

RHIZOGRAMMING AND A SYNESTHETIC TRANSFORMATION OF DESIGNER'S MIND

Mahesh Senagala



Figure 1.
Rhizogram, Mahesh Senagala.

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10.46	<i>Authors' Note:</i> This paper is intended to be a rhizome. You may connect to it in any way you wish, including reading the sections sequentially (spatially) or by following the edit time (chronologically, for the adventurous readers), or completely randomly. A + sign indicates a different day, though not necessarily the following day.
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<p>12.42 +1 17.10 +2 14.10 14.24 14.12 14.43 +3 17.56 +4 18.00 +5 10.23</p>	<p>Of Diagrammatology</p> <p>What is a diagram? In general, diagrams are best known and understood as visual tools used for the compression of information... The essence of the diagrammatic technique is that it introduces into a work qualities that are unspoken, disconnected from an ideal or an ideology, random, intuitive, subjective, not bound to a linear logic – qualities that can be physical, structural, spatial or technical. (Ben van Berkel, et al. 1999)</p> <p>There can be no design without a diagram. Between perception and reflection, thought and action, inspiration and design, between desire and realization, between the conceptual and the architectural lies the diagram. A diagram is not – in Deleuzian terms – a ‘tracing’; it forms a rhizome, with the informal concept at one end and formal manifestation at the other end. Diagrams belong to that</p>
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<p>+6 21.25 22.24 22.33 +7 22.09</p>	<p>epistemological space which allows connections to be made from the images and ideas abstracted from the world. Rhizograms, in particular, aim to foster rhizomatic connections while conventional diagrams are more arborescent with a taproot, stem and branches of carefully articulated hierarchies.</p> <p>Architecture of the diagram is as crucial as diagramming an architecture. Ben van Berkel et al. would want us to believe that diagrams are immune to ideological intrusions. In my view, diagrams are essentially ideological as they are, to a large extent, agencies of mediation. Every technique of diagramming necessarily brings a certain bias into the design process.</p> <p>Normally, architects are educated to draw formal and visual characteristics in a chosen scene. Unsurprisingly, most architects end up drawing buildings and other static objects – a static representation rendered in exquisite but hardly insightful detail. Thus a privileging of the static, the visual, the physical and the obvious (in front of the eyes). This involves admirable skill but no significant perceptual shift. Such a perception breeds an equally static and uninspiring architectural reality.</p> <p>Architectural students are usually introduced to typological and functional diagramming as a way to get started with the design process. Such things as ‘bubble diagrams’ and ‘adjacency diagrams’ have become normative. The results are, more often than not, less than enticing and hardly conducive to creatively exploring and generating architecture that is both viable and acknowledges the systemic complexities and the myriad interconnections between the components of the life-world system.</p> <p>A (good) diagram is NOT a tree. There are linear diagrams and then there are non-linear diagrams. To borrow Charles Jencks’ terminology, linear diagrams are <i>monovalent</i> and resist multiple readings. Nonlinear diagrams are <i>multivalent</i> and allow (mis)readings, (mis)interpretations and (re)connections at multiple levels. Rhizograms, being nonlinear diagrams, are necessarily multivalent. Moreover, rhizograms are fundamentally oriented toward transforming the designer (psychosynthetic) than toward producing a visual/spatial artefact.</p>
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<p>11.24 11.39 11.46 11.52 +1 14.36 +2 17.34 17.48 17.51 +3 21.10 21.17 21.18 +4 10.17 +5 18.27 +6 22.16 +7 10.03 +8 22.28 23.10 23.15 +9 22.06 +10 06.49</p>	<p>What is a Rhizogram?</p> <p>A rhizome has no beginning or end; it is always in the middle, between things, interbeing, intermezzo. The tree is filiation, but the rhizome is alliance, uniquely alliance. The tree imposes the verb ‘to be’, but the fabric of the rhizome is the conjunction, ‘and... and... and...’ (Gilles Deleuze and Felix Guattari, 1994)</p> <p>They [biograms] are more than visual. They are event-perceptions combining senses, tenses, and dimensions on a single surface. Since they are not themselves visual representations, they cannot be accurately represented in mono-sense visual form... The biogram is a literal, graphically diaphanous event-perception. It is what is portended when you remember seeing time in space. (Brian Massumi, 2002)</p> <p>Etymologically, the word diagram derives from Greek <i>dia</i> (across, through, apart) and <i>gramma</i> (writing or drawing) meaning a drawing or writing that connects across two different realms.</p>	<p>The Story of Felix</p> <p><i>Felix flexes his arm and arches his back as he sits down on the rough concrete ledge where he faces the Sombrilla Square in the centre of Univer City. It is half-past eleven on a sunny Friday morning. His hand holds a pencil as if it were a small flagpole. His eyes seem to be on autopilot, tracking any movement in the visual field. His senses seem to be heightened and attuned to sight, sound, smell, touch and taste events. His eyes direct his head in a fluid, perceptual field of the moment. The hand that holds the pencil moves freely and jumps merrily like a tadpole on the sketch paper as if bypassing his brain. He is NOT looking at his sketch at any point. He feels he is effortlessly absorbing the energy of the events that unfold around him. He is immersed in his experience. Felix is enthralled by the animated complexity of the moment.</i></p> <p><i>Within a minute or two he stops whatever he seems to be doing and looks at the seemingly random lines on the paper. He knows those lines are not random at all. They are the analogous recordings of specific events that he experienced. Those are the lines, arcs and curves that are a record of what he has sensed at that moment in his world. He has just made a rhizogram.</i></p> <p><i>Now, he looks intently and consciously at the diagram. It is intricate, intriguing and inviting him to imagine all kinds of possible sections and full-blown multidimensional scenarios. It is as exquisite as</i></p>
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Rhizograms are not typical diagrams. Rhizogramming is a process wherein the designer observes what is changing, moving and fluctuating in his or her sensory field and draws, without looking at the drawing and without privileging any particular event/sensation. An event is any fluctuation in the perceptual field that stimulates the senses: auditory, olfactory, haptic, and taste. Visual stimulation is relevant only insofar as movements are perceived and not the outlines of objects. Thus, an element of serendipity and playfulness is introduced into the process and the clutches of conscious choice are relaxed. Gregory Bateson was one of the first people to recognize the conflict between conscious choice and creative production (Bateson, 1972). He wrote:

The artist may have a conscious purpose to sell his picture, even perhaps a conscious purpose to make it. But in the making he must necessarily relax that arrogance in favour of a creative experience in which his conscious mind plays only a small part. We might say that in creative art man must experience himself – his total self – as a cybernetic model.

Once the purposefulness is relaxed,

the silhouetted branches of the leafless tree that weaves the sky into a complex tapestry. He realizes that he could not have created such a diagram had he done it consciously and while looking at what he was drawing. Consciousness is a trap when it comes to such creative tasks.

He knows that his architecture does not have to 'look like' his diagrams. Rather, his diagrams are like the DNA of his architecture, propelling his mind. The inherent complexity of a rhizogram makes it difficult to render it into a unilinear expressionistic response.

intentionality is eased, and the feedback circuit of seeing-drawing is disrupted, the possibility of discovering unforeseen configurations is increased multi-fold.

While rhizogramming is similar to the methods used by Coop Himmelblau and others employing accident and serendipity, it differs from those methods significantly as you will see in the discussion that follows. Rhizograms are primarily synesthetic and rooted in a constellation of concrete events perceived by the designer and *not intended to be the literal generators of form*.

Rhizograms are the by-products of the process of diagramming. The author calls them by-products as the rhizograms are not intended to be the primary results of the process. Rather, the primary aim of this diagramming process is to *transform the perception of the designer* through practice. As Brian Massumi puts it, 'practice makes perception'. (Brian Massumi, 2002)

Designer is the essential link that transforms the considerations, parameters and problems, and controls the design output. Designer is the unique point in this process.

Once the designer is transformed, the output is transformed as well.

	<p>The primary goal of <i>rhizogramming</i> is to transform the perception of the designer. Diagrams and designs are the by-products, albeit important ones at that. This article puts rhizogramming in the context of the current discourse about diagramming.</p>	
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<p>12.45 +1 15.15 17.39 +2 11.01 +3 18.39 +4 22.24</p>	<p>Rhizomatic or Parametric? Spuybroek's Diagramming</p> <p>Rhizograms differ from the conventional diagrams (diagrams of space or of material disposition) in terms of what is being diagrammed, how it is done and its relationship to fully developed works of architecture. In conventional diagramming, the designer draws out the literal location of walls, openings and other material placements or sketches the visual outlines of objects in space. This is often interpreted to be a plan view or a perspective view. Lars Spuybroek agrees: 'The old sketch method would go like this: first you look at the parts (rooms, stairs, entrance, etc. etc.) then you try to take a look at the whole; this is most often done by very old tools like the grid, the box or the axis. Then the design work is the difficult 'shaking-up' of these two viewpoints...' (Spuybroek and Cho Im Sik, 2002). Spuybroek goes on to note that 'one should have a conceptualized approach for the whole of the process, not do something subjective here and something objective there. A systems approach is much more coherent, it recognizes the design process as a series of actions upon visual means.'</p> <p>Spuybroek is one of the most articulate voices on contemporary architecture and the role of diagramming in the design process. For Spuybroek, a diagram stays alive throughout his design process. He tries a few terms to explain his diagramming process: 'I have different names for them, none of which has really satisfied me: flexigrams, haptograms, kinetograms, even awarograms, but I also like Brian Massumi's "biogram".' (Spuybroek and Cho Im Sik, 2002).</p> <p>Spuybroek in fact works with parametric models where the underlying diagrams are dynamically linked to the geometries of the architecture within a complex computational system of parametric relationships. Imagine a series of</p>
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	<p>rubber strings pulling on each other and the things in the model. If you pull one string anywhere in the model, the whole model is modified in an indeterministic, nonlinear yet mathematically consistent fashion. For him, the diagram does not specify or imply the location of a wall or a roof or some other material element. Nor is it a streamlining technique of the 1930s where movement rounds off the walls and edges. Perhaps, his diagramming technique might well be called a <i>paragram</i> or a parametric diagram. Or, perhaps Spuybroek's diagrams are, in UN Studio's terminology, operational diagrams. (Ben van Berkel, et al. 1999).</p> <p>But the question that he does not seem to address, at least as yet, is <i>how does he arrive at the diagram in the first place?</i> How is the diagram generated before it is parametrically linked, developed and tweaked? How, as he claims, does his design process systemically integrate diagram generation and parameterization of the whole and the parts? Being parametric does not automatically mean being rhizomatic and vice versa. Rhizograms do lend themselves to becoming parametric, which is an interesting direction deserving further investigation.</p>
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<p>22.13 +1 12.01 +2 07.10</p>	<p>Figures 2 to 6: Five images of 'Courtyard Housing', Rhizograms and Design work by student Shane Smith, second year undergraduate studio, spring 2003. Notice the nonlinear relationship between the rhizogram and the final design. In other words, form does not follow the diagram, but is affected by it.</p> <div data-bbox="930 1153 1404 1515" style="text-align: right;">  </div> <p style="text-align: right;">Figure 2.</p>
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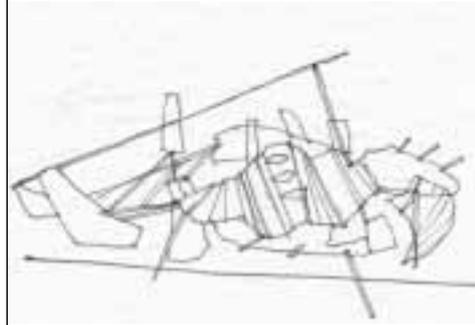


Figure 3.



Figure 4.



Figure 5.

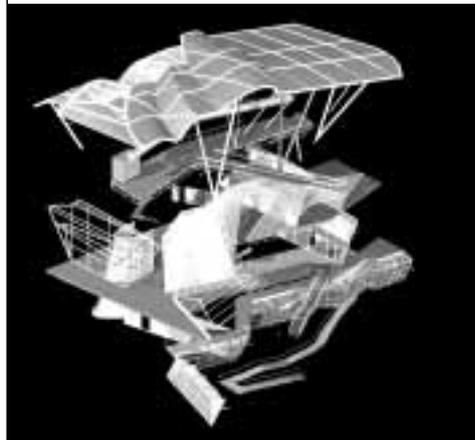


Figure 6.

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Rhizogram and Abstraction

The biogram is not lacking in order. It is over-organized, loaded with an excess of reality. It is deformed by experiential overfill. . . Its hyperreality explains why it is so stubbornly abstract. Since it cannot concretely hold everything it carries, it stores the excess fused in abstraction, ready for useful reaccess.

(Brian Massumi, 2002)

A diagram is necessarily abstract (*ab* means away, *tract* means to pull), although it arises from a concrete situation and leads to a concrete solution. A *rhizogram* would connect to multiple agencies and plot multiple pathways.

Rhizogram is the DNA of architecture. Architecture is the expression of a diagram just as a life form is an expression of the DNA code. Just as one does not look like one's DNA, yet one's DNA drives how one looks, a rhizogram drives the form of a design work without being its literal tracing.



Figure 7
 Rhizogram, Mahesh Senagala

While most of the present discussion has focused on the act of sketching, the method is applicable in any medium. The author and collaborators have carried out experiments where rhizogramming actually begins on a computer screen, albeit with the computer's interface completely and intentionally blurred. These experiments have been detailed elsewhere. (Senagala and Masden, 2002).

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<p>21.01 21.25 +1 14.18 +2 22.22 +3 10.28</p>	<p>Synesthesia and Rhizogramming</p> <p>Synesthetic forms are dynamic. They are not mirrored in thought; they are literal perceptions. They are not reflected upon; they are experienced as events. . . . Although synesthetic forms are often called ‘maps’, they are less cartographic in the traditional sense than ‘diagrammatic’ in the sense now entering architectural discourse. They are lived diagrams based on already lived experience, revived to orient further experience.</p> <p>(Brian Massumi, 2002)</p> <p>In his seminal essay ‘Strange Horizon’ Brian Massumi outlines a number of arguments that present the emergence of topological architecture, which for the first time resides within a philosophically and critically rigorous framework. What is interesting in his work for us, however, is his exposition about special diagrams, which he calls ‘biograms’. Some of his ideas on biograms have been quoted elsewhere in this article.</p> <p>Synesthesia (syn = together + aisthesis = perception) means involuntary cross-modal perception (Cytowic, 1995). Cytowic says: ‘The word synesthesia, meaning “joined sensation”, shares a root with anesthesia, meaning “no sensation”. It denotes the rare capacity to hear colours, taste shapes, or experience other equally startling sensory blendings whose quality seems difficult for most of us to imagine. A synesthete might describe the colour, shape, and flavour of someone's voice, or music whose sound looks like “shards of glass”, a scintillation of jagged, coloured triangles moving in the visual field.’</p> <p>Why is synesthesia important in the process of rhizogramming? While clinical synesthesia is a known phenomenon, rhizogramming promotes intentional cross modal perception by translating various sensations into a diagram that is not entirely visual. The power of synesthetic perception lies in the fact that it sharpens and engages all the senses and weaves them into a deeper experience. Events, from which rhizograms arise, are more than visual phenomena. Events might include auditory, olfactory, haptic and visual. Thus, rhizogramming is indeed a different way of engaging in the events that surround us. Also, by focusing on events rather than objects and spaces, rhizogramming is more temporal and comprehensive in what they connect with than mere spatial or visual diagrams known to architects.</p> <p>Understandably, it is not the intent of rhizogramming to transform the practi-</p>
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	<p>tioners into synesthetes. That is a biological impossibility. However, synesthetic sensibility and proprioception can be cultivated as vehicles for creative synthesis.</p>
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<p>09.23 +1 17.21 +2 11.12</p>	<p>Does rhizogramming lead to or promote a certain style of architecture?</p> <p>Etymologically the word <i>style</i> has interesting origins. It connotes a distinct manner of expression, and also the stem-like part of the female anatomy in a flower that separates ovary from stigma. In common parlance, or even in professional parlance, the word <i>style</i> is used in a slightly pejorative or derogatory sense for no explicit reason.</p> <p>Often, a style is associated with single author-designers such as Le Corbusier, Frank Gehry, Aldo Rossi, Tadao Ando, Peter Eisenman, and Zaha Hadid. Style, in the work of such designers, is a collection of common characteristics that can be found in each of their creative productions. It is less associated with group authorship where the sources of ideas and agents of transformation belong to multiple participants. Examples would be Renzo Piano Building Workshop, Foster and Partners, or any other design firm where a single individual does not play a major or original role in the creative production. Distinct architectural styles are also associated with certain academic institutions led by strong personalities such as Columbia University under Bernard Tschumi or Illinois Institute of Technology under Mies van der Rohe. Examples abound in the history of art, architecture and literature.</p> <p>Does this mean absence of style is better than presence of style or vice versa? Such a question is meaningless in and of itself. Author T.S. Eliot's style of writing is distinct and different from that of James Joyce. We cherish their unique creations precisely because of their distinct styles of expression. Deleuze and Guattari have written philosophical works that have a distinct 'style' of writing and structuring text.</p> <p>Just as Clint Eastwood personifies a certain combination of personal characteristics and expressions in acting, just as Vincent van Gogh's paintings are recognizable through their peculiar technique or colour, just as Le Corbusier's buildings manifest his personal convictions, preferences and idiosyncrasies, every</p>
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	<p>creative individual inevitably produces work of a certain style in the most comprehensive sense of the word. Following the botanical meaning, style enables the transmission of a particular 'conception' to its womb of concrete manifestation.</p> <p>Rhizogramming does not promote any particular style of or expression through architecture. In and of itself the technique does not prescribe a particular manner of formal geometric notation (as opposed to, say, that of Coop Himmelblau), which precludes an identifiable architectural style. If an individual practitioner develops a distinct style as a result of rhizogramming, then it is neither good nor bad in and of itself.</p> <p>A collection of individuals might, conceivably, work rhizomatically to produce a collective rhizogram with no distinct style. Such rhizomatic experiments have been carried out in creative writing. An example of collaborative writing can be found at http://ca80.lehman.cuny.edu/davis/Sentence/sentence1.html (2005) and elsewhere. John Frazer's group at the Architectural Association of London have conducted a similar experiment in morphogenesis where any visitor to the web site could input a genetic code that would alter the generation of a parametric form online at http://www.ellipsis.com/evolutionary.</p> <p>However, collective collaboration does not necessarily mean that it is automatically rhizomatic. A rhizome has to form relationships and connections that would link the participants, their perceptions, ideas, events, resources and actions. The topic of collective rhizogramming is definitely another area that merits further investigation.</p>
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<p>23.13</p> <p>23.16</p> <p>23.30</p> <p>23.45</p> <p>+1</p> <p>14.19</p> <p>+2</p> <p>22.36</p>	<p>Conclusions</p> <p>Diagramming is a very important part of the design process. There can be no design without diagramming – conscious or otherwise. The method and mode of diagramming has a tremendous bearing on the final design outcome and the lived experience of that design.</p> <p>Rhizogramming is a synesthetic and perceptually transformative process that forms a rhizome between the designer, a set of multi-sensory perceptions of</p>
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	<p>events and the design choices driven by the rhizogram. The primary goal of rhizogramming is to transform the perception of the designer.</p> <p>Rhizogramming is medium-independent in the sense that any medium may be used to produce a rhizogram as long as it is conducive to quick notation. Rhizogram differs from other diagramming techniques, including the parametric diagrams of Lars Spuybroek et al., by engaging the designer(s) integrally and synesthetically in the diagramming process. However, like the other contemporary diagramming techniques, rhizogramming also intends to liberate the designer(s) from typological and functional fixity.</p> <p>More research needs to be conducted to understand the kind of architectures that it enables, directly or indirectly, and its long-term impact on the perception of the designer. Further studies can help us understand the organizational and systemic implications of rhizogramming on the systems of design practice and education today.</p>
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<p>10.39 +1 18.43 +2 21.49 23.53 +3 22.21 +4 10.23</p>	<p>Bibliography</p> <hr/> <ol style="list-style-type: none"> 1. Bateson, Gregory: 1972, <i>Steps To An Ecology Of Mind</i>, Ballantine Books, New York, NY. 2. Brown, Pia E.: January 2000, 'The Texture of Diagrams', <i>Diagrammania</i>, Daidalos, issue 74, Berlin, pp. 72-79. 3. Cytowic, Richard E.: 1995, 'Synesthesia: Phenomenology And Neuropsychology', in <i>Psyche</i>, vol. 2. 4. Deleuze, Gilles and Guattari, Felix: 1994, <i>A Thousand Plateaus</i>, University of Minnesota Press, Minneapolis. 5. Eisenman, Peter: 1999, <i>Diagram Diaries</i>, Thames and Hudson, London. 6. Ingraham, Catherine: 1998, <i>Burdens of Linearity</i>, Yale University Press. 7. Massumi, Brian: 2002, <i>Parables for the Virtual</i>, Duke University Press, Durham. 8. Oases 48, <i>On Diagram</i>, 1998. 9. Senagala, Mahesh: 2002, 'Time-like Architectures: The Emergence of Post-Spatial Parametric Environments', in the ACADIA 2002 Conference Proceedings, Pomona, CA. 10. Senagala, Mahesh and Masden, Kenneth: 2002, 'Interrupted Interface: On the Cybernetics of the Digital Design Process', in the ECAADE 2002 Conference Proceedings, Warsaw, Poland. 11. Spuybroek, Lars interviewed by Cho Im Sik, 'Diagramming', in <i>Sarai Reader 2</i>, New Delhi. 12. Tufte, Edward: 1990, <i>Envisioning Information</i>, Graphics Press, Cheshire. 13. Van Berkel, Ben et al.: 1999, <i>Move</i> (3 volumes), Goose Press, Amsterdam. 14. Van Berkel, Ben, ed.: 1998, <i>Diagram Work</i>, ANY 23, New York. 15. Zellner, Peter: 1999. <i>Hybrid Space</i>. New York: Rizzoli.
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