appear to be quite similar to those situated within the work's technical composition. The plane of reference and Every Icon's technical composition can seem somewhat indiscernible because technical composition involves the arrangement of elements – which can be both material and immaterial – in a particular manner using a specific set of techniques. Deleuze and Guattari indicate that technical composition is populated by a variety of techniques that,

> *... include many things that are individualised according to each artist and work: words and syntax in literature; not only the canvas but its preparation in painting, pigments, their mixtures, and methods of perspective; or the twelve tones of Western music, instruments, scales, and pitch (1994: 192).*

In digital art, technical composition involves both hardware and software, which can include computers, processors, monitors, digital cameras, and the internet, and also encompasses spatial and tonal resolution, algorithms, systems of coordinates, and binary code. Many of these materials and techniques found in digital art are also found in Every Icon; but Every Icon's technical composition also contains the functives and functions that constitute the

'body' produced on the plane of reference, which include the thirty-two by thirty-two grid, the colours white and black, the one hundred icons per second display rate, and the displaying of each icon successively beginning with the all-white icon. The mutual use of the functives and functions is what makes the indiscernibility between the plane of reference and technical composition possible. Both overlap because they share the same compositional elements in Every Icon.

These shared elements between the plane of reference and the work's technical composition also makes it difficult for viewers to clearly determine whether Every Icon is a scientific representation or an aesthetic composition. As Deleuze and Guattari would say, 'we find ourselves on complex planes that are difficult to qualify' (1994: 217). Nevertheless, if Every Icon is to transductively make the leap from scientific representation to aesthetic composition, then distinctions needs to be made between the plane of reference and the work's technical composition. Sensations need to be foregrounded. 'We paint, sculpt, compose, and write with sensations' (Deleuze and Guattari, 1994: 166). The viewers' attention cannot solely be focused on the workings of Every Icon's 'body' found on the plane of reference. Focus needs to shift towards the emergence of sensations in order for Simon's work to pass from the plane of reference to its technical composition and then onto to the plane of aesthetic composition, or, as noted above, what Deleuze and Guattari simply call the plane of composition.

If the functives and functions laid out as a 'body' on Every Icon's plane of reference are to be understood from the perspective of art, then they can no longer be viewed as that which changes within an invariant system of coordinates, representing the calculations of all the possible permutations found within the icon. As the elements and techniques for the plane of technical composition, the functives and functions can no longer act as variables that impede the emerging excesses of that which is actualised. Instead, they need to be understood as activating parameters, or what Manning and Massumi call 'enabling constraints', which incite potential sensations to gather together in order to grab the viewers' attention. 'Enabling constraints are not rules as much as active parameters carving out an atmosphere for the event's potential realisation' (Manning, 2008b: 9). Recall the first two statements on Every Icon's website, which state that the grid is to measure thirty-two by thirty-two and that all the elements on that grid are to be white or black. When approached from the perspective of art, these two statements do not use the grid and the colours to establish limits and variables in order to calculate and count the number of possible permutations. Rather, as enabling constraints, the grid and the colours activate a perceptual field for white and black sensations to metamorphosise into visible images.

When the functives and functions of Every Icon are transduced into compositional elements and techniques for the plane of technical composition, the plane of reference can no longer

continue to prevent the actualisations it generates from exceeding themselves, opening themselves up to the virtual field. Instead, the compositional elements and techniques, as enabling constraints, modulate Every Icon's ability to go beyond its own actualisation so that it can emerge from its technical composition as the sensations viewers feel on the plane of composition. What viewers encounter in their experience with Every Icon is not able to fully exceed its own actualisation on either of these planes, but it is allowed to flow at an accelerated pace. More importantly, viewers can literally feel this acceleration as they watch the movement of the squares in Every Icon changing from white to black in the intense flickering in the upper left corner on the top row of the grid. The moment viewers feel this acceleration in the grid and perceive the movement of the squares in Every Icon, they have moved from the work's technical composition to the plane of composition itself. It is at that point that the elements and techniques pass into sensation (Deleuze and Guattari, 1994: 193).

Once sensations begin emerging for Every Icon, the 'body' coordinated by the invariant grid on the plane of reference is transformed into a perceptual field. In this field felt sensations generate the flickering image viewers see emerging from the plane of composition. For Anna Munster: 'It is as if images can no longer be located as distinct sets of coordinates upon a grid providing them with place and context in a system. They are now laid out on a plane, to be organised principally by directions and speeds in time' (2006: 174). When viewers watch Every Icon, they do not actually see the succession of clear and distinct representational icons that the invariant grid organises on the plane of reference; instead, they feel the accelerations of black and white sensations that generate the visible metamorphosis of a seen flickering image within a perceptual field on the plane of composition. Steven Shaviro explains: 'In metamorphosis, it is not the thing itself that attracts [viewers], over and above its qualities; it is rather the very unsteadiness of the thing that draws [viewers] onward, as it ripples and shifts in a kind of protean wavering' (2010: 8). Neither the invariant grid nor the icons themselves lure the viewers' attention; rather, it is the felt black and white sensations that generate the flickering image that draws the viewers' gaze. The invariant grid and the innumerable icons are backgrounded from perception in favour of the image generated by the oscillations of black and white. By proposing to show every icon, Simon's work has taken mathematical functives and functions and transduced them into what Alfred North Whitehead calls 'lures for feelings' (1929/1978: 25, 184). The functives and functions become Whitehead's lures, or sensational attractors, that instigate the incipiency of images.

Simon's proposition to show viewers every icon begins on the plane of reference. As he was noted as stating in the above, Every Icon posited a 'computational promise,' which creates a 'body' capable of counting all the permutations of black and white icons on an invariant thirty-two by thirty-two grid. Once this system of mathematical representations is displayed – as seen on the right side of Every Icon's website – this 'body' can no longer be contained within the plane of reference. As the process of counting gives way to 'momentary sensa-

tion,' as Simon states, the functives and functions of the referential 'body' undergo a process of transduction. They become 'lures for feeling' or sensational attractors. The functives and functions, which were represented on the mathematical system as the variable set of two colours, the size of the grid, and the rate the permutations of icons change, become sensational attractors. As sensational attractors, these transduced functives and functions then become the enabling constraints for the incipiency of images.

Once this transduction takes place, the functives and functions change into the compositional elements and techniques for the plane of technical composition. It is at this point that Every Icon transversally moves from the plane of reference, through the plane of technical composition, and emerges aesthetically on the plane of composition. Deleuze and Guattari explain:

> *There is only a single plane in the sense that art includes no other plane than aesthetic composition: in fact, the technical plane is necessarily covered up or absorbed by the aesthetic plane of composition. It is on this condition that matter becomes expressive: either the compound of sensations is realised in the material, or the material passes into the compound, but always in such a way as to be situated on a specifically aesthetic plane of composition (Deleuze and Guattari, 1994: 195-6).*

Every Icon begins as a work that generates scientific representations but it is ultimately able to present itself as an aesthetic composition of sensations. It generates a seeing that exceeds the limits established on the plane of reference. According to Manning, 'to see is to feel-with, to participate in the intensive passage from the virtual to actualisation' (2009b: 95). Viewers experience this passage from the virtual to actualisation transductively as the incipiency of images. As long as there is a computer to run the program and a monitor to display Every Icon, it will endure well beyond anything that is present today or that can easily be imagined for the future. This is because, according to Simon, Every Icon's 'theoretical possibilities outdistance the time scales of both evolution and imagination' (Simon, 1996)

Biographical Note

Troy Rhoades is at Concordia University's Centre for Interdisciplinary Studies in Society and Culture in Montreal, Canada. His current research is dedicated to the interplay between images, sensation, composition and art. He co-edited with Christoph Brunner the most recent issue of Inflexions: A Journal for Research-Creation (http://www.inflexions.org),

entitled 'Transversal Fields of Experience'.

Notes

[1] For the purposes of this article, I will be referring only to the version Every Icon that can be seen on Simon's web site, which can be viewed at;

http://www.numeral.com/appletsoftware/eicon.html.

Simon made numerous editions of Every Icon that were sold over the internet. 'Produced at a time when very few artists or galleries could manage to sell net art, Every Icon was in fact marketable; it lent itself to the production of unique editions, each inscribed with its discrete starting-point and buyer's name, which were sold' (Greene, 2004: 92). Some of these other editions of Every Icon can still be viewed online. For example, one edition, owned by the Institute of Artificial Art Amsterdam, can be seen at;

http://radicalart.info/AlgorithmicArt/grid/every/EveryIcon/eicon.html (Simon, 2001)

and another edition, owned by Enterzone, can be seen at

http://ezone.org/ez/e11/articles/jfsjr/everyicon.html (Simon, 1997a).

As well, Simon created versions of the work that are to be mounted on a wall, which comprise of modified computers and monitors. He even made versions for projection and Palm Pilot, an early Personal Digital Assistant device (PDA) popular in the late 1990s (Ploug, 2003). Recently, a version of Every Icon has been made available as an application for Apple's iPhone and iPod Touch.

[2] In fact, these three statements are included in every edition and version of Every Icon. For a detailed account of the various versions see Note 2. As well, when the work is presented as a still image for publication these three statements are shown alongside an image of the grid. See Eckmann and Keopnick (2006: 10), Green (2004: 91), and Rush (1999/2005: 213).

[3] At the time this paper was written in March 2011, there were three black squares in the second row from the top. The squares in the first two columns from the left and the fifth square from the left were black.

[4] The reason Simon chose a thirty-two by thirty-two square grid was because, as he explains, 'that was the original Macintosh definition for an icon, when the first Mac system came out. With the old Macs, you went to the icon editor "ResEdit", where you could design your own icon by clicking on the different fields of the grid' (Baumgärtel, 1999).

[5] For further discussion on linear perspective see Alberti 1972; on the videos of Woody Vasulka see Dunn, Vasulka and Vasulka 1992, Hatanka, Koizuiai and Ekiguchi 1998, Sturken 1996, and Vasulka and Weibel 2008; and finally, on Seurat's pointillist painting technique see Broude 1978, Fénéon 1966 and Homer 1985.

[6] According to physicist Ogden Rood: 'Any two colours which by their union produce white light are called complementary' (1879: 161). Because magenta and green are complimentary optical colours, when they combine, viewers will see neither magenta nor green. Instead, they will see the colour white.

[7] Stacy Reed notes: 'Some popular raster file types you are sure to come across are JPG, GIF, BMP, TIFF and PNG' (Reed, 2006).

[8] It must be remembered that internet art was still fairly new when Every Icon was uploaded to the World Wide Web in 1997. According to Green:

> *By 1997, net art had become an established pocket of relatively autonomous art-making, though it had not succeeded in reaching a wider public. Beyond the spheres of internet communities, media festivals and artists' immediate social and professional circles, there was little interest in and even less money for net artists' work (Green, 2004: 73).*

[9] The term 'enabling constraints' has been in use for more than a decade prior to Manning's adoption of it. Despite this, she has been one of the few researchers – along with Brian Massumi – to fully develop the conception of this term. For early uses of the term 'enabling constraints' see Massumi 1998 and Hansen 2002. For further investigations into the conceptualisation of this term see Manning 2009b and Massumi 2009.

[10] These planes cannot be directly perceived. According to Deleuze and Guattari:

> *The plane can be a hidden principle, which makes visible what is seen and audible what is heard, etc., which at every instant causes the given to be given, in this or that state, at this or that moment. But the plane itself is not to be given. It is by nature hidden. It can only be inferred, induced, concluded from that to which it gives rise (1987: 265).*

[11] For reference, one billion is ten to the ninth power (109 = 1,000,000,000).

[12] This rate of change in Every Icon, as presented on Simon's website, can be verified by finding the square in which the one hundredth change takes place and timing that specific square's rate of change. If that particular square cycles between white and black only once per second, then the entire work displays one hundred images every second. The square in which the one hundredth change takes place can be ascertained by converting the number one hundred to its binary base equivalent. Because Every Icon is essentially a counting machine that works in binary numbers, once the number of digits necessary to express the number one hundred in binary is discovered, then the number of squares that are needed for the first one hundred changes can be easily ascertained. The number one hundred expressed in binary is 1100110. This binary number uses seven digits. Therefore, the one-hundredth change in Every Icon takes place in the seventh square from the left of the top row. When observing this seventh square from the left, it does indeed cycle between white and black once every second, thus proving that Every Icon, as presented on Simon's website, shows one hundred images per second.

[13] The United States Geological Survey estimates that the age of the Earth is 4.54 billion years old. See 'Age' 2007.

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