Sympathy and Surface: In Depth and Difference

> "Sympathy implies exquisite vision; the power to receive as well as to give; a power to enter into communion with living and with lifeless things; to enter into a unison with nature's powers and processes; to observe—in a fusion of identities—Life everywhere at work—ceaselessly, silently—abysmal in meaning, mystical in its creative urge in myriad pullulation of identities and their outward forms."
>
> —Excerpt from *A System of Architectural Ornament*, Louis Sullivan, 1924.[1]

ANDREW LUCIA
Cornell University

The above passage articulates an immanent parallel relationship inherent to the observation of organic and inorganic material. Here, however, vision is not merely observational. Rather, it is experiential and generative; it is inseparable from the very forms and qualities it produces through a *fusion of identities*. This is an issue of entanglement and ecology. This is sympathetic and *informational*.

Suppose for a moment that nothing (living of lifeless) has direct access to anything except *information*. This would suggest there is an endless sea of omnipresent *potential information* everywhere. Much of this *information* is light borne, but not exclusively. All encounters, all experienced differentials, are immanent transferals of *information*. More correctly, these should be considered generations of *information*. *Information* in this sense is truly sympathetic.

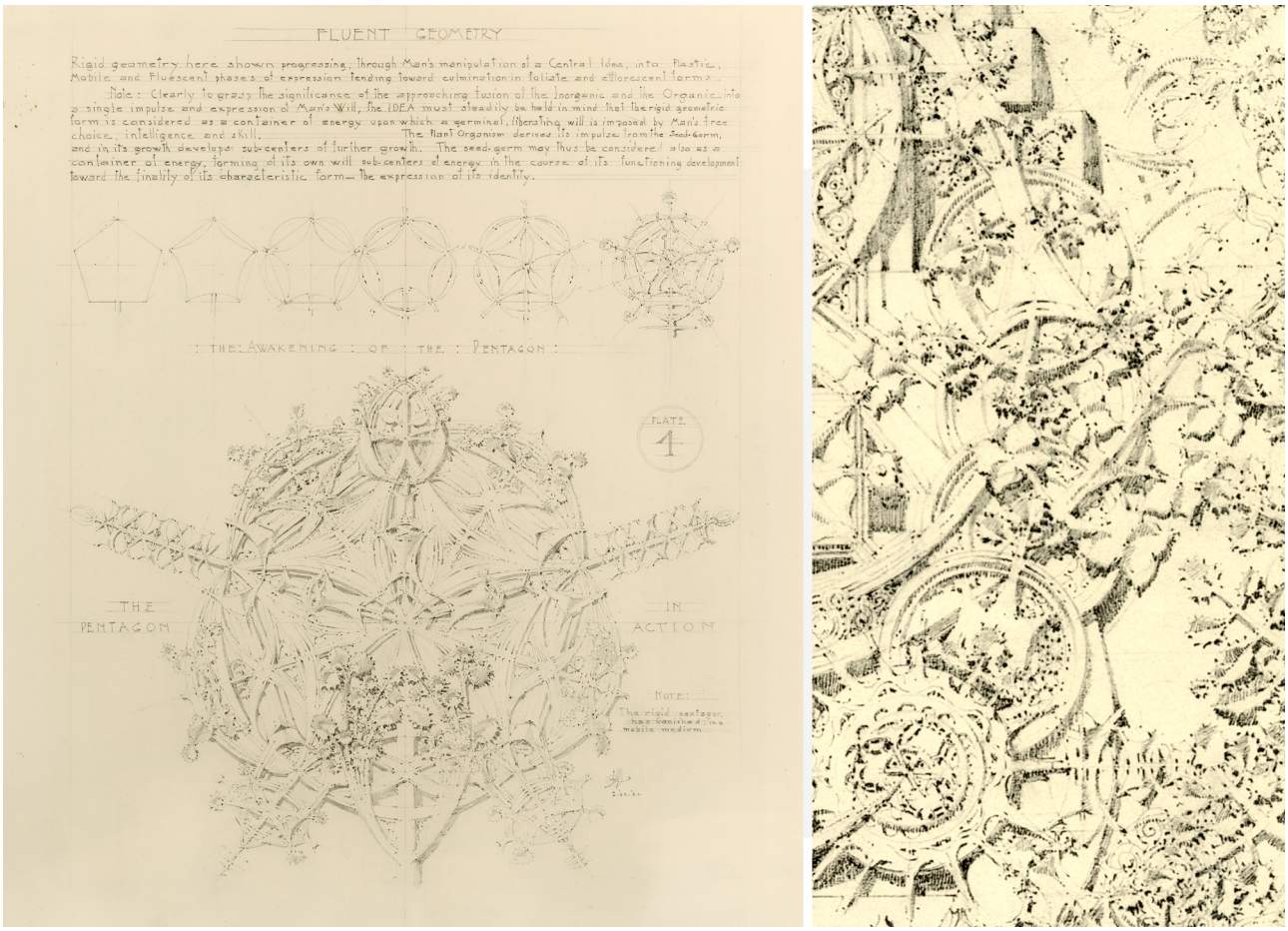
What is presented herein is a synthesis of ideas that speculates upon the role of *information* as the sympathetic medium of affect. This ultimately suggests that an infinite amount of *potential information* exists amongst all living and lifeless things as the medium of relative qualitative exchange. While this exchange is experiential, it does not imply that material is without quality in the absence of observation. Rather, it suggests that all material is specified through a *fusion of identities*, contingent and relative. While the present argument could be made in the absence of Louis Sullivan, aspects of his final treatise, *A System of Architectural Ornament According to a Philosophy of Man's Powers* (hereafter *The SAO*) will be used as a lens. Evidenced through his final drawings and accompanying text, Sullivan's deliberate subordination of idealized mechanical geometry in favor of noisy light-based effect will be interrogated in relation to a discussion of *disengo* (drawing) and *colore* (rendering). In turn, an alternate reading of these historic distinctions will be elaborated upon through concepts of ecological perception and information & systems theories.

CONTEXT

Operating out of what has today become a seemingly polarized backdrop of mechanistic rationalism and organic transcendentalism in the late-nineteenth and early-twentieth centuries, American architect Louis Sullivan penned his last treatise, *A System of Architectural Ornament According to a Philosophy of Man's Powers* published in 1924, the year of his death. Though now praised largely for the illustrative elements contained within this manifesto, it is equally important to acknowledge the text and ideological underpinnings that accompanied this final opus. While Sullivan has been claimed by many in the modern movement as a functional utilitarian, a concept that is repeated erroneously but often, more recent scholarship has perhaps appropriately resituated Sullivan firmly within a Romantic tradition within which he operated.[2] A consequence of this, however, has been to recast his intentions at complete odds with a rationalist tradition rooted in the mechanistic sciences while attempting to ground his production firmly in a transcendental lineage, specifically surrounding the literary and poetic community in mid-nineteenth century America. But to claim him firmly for either camp is also a misnomer. As is evidenced throughout *The SAO*, Sullivan was a synthesizer of disparate ideologies, both mechanistic and organic, a common mode of operation during the Romantic period and one that is often neglected for the sake of easily compartmentalizing supposedly opposing views. At the time this was not the case as is often misunderstood; the worlds of science and romanticism were not mutually exclusive.[3] Thus, if one is to then read Sullivan as a synthesizer of the mechanistic and organic, a scientist-poet, his own literary and design output may be understood as a virtuosic synthesis of oftentimes-opposed dogmas.

With this in mind, I would like to recall the above extraordinary passage from the opening prelude to the architect's final manifesto, titled *The Inorganic and the Organic,* while paying particular attention to Sullivan's notion of *sympathy* as an observational *fusion of identities*. What may at first glance appear as Romantic organicism in its conception also has strikingly prescient clarity when re-read through the lens of more contemporary strains of holistic thought, namely systems and information theories. These specific concepts would of course have been unknown to Sullivan, as they did not come about for a full quarter century after his death. Therefore, this is not an attempt to reconcile transcendental viewpoints Sullivan held, rather to reread Sullivan's *sympathy* not as governed by a transcendental authority, but from an immanent notion of experience rooted in the production of *information*. As such, holistic thinking (a core tenet of ecology & systems theory) rooted in an organicism that emerged from a Romantic tradition that deeply effected Sullivan's development and output is drawn upon.

Sullivan's disdain for the academy, specifically the confines of logical rationalism represented in the École des Beaux-Arts where he had spent a year of his life in study, reflected an alignment with a Romantic tradition; true enlightenment could not stem from pure logic alone (an objective endeavor per Sullivan), as it must be tempered with the intuitive "subjective" will of man. In this discussion, these terms bear no value. Rather, it is a notion of dynamic energetic systems, Sullivan's preference for Gothic (dynamic) architecture over a classical (static) Greek style that is worth noting in the present context. To be sure, much of Sullivan's texts and illustrations deal with this matter explicitly. One may specifically look to the accompanying plates within *The SAO* to find myriad examples of the organic in synthesis or dominating axial or bounding geometric limits [fig 1].



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For Sullivan the underlying geometry "straight or curved, may be considered an axis, and therefore a container of energy, and a directrix of power."[4] Even the inorganic can be seen as a conduit for energy en route to its final material expression and identity. In Plates 8 through 20 of *The SAO*, a strict bounding geometry is scarcely found within the illustrations' details. When this does occur, though seldom, it is an underlying structure upon which the likenesses of organic flourishes abound. More importantly is the manner in which Sullivan treats the illusory qualities of light upon the surface of his ornamental plates. The final expressions, the delicacies of surface detail, are rendered in a chiaroscuro style punctuated by hatches, dribbles, dots, smudges and noise [fig 1]. This clear attempt to render the surficial light based artifacts dominant over the underlying geometric structures indicates a deliberate motivation by Sullivan in the creation of an imperfect surface texture demarcated only through light and shadow. Indeed, Sullivan's chosen rendering techniques aligned with his written ideologies concerning the more subordinate nature of mechanistic rationalism to organicism; an inert, underlying, geometric container through which energy may flow and upon which foliate elements encrust–the organic artifacts of noisy light based processes. These artifacts of light and organic material become the stuff of outward appearances under which the husks of geometric containers reside in synthesis.

These two extremes, an underlying order of an object and the object's appearance (the organization of that order's corresponding light based effects), will

Figure 1: Louis H. Sullivan, American, 1856-1924, *System of Architectural Ornament: Plate 4, Fluent Geometry*, 1922/23, Graphite on Strathmore paper, 57.7 x 73.5 cm (22 3/4 x 29 in.), Commissioned by The Art Institute of Chicago, 1988.15.4, The Art Institute of Chicago. (Left)

Louis H. Sullivan, American, 1856-1924, *System of Architectural Ornament: Plate 12, Values of Overlap and Overlay, A Study in Virtuosity* (Detail), 1922/23, Graphite on Strathmore paper, 57.7 x 73.5 cm (22 3/4 x 29 in.), Commissioned by The Art Institute of Chicago, 1988.15.12, The Art Institute of Chicago. (Right)

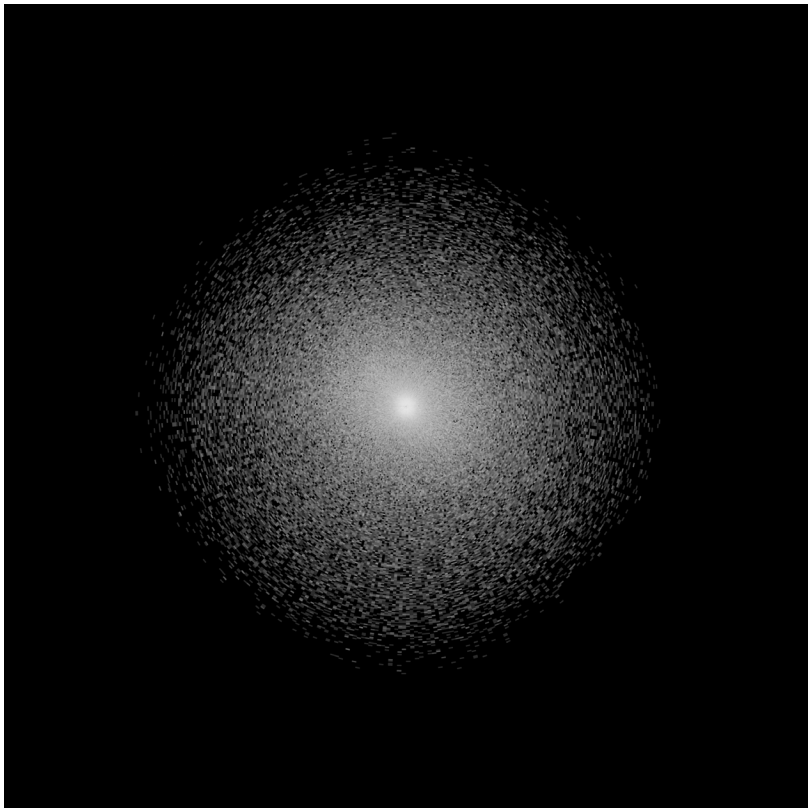

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Figure 2: Visualization demonstrating the order and organization (structure) of the gradient of light (adjacent intensities) across a region of Plate 12 from Louis Sullivan's *The System of Architectural Ornament According with a Philosophy of Man's Powers*. Andrew Lucia, 2014.

form the basis of further discussion in relation to *sympathy* as an informational endeavor. First, it is necessary to distinguish between two uses of the term *information* within this text. The former will outline *information* as a spatial structure, while the latter that of the temporal.

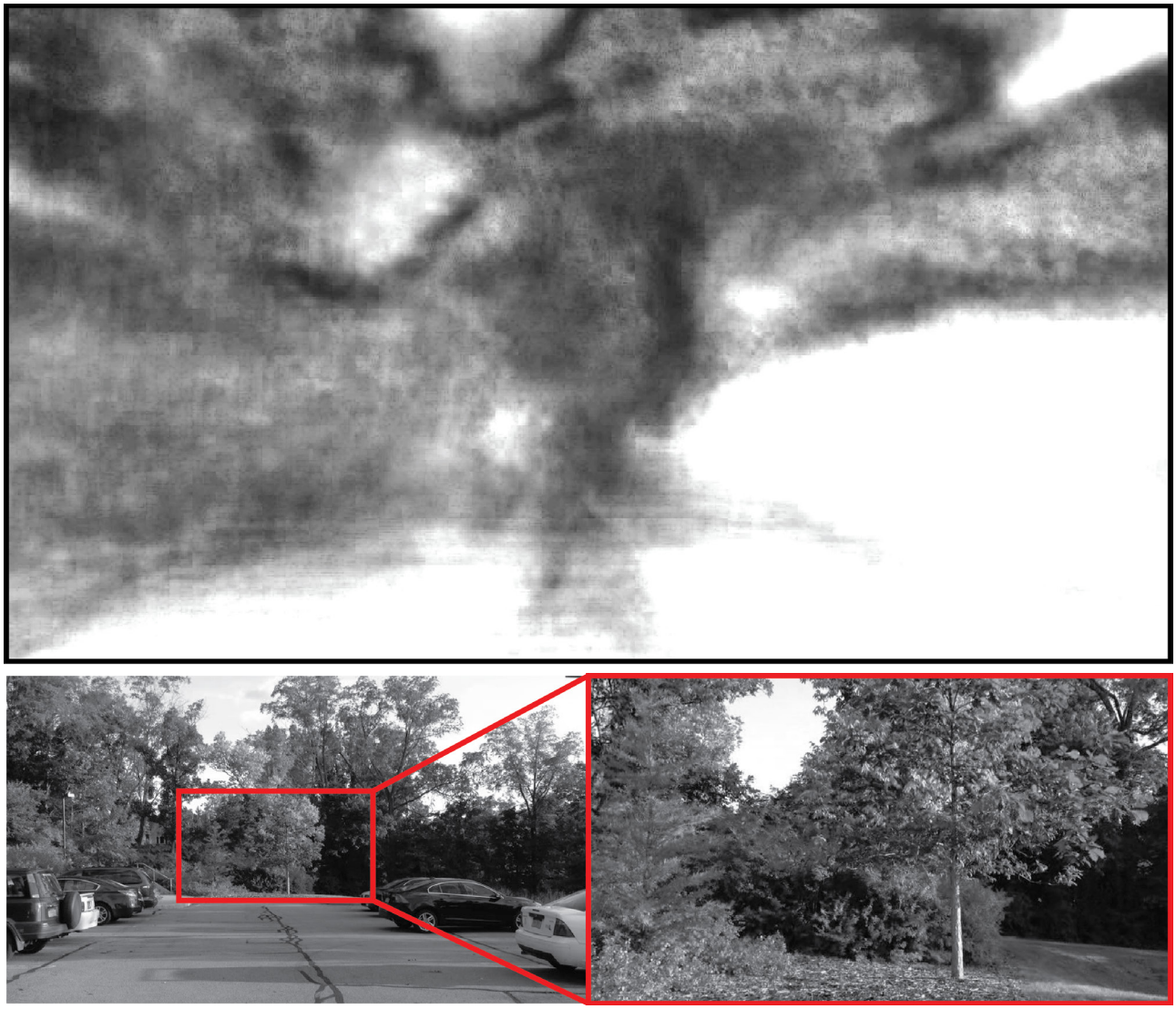
A DISTINCTION OF INFORMATION AS SPATIAL STRUCTURE

James J. Gibson, a perceptual psychologist operating in the mid-to-late twentieth century, openly opposed empirical separation from our surroundings. Gibson abhorred the laboratory models deployed in perceptual psychology during his time, while strongly advocating for studies *in situ* of the body embedded within context positing that the two can never be studied in isolation, hence his *Ecological Approach to Visual Perception*. Though commonly invoked during discussions of affordances, Gibson's broader ecological theories of perception concerning the structure of light within the environment offers much to the current discussion.

Gibson's informational world was embedded within what he termed the *ambient information array*, an array of structured ambient light reflecting off of all material within an environment and containing all the necessary *information* specifying an environment. This structured array would be defined as follows:

> "Only insofar as ambient light has *structure* does it specify the environment. I mean by this that the light at the point of observation has to be different in different directions (or there have to be *differences* in different directions) in order for it to contain any information. The differences are principally differences of intensity."[5]

Importantly, for Gibson it is not the "thing" that is seen, rather the *information* about that thing. This *information* is structured through *difference*, specifically



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adjacent *differences* of intensity [fig 2]. Critically, this structure contains the salient features of the spatial world at any point of unique observation. Though for Gibson a notion of time would have been implicit, this *ambient information array* was largely spoken of in spatial terms. While one certainly gains more specificity by traversing an environment, for Gibson spatial *difference* of intensity is the fundamental criteria of a structured light array at any point of observation. To this, I suggest that a living thing needn't undertake this observation.

A DISTINCTION OF INFORMATION AS TEMPORAL UNCERTAINTY

The second use of the term *information* is rooted in information theory, a field spawned by Claude Shannon in 1948 while working at Bell Laboratories.[6] In short, this use of the term is understood as the uncertainty within a given channel, whereby the amount of *information* generated is a function of the unlikelihood of an event's occurrence; less likely experiences produce greater *information*. Though eschewed by Gibson as a means of communication via symbolic means, an information theoretic use of the term is not mutually exclusive to this discussion. Perceptual systems operate under conditions of uncertainty; we experience *difference* in stimulus *information*, but importantly that *difference* is inherently

Figure 3: *Information* mapping demonstrating the sum of *information* generated upon a picture plane as an observer traverses a scene (top). Regions of greatest *information* accrual correspond to areas of greatest uncertainty of intensity *differences*. The scene traversed is highlighted in the bottom panel. Andrew Lucia, 2014.

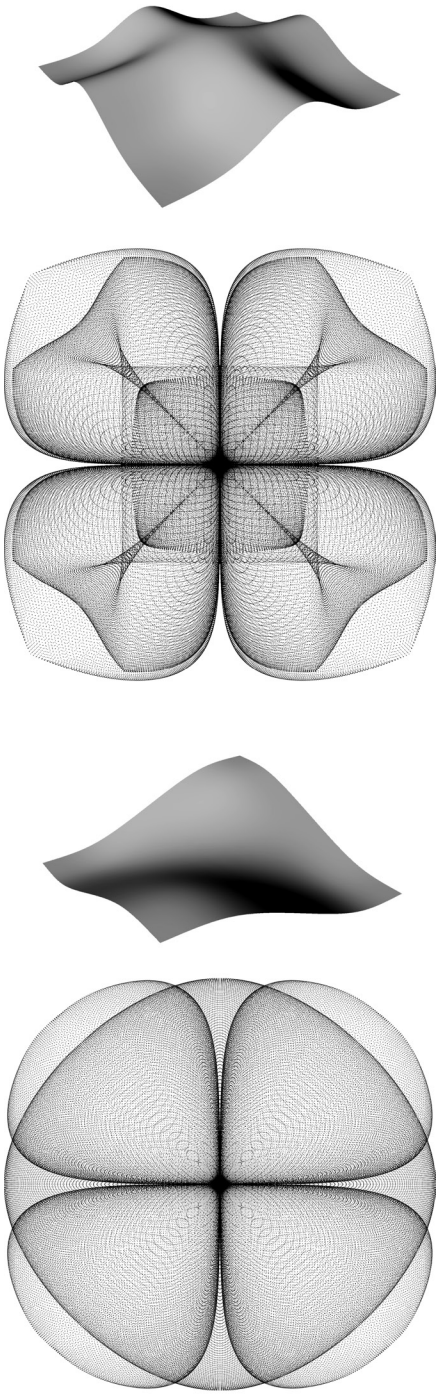

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Figure 4: Extracted curvature vectors for 2 given surfaces remapped to an origin demonstrating the order and organization (structure) of an object's surface removed from its metric image. Note: this is a multidimensional mapping but can only be displayed from a single vantage point presented here. Andrew Lucia, 2013.

linked to uncertainty. In the absence of uncertainty, or rather the presence of certainty within an *information array*, our perceptions are lost. This can be most clearly evidenced through sensorial adaptation to environmental stimuli. Think, for instance, of a scene fading when one is to stare at a point for too long. Fortunately, the body's physiology has a built in mechanism to prevent absolute fixation through involuntary saccadic movements of the eye. Similarly one will lose tactile sensation when resting their hand for a short while on a given surface without moving. When taken from an informational standpoint these adaptations are a function of uncertainty and are thus probabilistic in nature. A system's memory or history is therefor a factor in the make-up of this temporal *information*, as the probability of the encounter of unique data is directly linked to the impression of the material the corresponding data is specifying.[7] This ultimately goes beyond the simple recognition of the data within a system (i.e. whether it is perceived it or not) while having substantial impacts on material qualities therein; data is encountered at a gradient of intensities affecting the qualities of *information* through experience. It is this very probabilistic uniqueness of an informational medium that places it in the realm of affect. Moreover, *potential information* exists outside of any privileged observer, awaiting its specificity through a *fusion of identities*—between the structure of *potential information* at a given vantage point(s) and the memory of an observer or multitude of observers. Here, I wish to stress that an observer needn't have consciousness; they may be inorganic or organic, singular or multiple.

Essential to either use of the term *information* is a notion of *difference*. It is required of Gibson's *information array* to specify spatial structure [fig 2], while uncertainty specifies temporal structure from an information theoretic standpoint [fig 3]. It is precisely this *difference* that is entangled within the structure and quality of *information*. Though fundamentally *abysmal in meaning*, *difference* yields both the order and organization of available *information* spatially and temporally; this is pre-verbal and therefore non-semiotic. Order, organization, redundancy, and the structure of that redundancy underlie the form of dynamic systems and their outward appearances.

UNDERLYING ORDER AND APPEARANCE OF AN OBJECT

An observer needn't "see" in order to experience. If we accept that *difference* underlies form, then we may explain an object's form as a function of its rate of change across itself, or its curvature. Curvature, however, is not a light borne artifact; rather it is an abstraction of a rate of change that can be felt or experienced through non-visual means. Through this rate of change we may begin to explain underlying structural and organization properties of an object awaiting ambient reflection [fig 4].

Of concern here are the underlying order and organization of a given surface and the subsequent order and organization of the appearance of light from upon that surface. In a similar argument to the one presented here, I had lamented geometry's dominant influence over design at the expense of light borne characteristics—the qualities of material and more specifically the organization of ambient light reflected from material.[8] Michael Young recently called attention to the historic underpinnings of this distinction in the arts, namely those of *disegno* and *colore* emanating from Renaissance Italy.[9] To this Young makes a direct connection between the boundaries drawn in contemporary architectural discipline concerning the distinct roles and limitations of designing (drawing) and rendering

(painting). No doubt contemporary architectural tooling is rife with geometric privilege, one with which *disengo* has perhaps unduly burdened us. This becomes even more pressing when one takes into account the thermodynamic qualities inherent within light at a time when ecological approaches in design are direly needed but most often rhetorically tossed about.

The historic dominance of projective and descriptive geometries as our means of tooling has asserted an oversimplification of a far more complex and messy world of matter and energy. This geometric priority reduces potential rather than creating it. Similarly in a related argument referring to the "hegemony of the picture plane," Michelle Addington articulates the barriers these gross geometric oversimplifications impose on our abilities to freely imagine thermodynamic potentials.[10] For Young the reification of the picture plane is also an underlying source (or perhaps symptom) of this legacy. But that's just it, isn't it? Light, as a thermodynamic "thing," is inherently *colore*. Or rather, it is capable of producing *information* as *colore* that is probabilistic, noisy, relative to a point and trajectory of observation, and contingent upon the system's memory within which it is experienced.

But let's clear something up—this is not an assault on geometry, rather a recognition that geometry is not well suited to deal with certain pressing problems concerning both the arts and sciences. This inherently effects discussions of aesthetics as much as it does those of energy, if even there need be a distinction drawn with which to begin. Need I suggest it's political?

One could similarly take issue regarding geometric fetishes in our discipline; that the tools of geometry dominate de-contextualized form-finding methodologies while generally disregarding the realm of material's observational affect potentials latent in light-borne characteristics. Instead affect is treated as a byproduct of the generation of complexity. This should concern us on an ecological level, whereby mutual engagement of observation in context leads to emergent formal and perceptual qualities. This is where a nuanced but crucial distinction must be made. To speak of the "affect potential of light-borne characteristics" an observer needn't directly experience the source object, though this cannot be ruled out in all senses of experience. Rather, the *information* generated between the observer and the observed is inherently affectual. That is, *information* is the medium (the stuff) of *sympathetic fusions of identity*.

ON DEPTH AND INFORMATION

To illustrate this point further we must examine a problem latent in this discussion, specifically concerning the illusion of *depth* in space.[11] The misnomer of a 3-dimensional world is substantial. The foundations of a 3-dimensional Cartesian world is embedded within the very tools of our discipline, not to mention its pervasiveness in almost every walk of manufactured life. I, like you, probably learned this as a schoolboy. But the world of light is not 3-dimensional per se; it is merely spatial and informational. It can certainly be described in 3-dimensions, but this does not inherently make it 3-dimensional. The opposite is true of our tools, mostly, such that the space of our tooling environments is posited within a container of ideal Cartesian geometry, within which we may operate with more geometry (*disengo*), and after which time we may apply the appearance of materiality (*colore*) *ex post facto*. A further consequence of this mode of operation is that we are relegated to operate upon this space peering into it as N+1 dimensional observers in a reductivist scientific sense.[12] Thus, if one desires

ENDNOTES

1. Sullivan, Louis. *A System of Architectural Ornament According with a Philosophy of Man's Powers*, The American Institute of Architects, 1924, prelude.
2. See for example, Weingarden, Lauren S. *Louis H. Sullivan and a 19th-Century Poetics of Naturalized Architecture*, Ashgate Publishing Ltd., 2009.
3. See for example, Baker, Jennifer J. "Natural Science and the Romanticisms" in *ESQ: A Journal of the American Renaissance*, Vol. 53, No. 4, 2007, 387-412.
4. Sullivan, Plate 5.
5. Gibson, James J. *The Ecological Approach to Visual Perception,* Hillsdale, NJ: Lawrence Erlbaum Associates, 1986, 51. Emphasis in the original.
6. Shannon, Claude E. *The Mathematical Theory of Communication*. Urbana, University of Illinois Press, 1949.
7. The studies presented here do not aim to mimic the exact physiological circumstances under which the body's perceptual systems operate and therefor are not a simulation of *information* as it specifically acts within sensory apparatuses. Rather, this is a way of thinking and working through types of informational operations that parallel perceptual processes. In doing so we may begin to probe the types of patterns that arise under such statistical circumstances. The advanced reader is invited to see Kenneth Norwich's, "Information, Sensation, and Perception," an account of information theoretic perceptual models from a neurological standpoint, the basis of which could be utilized to effectively create such a simulation. Norwich, Kenneth H. *Information, Sensation, and Perception*, Originally published, San Diego, CA: Academic Press. Published on the Internet by Biopsychology.org. 2003.
8. Lucia, Jones, & Sabin. "Memory, Difference, and Information: Generative Architectures Latent to Material & Perceptual Plasticity" in *Knowledge Visualization Currents: from Text to Art to Culture*, Frank T. Marchese & Ebad Banissi eds., Springer-Verlag, London, 2013.
9. Young, Michael. "Essay: Drawing/Painting/Photography/ Symmetry Series—No. 3/Symmetry Series—No. 7" in *The Economy.* Published online August 2014. http://theeconomy-magazine.com/ISSUE-14
10. Addington, Michelle. "The phenomena of the non-visual" in *Softspace: From Representation of Form to a Simulation of Space*. Sean Lally and Jessica Young, Eds. Routledge, 2007, 39-50.

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Figure 5: Two algorithmically generated pixel fields with slight variation. Upon visual fusion of these data, areas of disparity in the data arrays produce the illusion of depth, an added visual dimension of a higher *logical type* per Bateson. This is the basic principle upon which "3D imagery" for Virtual Reality and cinema is produced. Andrew Lucia, 2014.

to comprehend the morphology of an object it must be understood through ideal means.

In the prior example demonstrating curvature measurement across an object [fig 4], a solitary point of observation is not sufficient to gain an understanding of an object's order and organization. A sufficiently dense sample set must be taken into consideration. To "see" an overall curvature diagram privileges an ideal view (N+1), as would the summation of a multitude of individual experiences. Rather, if one is to argue a direct experiential (N-dimensional) approach (visual or non), we are not immediately granted access to all moments around a scene (or object) simultaneously. "It is perhaps so, that wholes can never be presented; for that would involve direct communication."[13] This could, however, be reclaimed in the realm of collective memory and consciousness whereby a species is treated holistically as an organism. Collective memory through a multitude of simultaneous observations may in fact enable such access through ever-rapid modes of communication in which populations operate in unison as an organism while allowing direct experience across vast spatial domains.

For an individual, the ideal is a reduced durational composite of many experiential instances, and yet that composite is inherently clouded and figured by the memory imprinted upon it from experiences of past states. This doesn't mean that we, as conscious beings, cannot agree upon standards for ideals, but it shouldn't be overlooked that a *difference* of ideals strengthens ideologies adorned with their preferred style of ornamentation. Need I suggest it's political?

Let's return to *depth*, rather space—the location where multiple points of observation (and disagreement—a variety of *difference*) are possible. Per Gregory Bateson a comparison of two or more sets must be undertaken in order for a leap

to a higher state to occur, specifically that of a *higher logical type*.[14] In an explicit example, Bateson uses the concept of binocular vision providing two sets of sense data about a given scene. The disparity (*difference*) in these data gives rise to a higher *logical type*, in this case *depth*. This *depth* is not a function of geometry; rather it is generated via emergent perceptual properties through a *fusion of identities* resulting in the sensation of *depth* [fig 5]. When Rene Descartes codified space as having three dimensions the ramifications rippled throughout the world and continue to be felt in almost every walk of life. It is difficult, if not impossible, to effectively remove oneself from this train of thought. When treated as a function of *information*, however, *depth* is not limited to a geometric container of 3-dimensions. It is an entanglement problem, one that suggests that the very notion of space, perceptually speaking, is fundamentally an emergent property of *information* available for experience.

One last point to be made concerns the act of drawing, specifically as it stands in for an oversimplification of a scene. On this we may recall Degas: "*Le dessin n'est pas la forme, il est la manière de voir la forme*."[15] Taking this insight further, we may contend that drawing is a way of seeing form's appearance at a given instance, but that *form in its totality* is beyond precise location in space or time rooted in fundamental aspects of *difference* arising from change.[16] The observation of this *difference* underlies this process. Bateson reminds us "William Blake tells us firmly that wise men see outlines and therefore they draw them."[17] While this may hold credence from a cognitive standpoint, particularly in terms of efficiency, it also presents for us problems of undue oversimplification. To be sure we "see" *difference* within a scene, ultimately filtering the *information* to discern salient features (the order and organization of edges).[18] In doing so, we ostensibly arrive at a caricature, or out of the *ambient information array* what Gibson may refer to as "*…the formless and timeless invariants that specify the distinctive features of the object.*"[19] While the salient features are retained, we are left with an otherwise empty husk of inert shape awaiting identity; these have become symbols, empty containers of ideology.

From childhood we are constrained, through our own limited ability to articulate, to interpret and represent the world about ourselves from a naïve perspective. At some point these limited articulations become manifest into predisposition and preference, blocking our ability to conceive of alternate realities. Simultaneously these predispositions become political as we strive to reenact the world that never was.

What am I suggesting? I'm suggesting that *disegno* was once subordinate to *colore* (perhaps well before they had been named). It's as though the prince grew up and murdered his father in order to gain control. The abstract space of *disengo* is of a higher *logical type*, whose genesis is the messy statistical world of ambient light. Several orders of informational magnitude foregone, we arrive at a simplification from gradient to line, whereby clouds of energy and matter are reduced to geometric boundaries. Levels of abstraction are certainly necessary, but we mustn't overlook our predispositions and tools' abilities to fool us at a time when critical judgment of our traditions may be the very thing that impedes our necessary evolution. This is a discussion of aesthetics as much as it is energy and politics. This is a sympathetic adventure of perception.

11. Concerning the dimensionality of space and the *information* available for perception, Gibson would vehemently argue, "The notion of space of three dimensions with three axes for Cartesian coordinates was a great convenience for mathematics… but an abstraction that had very little to do with actual perception." He would continue, "This means that perception does not begin with two-dimensional form perception. Hence there is no special kind of perception called depth perception, and the third dimension is not lost on the retinal image since it was never in the environment to being with. It [depth] is a loose term." Gibson, 148.

12. As this is written the advent of workable virtual reality technology may allow for truly N-dimensional experiential immersions. Still, this technology is not an exception to the larger argument made here, that of the role of *information* within the formation of material bodies.

13. Bateson, Gregory. *Mind and Nature: A Necessary Unity*, NJ: Hampton Press, 2002 (orig. 1979), 106.

14. Ibid., 65. "…information about depth is created. In more formal language, that *difference* between the information provided by the one retina and that provided by the other is itself information of a *different logical type*. From this new sort of information, the seer adds an extra *dimension* to seeing." The cinematic industries have come to realize this aspect of data *difference* resulting in the emergence of depth-based phenomena experienced during "3D" movies. Importantly, what is called for here is not simply a "3D" workings space, but a realization that all qualities, including depth, are of an emergent type associated more broadly with the production of *difference* and *information*.

15. Translated as, "Drawing is not the same as form; it is a way of seeing form." Valery, Paul, trans. Paul, David. *Dega Danse Dessin*, Princeton University Press, 1989, 82.

16. Bateson, 85. Bateson does not make this specific claim of form, rather the attribution to Bateson in this reference asserts that "difference is a nonsubstantial phenomenon not located in space or time; difference is related to negentropy and entropy rather than to energy."

17. Ibid., 189. For Bateson this would be more or less an account of *number* is arising from *quantity*. Here, a geometric line is the equivalent of Bateson's *number*, the distillation of vast quantities of light thresholds within a scene. And while for Bateson this provides evidence of his cybernetic model of the mind, for us it presents a problem of tooling and oversimplification when one does not wish to be limited to that line.

18. Addington, 44.

19. Gibson, James J. "The Information Available in Pictures" in *Leonardo*, The MIT Press, Vol. 4, No. 1, 1971, 27-35.

THE ENVIRONMENT SCHISM