

SCHRIFTENREIHE DES GRADUIERTENKOLLEGS

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„AUTOMATISMEN“

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LAURA U. MARKS

# THINKING LIKE A CARPET: EMBODIED PERCEPTION AND INDIVIDUATION IN ALGORITHMIC MEDIA

This essay arises from explorations of the relationships between contemporary computer-based art and classical Islamic art, in my book *Enfoldment and Infinity: An Islamic Genealogy of New Media Art*.<sup>1</sup> One of the central points of comparison is that both Islamic and computer-based art forms privilege aniconism, or the avoidance of figurative images. Computer-based art is often figurative, of course (as in computer animations), but the medium of software is not. Islamic religious art, of course, tends to eschew figurative images, and in so doing generates all kinds of creative image-making practices that can inspire contemporary media art by example. Islamic art and Islamic thought, in avoiding a direct representation of God, create powerful abstractions that indicate the divine presence/absence, are pulled toward it, demonstrate and perform it, but do not show it. This power of non-representation created the conditions of a kind of nonorganic life, in Deleuze and Guattari's term, in Islamic art: a self-generated liveliness by which forms differentiate and multiply.

There are many reasons why Islamic *religious* art tends to be aniconic. Islam came about at a time when the other religions of the book, Judaism and Christianity, were iconoclastic. Aniconism helped distinguish Islam from other religions visually. The Qur'an cautions humans not to compete with God by trying to make living forms, and that it is impossible to conceive of God. God, being beyond comprehension, is also beyond representation. A branch of rationalist philosophers of ninth-century Iraq, called the Mu'tazili, argued that since God is indivisible, He has no attributes (such as sitting on a throne). Thus any attempt to identify the properties of God in art risks blasphemy.<sup>2</sup> Theirs was not the only view, and I must note that in the eastern Muslim world, dominated by Shi'ite Islam, there exist many figurative images of Muhammad and other saintly people – images that would be cause for persecution in the western, largely Sunni, Muslim world. Still, Islamic art for religious reasons almost always avoids depicting anything with a face, anything with a body, and even sometimes anything with an outline. It is an abstract religious art that shifts your attention away from the human scale and both out toward

<sup>1</sup> Laura U. Marks, *Enfoldment and Infinity: An Islamic Genealogy of New Media Art*, Cambridge, MA, 2010.

<sup>2</sup> Tarif Khalidi, *Classical Arab Islam: The Heritage and Culture of the Golden Age*, Princeton, NJ, 1985, p. 84.

the infinitely large and in toward the very small. Thus Islamic art can inspire the making of and thinking about algorithmic art.

The invitation to participate in the *De-Automatization* lecture series gave me the opportunity to return to these issues in light of a perplexing question: How can algorithmic media give rise to something new; how can information-based objects be truly individual? Pondering this in turn raises the following questions: How does a force that propels individuation arise? Is it possible to release the energy contained in small units, instead of making them conform to human-scale forms? What would it be to inhabit the point of view of a point?

These questions turned my thoughts from computer-based media to an analog algorithmic medium, the carpet. I'm thinking that thinking like a carpet can be a way to start at any point and connect to the universe. A way to unleash creative energy that's not available when we start at a larger scale. What I'm after is not only the thoughts and hands of weavers as they produce these astonishing patterns. It's not only the material of wool and silk, or for that matter of pixels and silicon. It's the way the carpet itself thinks, pulling forces from the weavers, the yarns, the matrix, the algorithm and producing something new: the carpet as a force of individuation.

*Enfoldment and Infinity* ended by going beyond religion. In the last chapter I looked at some carpets that seem to have an internal life force that does not obey the injunctions of a benevolent (or any other kind of) God; carpets that suggest we do not need to ascribe creation to God because Life creates itself. This essay develops on that perception. But since you likely were not thinking that carpets usually are telling us we need God, let us first consider some particular carpets and explore the way they indicate ideas about Creation and about the relationship between the knot and the universe. Then let us consider how different kinds of carpets imply and invite different kinds of thinking: between representation and performativity, empathy and abstraction, materialism and abstraction. Then I will suggest that carpets help us understand algorithmic media as machinic phyla and as individuating. I hope that thinking like a carpet will allow us to humanize some of the ideas about algorithmic media.

To start off, however, I propose to examine the ways non-figurative, or an-  
iconic, images may appeal to an embodied way of looking that gets out of a human perspective and into the perspective of a point.

### *The interval: perception of a point*

Looking at a carpet, entering its patterns from any point, our perception creates something new. The idea that perception must discover the world anew every time arose in the thought of Abu 'Ali al-Hassan Ibn al-Haytham (b. Basra 965, d. Cairo 1039), known in the West as Alhazen. Ibn al-Haytham introduced the intromission theory of vision in his *Kitab al-Manazir* or *Treatise on Optics* around 1000. Consulted in Arabic, and translated into Latin in 1200

by Gerard of Cremona,<sup>3</sup> the *Optics* remained the major work on optics until Kepler in the seventeenth century.<sup>4</sup> In it Ibn al-Haytham described a contemplative mode of perception. He argued that we do not automatically perceive form; form is a psychological concept, not a given in nature. This means that contemplation is necessary for the recognition of form, for it requires us to use our internal faculties, such as memory, comparison, imagination, and judgment. Ascertainment can only be relative, to the limits of sense perception.<sup>5</sup> So form is produced in an oscillation between what we see and mental operations: it is created in time, in the embodied mind.

In *Enfoldment and Infinity* I noted the remarkable similarity between al-Haytham's theory of perception and that of Henri Bergson, 900 years later. Bergson's concept of the subject as a center of indetermination influenced Gilles Deleuze's Leibnizian idea that perception does not reproduce the world but unfolds it from its particular point of view. We humans, like other creatures, tend to act on our perceptions (we see food, smell danger, etc.). But, as Bergson argued, the wider the interval between perception and action – the more time you absorb the perceived world from your given perspective – the more of the universe you can perceive. The longer you look, the more you see (hear, smell, taste, etc.). Widening the interval requires undermining our creaturely habits of perception-action. The wild boar seems to be attacking you, and instead of throwing your spear you take time to contemplate its fur, its tusks ... We might observe that widening the interval is in a certain way anti-human, for our basic human needs demand us to act decisively in order to preserve and sustain ourselves. Yet Ibn al-Haytham's conception of perception, like Bergson's, proposed that human beings have a necessary leisure to contemplate what we perceive before we can act on it.

Aniconism liberates the molecular from the molar, another paired term from Deleuze and Guattari that reflects the scientific proportion 1 mole = 10<sup>23</sup> units. While the molar scale deals with large-scale happenings and general states, the molecular scale deals with tiny events, bursts of energy that we don't experience when we are acting at the molecular level. In privileging a non-human perspective we move not to a larger, God-like perspective, but to a tiny perspective: the point of view of a molecule. Or, say, an atom.

Here it is exciting to learn that the independent life of atoms is something considered as long ago as the eighth century in Islamic thought. (Apparently atomism developed in Islamic thought entirely independently from Greek atomism)<sup>6</sup>. The atomist occasionalists, a subgroup of the Mu'tazili rationalist

<sup>3</sup> Nazir Ahmad, "Ibn al-Haytham: His Life and Work", in: Hakim Mohammad Said, ed., *Ibn Al-Haytham*, Karachi, 1969, pp. 34-40: 37.

<sup>4</sup> David C. Lindberg, *Theories of Vision from Al-Kindi to Kepler*, Chicago, IL, 1976, pp. 58-60.

<sup>5</sup> A. I. Sabra, *Optics, Astronomy, and Logic: Studies in Arabic Science and Philosophy*, Aldershot, UK, 1994, pp. 170-171.

<sup>6</sup> Alnoor Dhanani argues that there could not have been textual transmission, since Epicurus' *Letter to Herodotus* on atomism, and his now-lost *On Nature*, were unavailable to the *kalām*

theologians who enjoyed a brief heyday during the open-minded early years of the 'Abbasid caliphate, argued that God was so powerful that no thing could endure except by His grace. The Mu'tazili argued that the world is composed of disconnected atoms and the accidents that befall them; and that rational inquiry can demonstrate how divine will causes atoms and accidents to come into existence and cease to exist. Later a conservative, mystical atomism (associated with al-Ash'ari and al-Ghazzali) asserted that humans cannot inquire into divine will and must instead submit to the random actions of the atomistic universe. God alone knows how the virtual becomes actual. Therefore, a body's tendency to hang together, to cohere, was simply an accident that befall its atoms. Those atoms could just as easily go their separate ways.

Lenn Evan Goodman describes their argument thus: "No substance extends beyond a point, for the givenness of one point of being does not imply that of another, [...] lest we limit God's omnipotence and the fundamental datum of contingency."<sup>7</sup> Furthermore, "[t]o the radicals of the kalâm [rationalist theologians] this meant that God might create intelligence in an atom, or in no substrate at all, without the prerequisite of, say, Life."<sup>8</sup> Here already is a sort of declaration of independence of points, of atoms: independent of each other, but not of course of God's will. The kalâm atomists prefigured a molecular life disdainful of molar habits – though of course all this was only to defer to God's freedom to reorganize the world, atom by atom, as He might see fit.

Writing on Greek atomism, Deleuze and Guattari observe, "The ancient atom is entirely misunderstood if it is overlooked that its essence is to course and flow." An aggregate of atoms, they write, is a war machine, "a physics of packs, turbulences, 'catastrophes', and epidemics."<sup>9</sup> Atoms are not obedient to form but flow in smooth space, coalescing in all kinds of intensive ways.<sup>10</sup>

A couple of times in *The Movement-Image* Deleuze describes how the smallest elements of "flowing-matter" are perceiving, acting; alive. We do not need to see things, for things themselves already see: "The eye is in things," he writes, referring to Bergson, who imagined that every point has a point of view that can be, as it were, photographed: "taken in the interior of things and

philosophers. He posits that the concept of the atom probably reached the kalâm philosophers via the thought of the dualist Bardaisan of Edessa, in a word-of-mouth fashion. In any case, kalâm atomism thoroughly transforms and expands Greek atomism, especially in its elaboration of discrete geometry. Also, while the Epicurean atoms are infinite, eternal, and in constant motion, kalâm atoms are finite, created, and may be in motion or at rest. Alnoor Dhanani, "Kalam Atoms and Epicurean Minimal Parts", in: F. Jamil Ragep/Sally P. R. Ragep, eds., *Tradition, Transmission, Transformation: Proceedings of Two Conferences on Pre-modern Science held at the University of Oklahoma*, with Steven Leiden, 1996, pp. 157-169.

<sup>7</sup> Lenn Evan Goodman, *Avicenna*, New York, NY, 1992, p. 53.

<sup>8</sup> Ibid.

<sup>9</sup> Gilles Deleuze/Félix Guattari, *A Thousand Plateaus: Capitalism and Schizophrenia*, transl. by Brian Massumi, Minneapolis, MI, 1987, pp. 489-490.

<sup>10</sup> "Smooth space" refers to space that is heterogeneous and intensively organized; 'striated space' refers to territory that is homogeneous and subject to general laws. Ibid., pp. 474-500.

for all the points of space."<sup>11</sup> These kinds of photographs taken from inside particles are now cropping up in scientific imaging. Similarly, Deleuze describes the earliest life forms as tiny machines that perceive and react: "Biologists speak of 'primeval soup', which made living beings possible, and where forms of matter known as dextrogyres and levogyres play an essential role": they produced micro-intervals, perceiving at one end, acting at the other.<sup>12</sup> Similarly, Deleuze identified a gaseous perception in the films of Dziga Vertov, American experimental cinema, and video: works that do not connect movements together but privilege the energy of each freely moving particle. They attain "a pure perception, as it is in things or in matter, to the point to which molecular interactions extend."<sup>13</sup> Gaseous perception, then, achieves the radical openness to the universe implicit in Bergson's philosophy of perception: the interval between perception and action becomes so minute that the particle's entire existence consists of perceiving and acting in a single instant.

Deleuze thus attributes life to the tiniest particles of matter. This theme occurs also in *The Fold*, where Deleuze extends Leibniz's already generous definition of the soul, or the monad, from organic entities to anything that "perceives", i.e. discriminates among and reacts to its environment. Thus cells, proteins, molecules, photons, and atoms can all be considered to perceive. The universe swarms with infinitesimal souls! This attribution of life to all entities calls to mind Charles Peirce's statement, "Viewing a thing from the outside, considering its relations of action and reaction with other things, it appears as matter. Viewing it from the inside, looking at its immediate character as feeling, it appears as consciousness."<sup>14</sup>

The Deleuzian film theorist Elena del Rio argues that a film (or, we can extrapolate, any artwork) often takes place on the dueling levels of molar/molecular: large scale/small scale, representation/hundreds of small events. The molar level of meaning, values, narrative may say one thing; the molecular level (affects, attractions) another.<sup>15</sup> Del Rio, analyzing the melodramas of Douglas Sirk, points out that while the narrative takes place on a molar level, trying to convince the audience into ideological beliefs such as the productive Oedipal family, on the molecular level a completely different kind of energy acts. Del Rio describes the 'bad girl' character Marylee in Sirk's *Written on the Wind*: she's sexually voracious and frustrated – a 'tramp' – wears hot colors, bubbles with swishy, provocative gestures, loves music, loves to dance.

<sup>11</sup> Gilles Deleuze, *Cinema 1: The Movement-Image*, transl. by Hugh Tomlinson and Barbara Habberjam, Minneapolis, MI, 1986, p. 60.

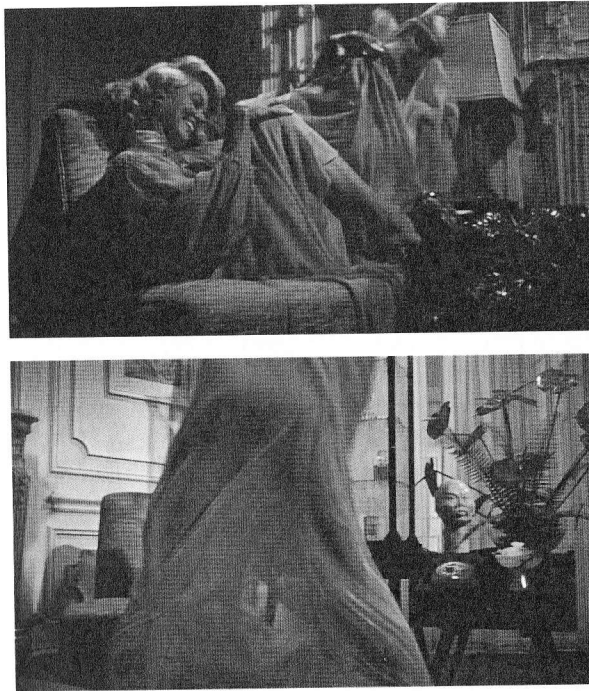
<sup>12</sup> Ibid., p. 63.

<sup>13</sup> Ibid., p. 84.

<sup>14</sup> Charles Sanders Peirce, "Man's Glassy Essence", in: *The Collected Papers of Charles Sanders Peirce, Electronic Edition*, vol. 6, *Scientific Metaphysics*, book 1, *Ontology and Cosmology*, Charlottesville, VA, 1994, paragraphs 238-271: 268.

<sup>15</sup> Elena del Rio, *Deleuze and the Cinemas of Performance: Powers of Affection*, Edinburgh, 2008, pp. 26-55.





1 and 2 – Marylee, the molecular character: stills, *Written on the Wind*

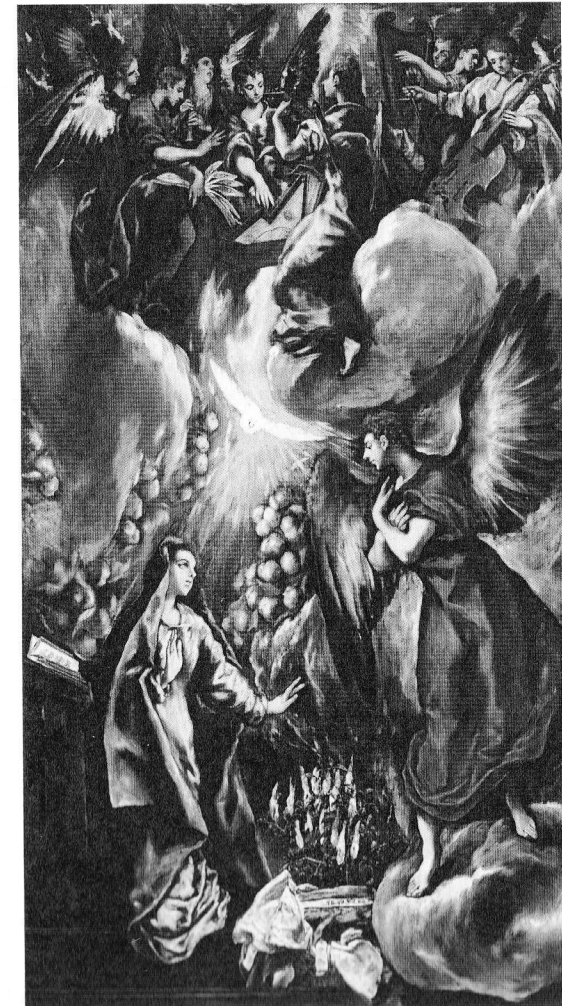
Marylee is a mass of molecular energy who cannot be contained by the molar morality of the film's plot. Del Rio argues that representation is molar, performance is molecular. Representation re-presents, it's stuck with the precedent. Performance creates something new: becoming. Marylee, then, is like a carpet, alive with an energy that bursts the bounds of representation.

So we have a conception of the universe as a swirl of lifelike particles, a dance of points. From an atomist perspective, the points are disconnected. But if we consider the universe to be a plenum, a space entirely filled with matter, points are the seemingly disconnected surface of an internally connected substance. As Mario Perniola writes, the world is not empty, it's full: so full that everything has to be folded up to fit.<sup>16</sup> Deleuze in *The Fold* argues the latter: all matter and spirit are inseparable, one fabric, deeply folded. What look like points are really the inflection points of folds.<sup>17</sup> The fabric of the universe is matter; the powers that fold it from the inside are spirit.

<sup>16</sup> Mario Perniola, *Enigmas: The Egyptian Moment in Society and Art*, transl. by Christopher Woddall, London, 1995, pp. 3-21.

<sup>17</sup> Gilles Deleuze, *The Fold: Leibniz and the Baroque*, transl. by Tom Conley, Minneapolis, MI,

The Baroque paintings of El Greco interested Deleuze for the way they depict the universe as a field of folds. El Greco's harsh white highlights and slashing dark crevices emphasize the folded texture of matter. The tips of these folds look to us like points, but if you take one and drag it out you unfold a section of the universe. Certain parts of the image bulge out toward us, others remain hidden. In El Greco's *Annunciation* at the Hermitage in St. Petersburg, some of the universe remains enfolded, like the vague area behind the dove or holy spirit that flies down between clouds, the squashed-together mass of angel musicians, and the deep folds of Mary's robe. This is because heaven and earth are on the same plane, a deep fold between them.



3 – El Greco, *Annunciation* (c. 1600). Museo del Prado

The accordion-like space in El Greco also suggests we could unfold it in the opposite direction, the peaks becoming valleys and the valleys, peaks. It gives a sense that not everything is available to vision, but rather it is a struggle to make things perceptible, to unfold the world to perception. The composition tips and tilts: it does not offer the scene to one privileged viewing position, as in Renaissance perspective, but *inflects* at certain points (as Deleuze writes, calling upon Leibniz's calculus-based conception of the universe), emphasizing that the universe appears differently to every point of view. This point of view is, of course, the perspective of the monad, Leibniz's soul that perceives the entire universe from its limited perspective. The monad is a kind of dependent universe.<sup>18</sup>

This view finds its complement in Islamic Neoplatonism, which argues, synthesizing Greek Neoplatonism with Qur'anic monotheism, that all entities emanate from God. Islamic Neoplatonism is a direct philosophical antecedent of Leibniz's thought as well, for it informed many Islamic philosophers, including Abu 'Ali al-Husayn ibn Sînâ, known in the West as Avicenna (980-1037), which in turn influenced the thirteenth-century Scholastics, whose conceptions of a pre-categorical God as First Cause in turn influenced Leibniz.<sup>19</sup>

Leibniz's monad has a soul because it envelops some part of the life force that courses through the universe: it individuates without becoming separate from the One. "A One – without ceasing to be a One – must belong to each Every."<sup>20</sup>

Here we encounter Deleuze's concept of the univocity of being. Though here he is writing of Leibniz, he receives this concept ultimately from Ibn Sînâ, who argued that all existence is contingent, save for God, the single Necessary Cause from which all existence emanates. Deleuze rarely acknowledges this heritage, though he does address Ibn Sînâ in *The Logic of Sense* and *Difference and Repetition*. But *The Fold* is in fact deeply flavored by Ibn Sînâ's categories of necessary in itself, necessary through another, and possible in itself. Deleuze usually ascribes this triad to Duns Scotus, and notes that it influenced both Leibniz and Spinoza. However, light reading in medieval philosophy shows that Duns Scotus attributes it to Ibn Sînâ.<sup>21</sup> As Ibn Sînâ's cosmology identifies a Being that, in individuating, creates the universe, so in Leibniz the One individuates to become Many.

Reading the Monadology you perceive that the religious premise underlying Leibniz's folded universe causes it (as in much Islamic thought, including

<sup>18</sup> Ibid., p. 53.

<sup>19</sup> See Goodman (1992), *Avicenna*; Jules Janssens, *Ibn Sînâ and His Influence on the Arabic and Latin World*, London, 2006; Joseph Owens, "The Relevance of Avicennian Neoplatonism", in: Parviz Morewedge, ed., *Neoplatonism and Islamic Thought*, Albany, NY, 1992, pp. 41-50.

<sup>20</sup> Deleuze (1993), *The Fold*, p. 106.

<sup>21</sup> I discuss this genealogy in greater detail in "A Deleuzian *Ijtihad*: Unfolding Deleuze's Islamic sources occulted in the ethnic cleansing of Spain", in: Arun Saldhana/Jason M. Adams, eds., *Deleuze and Derrida (Deleuze Connections)*, Edinburgh, 2013, pp. 51-72.

Ibn Sînâ's) to be closed in on itself. Nothing is free in this universe except for God: this is because Leibniz needs to guarantee the liberty of the deity at the expense of His creatures. God even foreordains the amplitude of the soul, i.e. whether the soul will be saved or damned.<sup>22</sup> Thus we encounter in religious thought a universe that is not really free because it is subject to the freedom of God. Deleuze overturns this almost casually in *The Fold*, asserting that in modern thought an open universe replaced the closed one and Process has replaced God. Yet he retains the powerful model of a universe connected by folds, in which a single source can individuate infinitely.

*The Fold*, in short, attributes a capacity for life to non-organic things: molecules, atoms, points of matter. Furthermore, it suggests that these points an intensive perception, freed from anthropomorphic perspective, that connect them to the very source of life. So we get a sense that the universe appears as a series of disconnected points that are, in fact, all connected by folds. If we can relinquish a human point of view for a while, we can enter into the perception of these points, perceive the universe the way a point, a molecule, an atom might perceive it. An infinity of dispersed, tiny points of view that connect us to the universe.

### Algorithmicity

All carpets have some degree of automatization: the square matrix of the loom, determination of number of threads per inch, knot style, and design. Given their basis in calculation, carpets are a fundamentally algorithmic medium, where an algorithm is an instruction to be executed. It's important to note that carpet designs are not necessarily determined by the materiality of their medium. Many carpets borrow their designs from other media, such as painting: for example, the twelve-pointed medallion of a Qur'an frontispiece may be adapted to a carpet, even though the 60-degree angles required do not translate easily to the 90-degree angles of the carpet's warp and weft. So the algorithms that carpets carry out are somewhat independent of the medium. Carpets don't only express the material, they express a relationship between material and idea: an algorithm.

We can say carpets *index* their algorithms, for examining a carpet we can figure out the algorithms followed by the weaver.<sup>23</sup> For example, the pattern of the Lotto carpet (so called because it occurs in the paintings of Lorenzo Lotto) applies algorithms of recursion and mirroring to basic motifs in order to fill a field with them. Often these algorithmic processes begin at a point and unfold. And, thinking in an unfolding way, we can say those algorithms in turn index their weavers, designers, and programmers. Looking at them we see the ex-

<sup>22</sup> Deleuze (1993), *The Fold*, p. 71.

<sup>23</sup> Beavron Sadlerman, "The Index and the Algorithm" in: *Differences* 18/1 (2007), pp. 153-186.

pression of the instructions for their making, a communication between the designer and the weaver.

As Braxton Soderman argues, algorithms are expressive and meaningful, and also ideological. Algorithms are created by humans, of course, so far from being a cold impersonal medium, algorithmic works like carpets indicate all kinds of decision-making, reflection, even emotion – and of course error. For example, a carpet in the collection that Joseph McMullen amassed in the early decades of the twentieth century and donated to the Metropolitan Museum of Art in New York, allows us both to image the model (the algorithm) that the weaver followed and to intuit the decisions she made that deviate from the model in executing it. It is a funny-looking carpet with asymmetrical touches of color.



4 – “Bad” carpet, Joseph McMullen Collection, Metropolitan Museum of Art

The collector described it this way:

This is a very close but hilarious descendant of no. 97 [another carpet in the collection]. ... The design is basically faithful ... But there is no comparison between the sloppy drawing in this rug and the sophistication of its model, while the use, or misuse, of colour, particularly blue in the central medallion, is strange indeed, without system or sense. Again green is used in the corner pieces at one end only. It is all a refreshing reminder that the human spirit can, and does, produce wonderful effects impossible to the trained and sophisticated mind.<sup>24</sup>

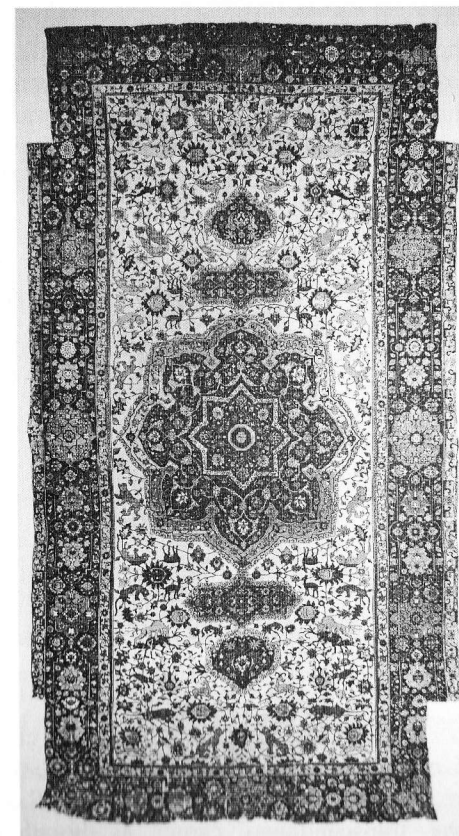
Algorithmic media, when executed by hand, permit all kinds of decisions, felicities, and mistakes to occur. But what about algorithmic media executed by

<sup>24</sup> Joseph McMullen, *Islamic Carpets from the Joseph V. McMullen Collection. Catalogue*,

machines, such as computers? I shall return to this question. For now, let us look at the ways different kinds of carpets imagine the universe.

A number of Persian carpets look a bit like a universe in which everything emanates from an invisible Center. From a central medallion radiate patterns that become ever more complex: sometimes their motifs are entirely abstract, sometimes they are floral, and sometimes their vinelike forms intertwine tiny creatures. The most complex such carpets were woven during the Safavid period, 1501-1732. They imply a monadic relationship between infinitesimal and infinite, for from any point of view you can reconstitute the generating center. Ultimately they confirm a whole, though, because the individual motifs do not make sense independently of the center that gives rise to them.

A set of Turkish carpet designs from Ottoman times, such as the Ushak carpets, consist of medallions (symmetrical radiating shapes) inside medallions in contrasting colors, each with a complex, intertwining pattern, set against a ground whose pattern is similarly complex.



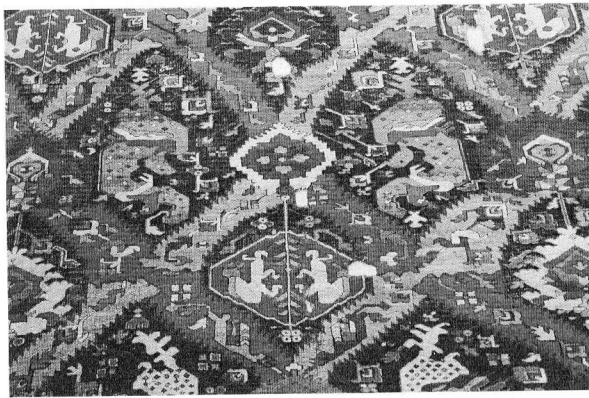
5 – Medallion carpet, India



These carpets depict a *mise-en-abîme* of worlds within worlds. Carpet scholars sometimes suggest that the center or the deepest layer represents heaven; often the motifs become increasingly refined as they approach the 'divine' center. A mystical view could see these carpets as lessons that all of reality is illusory, but that the universe has an underlying structure.

Another group of carpets begin to set their patterns free from central organization and permit independence to their individual motifs. These are Caucasian carpets, woven in the seventeenth and eighteenth centuries in the Caucasus (a region at the time loosely politically organized but with basic allegiance to Iran). In Caucasian carpets life seems to begin not from a Center but from the smallest point, from any point whatever: it self-organizes, mutates. The oddness and particularity of the forms in Caucasian carpets suggests they could have evolved differently. In the final chapter of *Enfoldment and Infinity* I compare Caucasian carpets to generative algorithms, algorithms that respond to new information and come up with results that could not be prefigured in the algorithm's initial state.

Yet I must note that even the most strictly ordered, hierarchical carpets produce singularities where idea meets matter. No two motifs can be exactly the same when they are executed on a loom with a certain thread count, with wool or silk of a certain diameter, by hands of weavers with varying skills and interests. My favorite example is the medallion and star carpet, Eastern Anatolia, sixteenth/seventeenth century, from the Ulu Mosque of Divrigi-Sivas, now in the Vakıflar Carpet Museum, Istanbul.

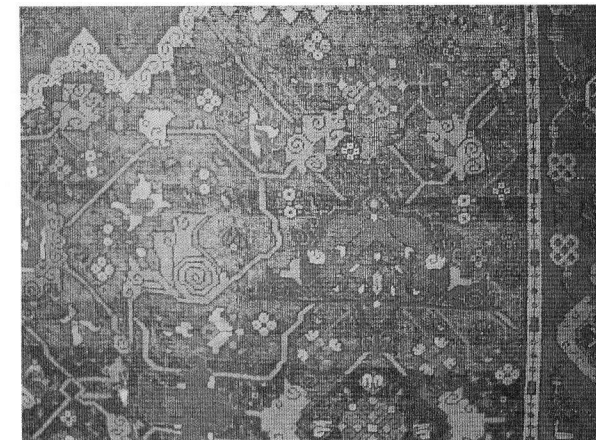


6 – Detail of Caucasian dragon carpet, 17<sup>th</sup> century, Pergamonmuseum, Berlin

Each floral motif, boxy arabesque, and (Chinese-derived) cloud band is different from the others. Unlike the carpets I described above, these motifs do not seem to emanate from the center, a stiff little blue medallion. They refuse to be subordinated to the 'transcendental' center, as though they've heard of heaven and they want none of it!



7 – Medallion and star carpet, Eastern Anatolia, 16<sup>th</sup>/17<sup>th</sup> century, from the Ulu Camii, Divrigi-Sivas. Vakıflar Carpet Museum, Istanbul



8 – Detail of Figure 7

This carpet insists that there is something in material that resists idealism, that has its own ideas of how to develop. It reminds us that matter to be formed has

an entire energetic materiality in movement, carrying *singularities* or *haeccities* that are already like implicit forms that are topological, rather than geometrical,

and that combine with the forces of deformation: for example, the variable undulations and torsions of the fibers guiding the operation of splitting wood<sup>25</sup>

together with variable intensive effects, such as porosity and resistance. A carpet, arising from the meeting of ideas (designs, algorithms) and matter in the hands of the weaver, is a *machinic phylum*: “materiality, natural or artificial, and both simultaneously; it is matter in movement, in flux, in variation, matter as a conveyor of singularities.”<sup>26</sup> The weavers have to follow the material and let its singularities guide their hands; yet they are also introducing (not imposing) ideas to material, and rolling matter and idea together in forms that will be slightly different each time.

### *Embodied response*

What does contemplating these patterns do to our bodies?

On the one hand, it enlarges us. We are wired to perceive pattern, for pattern makes order out of a chaotic universe. Our brains look for patterns in images with low information content.<sup>27</sup> Our brains are constituted to seek order; they create order out of chaos. Our brains protect us from meaninglessness.

So it seems that the patterns of carpets confirm the certainty of embodied subjectivity, by giving us pattern where we look for it. A phenomenological view suggests that engaging with a carpet enlarges our capacity for perception.

I suggest all carpets appeal to an embodied response at levels from the molar to the molecular.

Some carpets invite an identification with figure and narrative, just as movies do. Some Safavid Persian carpets take advantage of extremely high thread counts (or pixels) to depict delightful scenes borrowed from paintings of people hunting, playing music, and relaxing in gardens, as well as all kinds of animals. As much as a Douglas Sirk film, these carpets invite a narrative identification with figures, which operates on a molar level.

Some carpets even command an acknowledgment of social hierarchy: we see this in carpets with heraldic symbols woven by Muslims in Spain in the fifteenth century for Castilian nobility. Yet these carpets undermine hierarchy by imbuing the fields of floral and geometric motifs under the heraldic shields with subtle liveliness and framing the whole with quasi-Arabic writing.

<sup>25</sup> Deleuze/Guattari (1987), *A Thousand Plateaus*, pp. 408 et seq.

<sup>26</sup> Ibid., p. 409. In *The Fold* Deleuze characterizes Leibniz's third order of infinity as an intensive series, of qualities that are possible but not necessary, which constitute “the real in matter: texture of a substance, timbre of a sound, malleability of gold, etc.” (47). “If the world is included in the soul, the monad, it is creased in matter” (102).

<sup>27</sup> Patricia Pisters, “Illusionary Perception and Cinema: Experimental Thoughts on Film Theory and Neuroscience”, in: Mark Poster/David Savat, eds., *Deleuze and New Technology*, Edinburgh, 2009, pp. 224-240. Pisters refers to C. Bach and M. Poloschek, “Optical Illusions”, in: *Advances in Clinical Neurophysiology and Rehabilitation 6/2* (2006), pp. 20-21.

Carpets can also invite us to identify with the riotous, fecund life of plants, as in the so-called vase carpets of Safavid Persia.<sup>28</sup>

Moving from a molar to a more molecular level, ‘below’ figurative and symbolic images, we encounter carpets that appear entirely abstract, populated by lines that curve languidly and twist together smartly, by jagged, energetic lines, and by oscillating relationships of figure and ground. Feeling along with these forms we (I, anyway) find that the abstract pattern of a carpet itself appeals to shared embodiment. We could call this relationship empathy, in the term of turn-of-twentieth-century theorists Theodor Lipps and Wilhelm Worringer for an “enjoyment of the self projected into a body or form”: suggesting that people “empathize” with abstract forms insofar as those forms undergo experiences that we too might undergo.<sup>29</sup> We can relate to a line, feel the way a line feels. Thus thinking like a carpet invites experiments in corporeal perception. Where figuration invites identification through the comparison of the body beheld with one's own body, ornament appeals to a different kind of embodied relationship. We can even feel along with the expressive rhythms of line in space, as in the wonderfully ‘independent’ carpet from the Ulu Mosque discussed above.

The above is a phenomenological view, which I like a lot. It argues that abstract pattern appeals to our bodies: perhaps to confirm the embodiment that we already have, but also, I think, to gently expand it and invite us to take on new kinds of embodiment. However, as we shift from a molar to a molecular level, we may also find that pattern does not confirm what we already are; rather it undoes our bodies' usual ways of being. This is especially so because pattern appeals to rhythm. Rhythm unmakes and remakes the body – as in *Written on the Wind*, when the ‘bad’ daughter Marylee dances with such energy that she ‘causes’ her father to fall to his death on the stairs.

Here I look to Deleuze again, on rhythm. Deleuze argues in *Francis Bacon: The Logic of Sensation* that representation speaks to cognition, confirming what we already know. But the kind of image he calls “the Figural” bypasses the mind to appeal directly to the nervous system. Deleuze holds out for the nervous system as the one site in our body that is not colonized by clichés. Perception itself is already informed by habit and social custom: this is where Deleuze parts company with phenomenology. Sensation, attacking the nervous system directly, is the only way we can feel something that does not address ‘us’ as already formed. Thus the figural does not address the body we already have, but makes us a new body.

So I want to ask whether the non-figurative patterns of carpets and other designs in Islamic art are capable of seizing our nervous system. At first it seems the answer is no, because Deleuze doesn't find the Figural in forms that are

<sup>28</sup> I describe these at length in Chapter Ten of *Enfoldment and Infinity*.

<sup>29</sup> David Morgan, “The Idea of Abstraction in German Theories of the Ornament from Kant to Kandinsky”, in: *Journal of the History of Ideas* 57/2 (1996), pp. 317-341.



non-figurative to begin with, such as the arabesque, geometric, and other symmetrical patterns of carpets. It would seem such patterns only achieve the “mathematical sublime”.<sup>30</sup>

The Figural takes a risk by coming close to conventional embodiment and then radically, violently departing from it, and taking the viewer’s normal conception of embodied being with it. Indeed, we see this in the bizarre not-quite-creatures of Caucasian dragon carpets, which rear their stringy heads in Chapter Ten of *Enfoldment and Infinity*. But does the Figural have to come as an assault? J. M. Bernstein finds the Figural in the colorful and schematic figure paintings of Matisse.<sup>31</sup> This is a risky argument because Matisse’s paintings are generally considered soothing and decorative, and Matisse himself said something to that effect. But Bernstein finds a violence in Matisse’s paintings in that they disembody the image, decreasing the corporealization of figures while increasing the corporealization of the painting as a whole.<sup>32</sup> Matisse liberates the line, giving it “an uncanny expressive vitality of its own” independent of figuration – which is the power Deleuze and Guattari attributed to the abstract line. And as we know, Islamic carpets profoundly inspired Matisse’s search for patterns that would envelop the figure and absorb it.

Thus I think we should attribute the power of the Figural to the non-figurative, or not-quite-figurative, patterns that invaded Western painting from the East. Islamic aesthetics were the undoing of European figurative art. The uneasiness of the Figural often results directly from a confrontation of a molar-scale, figurative image with the rhythmic energy of the abstract line.<sup>33</sup> Whether the carpets themselves are Figural probably lines in whether a person comes to them with a figurative mindset in the first place. Someone accustomed to figurative images may encounter a Figural shock; someone who has spent more time surrounded by non-figurative images is less likely to.

### Thinking like a carpet: automatization and de-automatization

In the last chapter of *Enfoldment*, I finally broke with the religious model, proposing that life is not created by an exterior causal force, like a certain idea of God, but rather by a force of individuation. Hence the fascination of Caucasian carpets, that seem animated by an energy independent of any system; a life.

<sup>30</sup> See the discussion in Chapter Seven of *Enfoldment and Infinity*.

<sup>31</sup> J. M. Bernstein, “In Praise of Pure Violence (Matisse’s War)”, in: Diarmuid Costello/Dominic Willsdon, eds., *The Life and Death of Images: Ethics and Aesthetics*, Ithaca, NY, 2008, pp. 37–55.

<sup>32</sup> *Ibid.*, p. 49.

<sup>33</sup> Chapters Three and Four of *Enfoldment and Infinity* examine in detail this ‘invasion’ of Islamic aesthetics into Western art from the thirteenth to the nineteenth centuries.

Are algorithms alive? The examples of carpets I’ve discussed show how algorithmic artworks *acquire* lifelike qualities as they emerge from the interaction of matter and ideas in a machinic phylum. Still, even the most complex of algorithms tend to finally refer to an overarching order. Information or *in-form-ation* implies the imposition of form from outside, as in the medieval scholastic Latin definition, “the giving of a form or character to something” (OED), as clay is shaped into bricks by a mold. This concept dates to Aristotle’s theory of form, in which matter is potentiality, form is actuality<sup>34</sup>: matter is seen as passive, and form acts on matter.

A different paradigm asserts that forms arise not through the imposition on passive matter but according to a process of individuation, which relates an entity’s potential to the changing system of which the entity is part. Gilbert Simondon proposes this distinction between information and individuation in “The Genesis of the Individual” and in it we can hear the echo of Bergson’s *Creative Evolution*. The results of individuation can never be predicted. Simondon wrote, “We must begin with individuation, with the being grasped at its center and in relation to its spatiality and its becoming, and not by a realized [*substantialisé*] individual faced with a world that is external to it.”<sup>35</sup> No two things individuate in the same way, because the universe is always changing.

So let us define life as the capacity for individuation. We saw that Deleuze goes to great lengths in *The Fold* to uphold a free life force internal to matter that shapes it from within, each according to its capacities. I’ll assert again that this concept of individuation arises first in the thought of Ibn Sînâ. Deleuze embraces it wherever he finds it: in Duns Scotus (who got it from Ibn Sînâ), in Bergson, in Riegl, in Whitehead, in Simondon.

It might seem that technical production cannot match the artist’s hand and eye in their ability to spontaneously create the new. This anti-technical criterion has been around since Ruskin, Morris, and others reacted to the Industrial Revolution’s seemingly devastating effects on handcraft. Certainly peasant carpets made without pattern seem to index thoughts, dreams of the maker. The carpets I’ve been discussing, however, were made for the court or for commercial clients. At the beginning of the seventeenth century, Shah ‘Abbas supported economic development throughout his realm, and it may have been he who established commercial rug weaving in the Caucasus. The size of the Caucasian carpets shows they were woven on large looms, suggesting commercial production.<sup>36</sup> Court carpets are made from patterns, often derived from painting, as I mentioned, and in the case of Caucasian carpets, sometimes from

<sup>34</sup> Gilbert Simondon, “The Genesis of the Individual”, in: Jonathan Crary/Sanford Kwinter, eds., *Incorporations*, New York, NY, 1992, pp. 297–319: 298.

<sup>35</sup> *Ibid.*, p. 310. Italics in the original.

<sup>36</sup> Carol Bier, “Knots and Bolts: Design and Technology in the Caucasus”, in: Lotus Stack, ed., *Conservation Research: Studies of Fifteenth- to Nineteenth-Century Tapestry*, Washington, D.C., 1993, pp. 105–118: 108.

embroidery.<sup>37</sup> This intermediality suggests a law imposed on the carpet from without, rather than arising from within.

Hence the fascination of Caucasian carpets, whose laws seem arbitrary, despite the industrial circumstances of their production. To me this suggests a lively competition between information and individuation. Carpets show us that algorithms will never produce the same result in its execution, for it is executed in time, in a universe that is always changing.

If we understand algorithmic media this way, then we can confidently assert that computer-generated objects too are always unique. A sophisticated example is a sculpture produced in polymer on a 3-D printer by genetic algorithms that mimic the molecular structure of a shell, such as the beautiful objects Neri Oxman makes. In this machinic phylum, information penetrates to the molecular level. However, I suggest that even simple algorithms produce results that are always different, because they arise from a machinic phylum in which ideas meet matter – printed on paper, rendered in electronic pixels, 3-D printed in gooey plastics – and matter has its own ideas. And let's not forget that we humans, material, alive, and contingent, are involved in every step of 'automatic' computing processes: writing software on deadline, cleaning the plastic goo out of the 3-D printer, scavenging copper wire from abandoned computer monitors.

Simondon offers a useful criterion for how technical production can create the unforeseen:

There is nothing essential about the made-to-measure aspect of the artisan's hand-craft. This derives from another, though essential, aspect of the abstract technical object: its being based on an analytical organization which always leaves the way clear for new possibilities, possibilities which are the exterior manifestation of an interior contingency.<sup>38</sup>

Computer-produced objects, as much as hand-woven carpets, individuate in response to unforeseen contingencies, emerging relationships in an ever-changing universe.

Is there a politics of thinking like a carpet? Might thinking like a carpet offer a model of ethical being? If so, it would be a mode of being that keeps on changing, powered by a force that, while coming from within, exceeds the bounds of the individual. This is what Deleuze was after in his final writing, "A Life". Is it too much of a leap to compare this process of perpetual individuation to the action of democracy? John Rachjman writes, "We should judge political regimes (including democratic ones) in terms of the space they allow for 'multiplicities' and their 'individuations' – for the time of 'a life'."<sup>39</sup> Modestly I would like to suggest that thinking like a carpet can at least help us

<sup>37</sup> Ibid., p. 107.

<sup>38</sup> Gilbert Simondon, *On the Mode of Existence of Technical Objects*, transl. by Ninian Mellamphy, London, ON, 1980, p. 22.

<sup>39</sup> John Rachjmann, *Deleuze Connections*, Cambridge, MA, 2000, p. 82.

imagine a kind of becoming that's not the imposition of a model on the formless mass, but arises from a beyond-within. Thinking like a carpet means becoming intense, mirroring the universe at any point, undergoing transformations, and recreating human relations in one's own body.

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