

## Recombinant Poetics and the Database Aesthetic

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An embodied approach to computing acknowledges the importance of the physicality of experience as it falls within the continuum that bridges the physical with the digital. To illuminate the operative nature of database aesthetics, one needs to point at a number of human processes— memory, association, thought processes, cataloguing, categorizing, framing, contextualizing, grouping, the production of boundary objects<sup>i</sup>, grammars of information, grammars of attention, media constellations, principles of combinatorics<sup>ii</sup>, interface design – both physical and digital, as well as how these human processes become operative through the operative nature of a relevant robust coded environment. The mass of lived experience and the residues and/or inscriptions of experience include such creative processes as the shooting and editing of video, the sculpting of virtual objects, the construction of sonic content, the composition of musical fragments or selections, the writing of poetic texts, the naming of files, the design of structures, the physicalization of metaphor etc. These human processes become intermingled on the highest level with machine functionality in the service of human expression.

The mathematician Claude Berge a member of OULIPO<sup>iii</sup>, in the book *Principles of Combinatoric* provides this definition for combinatorics:

We wish to offer here a definition of combinatorics, which depends on a very precise concept of "configuration." A configuration arises every time objects are distributed according to certain predetermined constraints. Cramming miscellaneous packets into a drawer is an example of a configuration... The concept of configuration can be made mathematically precise by defining it as a mapping of a set of objects into a finite abstract set with a given structure; for example, a permutation of  $n$  objects is a "bijection of the set of  $n$  objects into the ordered set  $1, 2, \dots, n$ ." Nevertheless, one is only interested in mappings satisfying certain constraints.<sup>iv</sup>

Thus database aesthetics put the poetic nature of composition, media configuration, sequence, media ‘distribution’ and differing qualities of articulation *in line* with the

constraint-based nature of combinatorics. A myriad of relevant precursors fall outside of the scope of this paper yet to name two important foci: the history of the memory theatre as described in *The Art of Memory* by Francis Yates<sup>v</sup>, explores memory techniques, memory oriented physical ‘architectures’ and devices, as well as Bush’s plans for the Memex<sup>vi</sup> - designed to facilitate the exploration of “trails and webs of association.” The database in my case is used to *negotiate* the emergent potentials of poetic expression and emergent meaning.

I have approached the aesthetic and operative nature of the database for over twenty years in my artistic practice. In particular I have focused on meta-meaning production using navigation and combinatorial strategies across a series of technological substrates. I will give a brief historical overview of these works as they contextualize a series of operative strategies relevant to database aesthetics. Perhaps the most complex of the works is The World Generator / The Engine of Desire— a virtual world generating system (a collaboration with the programmer Gideon May).<sup>vii</sup>

There are specific attributes that are common to all of the works. Each work contains one or more of the following:

- 1) A database of media elements;
- 2) An operative set of interactive digital processes;
- 3) A particular content-based strategy toward human/computer interaction;
- 4) An interface combining physical environment, hardware and software strategies;
- 5) A focus on meta-meaning production;
- 6) A nonhierarchical poetic strategy exploring combinatorics;
- 7) The exploration of fields of meaning arising through dynamic interaction with diverse media-elements;
- 8) An open, emergent, process-based approach to meaning production;
- 9) The exploration of image, sonic, and textual media relations;
- 10) Interactive engagement is empowered at a high level;

- 11) The artist involves media-construction as an active process in the work, calling forth the exploration of multiple media-element combinatorics and abstractions.
- 12) The artist defines the approach to the art content.

I have come to call this approach Recombinant Poetics, primarily referring to this set of criteria in terms of generative virtual worlds. I now seek to extend this definition to a larger class of generative works exploring differing media and their concomitant qualities. The term "recombinant poetics" was created by the author in 1995. <sup>viii</sup> The word "recombinant" is used in a metaphoric and poetic manner. In a scientific context it is defined as:

Recombinant :  
Any new cell, individual, or molecule that is produced in the laboratory by recombinant DNA technology or that arises naturally as a result of recombination.

Recombinant DNA technology can be defined as:

In genetic engineering, a laboratory technique used to join deoxyribonucleic acid from different sources to produce an individual with a novel gene combination. Also known as gene splicing. <sup>ix</sup>

The metaphor of molecular generation through recombination is central. The participant functions in a unity with the media through interaction, bringing a history of media relations with them as one particular field of meaning relation. By operating on the media-elements in the works they derive emergent meaning — intermingling their mind set with the interpenetrating fields of the media elements that shift in meaning in relation to constructed context and dynamic interaction. Just as in a molecule, the combination of media-elements takes on a life and qualities of its own through intermingling — the participant conceptually projects meaning across the entirety of the ongoing experience. Meaning is accretive and functions as an ongoing process of meaning-becoming.

An early work informing the operative nature of this sensibility is **.apt.alt.** (1981).

**.apt.alt.** is a generative text system — For each element in the *Periodic Table of Elements* three words (or sets of words) were designated. Any “compound” could function as an algorithm to derive *compound* poetry exploring the periodic table of

elements in a literal and metaphorical manner.<sup>x</sup> The text also functioned as a mnemonic device. The programmed version has not as yet been facilitated. I have written at length about the relevance of analogue recombinant works to related digital production in my text *Oulipo / Vs / Recombinant Poetics*, published in Leonardo.<sup>xi</sup>

Along with **.apt.alt.** another work functioned as a precursor to my more mature projects exploring recombination. **Elastic Movies** (1983) was an interactive laserdisc work. It was comprised of a set of interactive video experiments in a class in the MIT Film/Video section. Seaman produced **Dance Haiku** – a video database of short modular dance and music sequences. The basic idea was to enable a set of short dances to be juxtaposed and played back in different orders. A series of experiments were undertaken and many of the ideas that later became active from different perspectives by the participants in the class were initially sketched here.<sup>xii</sup>

## Set Theory

Central to database aesthetics is the arithmetic notion of the ‘set’. The concept of the set enables different kinds of groupings to be defined and still function as a unity. What strategies does the database enable in relation to the exploration of sets? The exploration of a plurality of approaches to a series of media elements — a multiplicity becomes an accretive body of media — a dynamic investigation of fragments becomes a unity in an ongoing manner. The potentiality that this unity might arise through choice and/or probability/chance is explored — thus users of the system can at times use chance methods to define or choose a particular set from a pool of potential variables.

The concept of both smooth and striated space as articulated by Deleuze and Guattari in *A Thousand Plateau* is explored in an operative manner:

No sooner do we note a simple opposition between two kinds of space than we must indicate a much more complex difference by virtue of which the successive terms of the oppositions fail to coincide entirely. And no sooner have we done that than we must remind ourselves that the two spaces in fact exist only in mixture: smooth space is constantly being translated, traversed into a striated space; striated space is constantly being reversed, returned to a smooth space.”<sup>xiii</sup>

By exploring different attributes of the interactive video, a participant can explore both a smooth flowing pre-edited linear work, defined as a singular video segment as well as interact with operative fragments that can be recombined, viewed over and over again, repositioned in time, navigated etc. After a unity has been derived [in this case prescribed by the operative characteristics of the laserdisc itself] one can explore fragments of this unity in differing orders. A flowing linear edit as well as a series of sub-units are articulated and relevant computer-based addresses (time code numbers) are defined. These 'addresses' become operative access points on the laserdisc that are driven by coupling the disc with the computer through a physical interface connection. This work now could be facilitated to be entirely digital in nature. The computer drives the laserdisc to a particular relevant location on the disc and/or controls speed and direction of playback of the material. A linear module can be defined as any articulated segment drawing on these properties.

The exploration of levels and qualities of Granularity — A laserdisc has 54,000 individual frames— It holds 30 minutes of video at 30 frames per second. Each frame is addressable and potentially can be coupled to a code-based abstraction of a mode of address. These frames represent the qualities of a particular kind of space addressed through a technological process. Thus different selections of media material can be explored as a potential set of permutations. New digital video enables edits and abstractions that are fragments of the frame itself. I will later address the differences that virtual space affords. The important concept is that a computer can mediate different forms of addressable space – be it technological space i.e. digital video, digital audio, virtual environments etc., or space that becomes physical in a different manner — i.e. architectural space, robotic space, the space of analogue video on a disc etc. I see these differing spaces as a continuum — highly bound/interwoven. We can talk about such a continuum as a space where operative energy processes bring about dynamic relations through interaction. The computer itself should be seen as a dynamic energy process, a enabling device embedded in a coupled environment or functioning as part of a distributed process/environment.

## Resonant Rhizomatic Experience

The question for the author of such a work is — How can the form of the work — its technological potentiality, fuse in a relevant and resonant manner with the content of the work? In each of my works which I will discuss below, I was interesting in exploring a differing set of aesthetic foci in relation to particular technological potentials. So the *set of sets* accessed by the participant forms a unity out of fragments of attention. We could say that meaning arises out of a history of multi-modal sensual experience as it is brought to bear in the current context — a context that is dynamically arising through interaction.

A growing, open “set” of experiences informing the understanding of a work also arise outside of the initial interactive context, through subsequent abstraction of the work as well as differing forms of re contextualization, and reproduction. Deleuze and Guattari describe this concept as the “line of flight”<sup>xiv</sup>. The concept of the rhizome as developed by Deleuze and Guattari in *A Thousand Plateaus* is highly relevant to a discussion of a shifting set of configurations of media-elements and processes. The authors relate this definition:

Let us summarise the principal characteristics of a rhizome: unlike trees or their roots, the rhizome connects any point to any other point and its traits are not necessarily linked to traits of the same nature; it brings into play very different regimes of signs and even nonsign states. The rhizome is reducible to neither the One or the multiple. It is not the One that becomes Two or even directly three, four, five etc. It is not a multiple derived from the one, or to which one is added (n+1). It is comprised not of units but of dimensions, or rather directions in motion. It has neither beginning nor end, but always a middle (milieu) from which it grows and which it overflows. It constitutes linear multiplicities with n dimensions having neither subject nor object, which can be laid out on a plane of consistency and from which the one is always subtracted (n-1). When a multiplicity of this kind changes dimension, it necessarily changes in nature as well, undergoes a metamorphosis. Unlike a structure, which is defined by a set of points and positions, the rhizome is made only of lines; lines of segmentarity and stratification as its dimensions and the line of flight or deterritorialization as the maximum dimension after which the multiplicity undergoes metamorphosis, changes in nature. These lines, or ligaments, should not be confused with lineages of the abodescent type, which are merely localizable linkages between points and positions... Unlike the graphic arts, drawing or photography, unlike tracings, the

rhizome pertains to a map that must be produced, constructed, a map that is always detachable, connectable, reversible, modifiable and has multiple entranceways and exits and its own lines of flight.<sup>xv</sup>

Deleuze and Guattari present a number of concepts that are relevant to this form of practice. I will talk about the notion of the *machinic assemblage*<sup>xvi</sup> later in this text in relation to **The World Generator** although each of my works can be understood as being machinic assemblages. Deleuze and Guattari describe their concept of the mixed-semiotic "machinic statement" or "enunciation":

What we term machinic is precisely this synthesis of heterogeneities as such. Inasmuch as these heterogeneities are matters of expression, we say that their synthesis itself, their consistency or capture, forms a properly machinic "statement" or "enunciation." The varying relations into which a color, sound, gesture, movement, or position enters into the same species and in different species, form so many machinic enunciations. (Deleuze and Guattari, 1987, pp. 330 & 331)

Deleuze and Guattari describe an accumulation of the various enfolded modes of the abstract machine as a "machinic assemblage."<sup>xvii</sup>

There are five works of mine which each operatively explore the notion of sets through interactive video navigation — **The Watch Detail** (1990), **The Exquisite Mechanism of Shivers** (1991), **Passage Sets / One Pulls Pivots at the Tip of the Tongue** (1995), **Red Dice / Des Chiffre** (2000) and **Exchange Fields** (2000), I will talk about each work and its particular relation to database aesthetics. Each work approaches interactive video and its potential for generative meaning production in differing ways. I have a second major approach that I have been utilizing — sets of media elements in 3D or Virtual Space are explored. I will elucidate this form of interactive set exploration in relation to two other works **The World Generator / The Engine of Desire** (1995 – present) (with Gideon May Programmer), and **The Hybrid Invention Generator** (2001). These are part of a generator series that is ongoing.<sup>xviii</sup> Each individual work explores a special set of qualities relevant to operative database authorship. An enfolding of strategies enable the aesthetic and the technologically pragmatic, to intermingle in the service of poetic

expression. The actual physical attributes of the medium must marry the content to produce resonant experience.

**The Watch Detail** (1990) is comprised of video sequences, video still images, music and text that address both the subject of time and qualities of media-time thus the work becomes a meta-time piece. The main categories explore *Wood; Stone; Clocks and Watches; Yards, Gardens and Grounds; and The Airport*. This work employs Macintosh Hypercard media, that is used to control an interactive laserdisc. A large database of time-oriented images, video sequences, and related texts can be ‘navigated’, juxtaposed and/or re-oriented in time. Media-time can also be operatively explored — one can move forward, backward, still, fast forward and fast reverse through the media material. The aesthetics of this kind of playback-speed navigation have now been formalized and forms part of the visual vocabulary of contemporary music-video, film, and is also commonly explored in advertising aesthetics — although for those contexts it is shown as a fixed linear sequence. In the **The Watch Detail** an elaborate modular poetic text database can be juxtaposed with any image sequence or still image. A vast set of potential juxtapositions could be derived, as well as alternate sequential playback modes — any of the video and still material can be navigated. From one sub-menu the participant can re-edit the work. One can move from chapter to chapter, edit segments, trigger sequences of encoded database material in relation to chosen selected textual criteria, view a set of still images with text superimpositions, or view material in a linear mode. This work could be considered an early example of an interactive relational database. Each edit was given a particular alphabetical identification suggesting (with a key) what it contained i.e. wood, stone, clocks etc. If an edit contained multiple examples it was reflected and tagged by a multiple letter code and could be searched for as such. Different musical scores were also called up when different playback speeds were triggered by the participant. The work was shot across New England and is ambient and meditative in nature. Thus, time as registered through recorded physical trace and time as explored through media variability are central to the work. The technological apparatus and the content fuse in a resonant manner.

### **The Mutability of Time**

Another attribute that the differing playback of media material affords is the potential to explore the mutability of time. When a work is being explored as a long flowing linear time-based edit, time may



appear to be suspended. Alternately, fragmentation can promote a feeling of the elongation of time. One can also speed across the surface of the media in fast forward and/or reverse modes, scanning the entirety of the video resources. Again the flow of time falls in relation to differing qualities of database navigation. One particular shooting strategy was the slow zoom. This functions as an interesting isomorphic time exploration. Zooming in or out of the image is isomorphic – time can flow in both directions and feel “correct” in playback. The work becomes a meta-machinic assemblage related to a poetics of time observation.

Where **The Watch Detail** was about particular categories of experience related to the observation of time, **The Exquisite Mechanism of Shivers** (1991) explored audio visual sentences, sentence variables as database, and a particular media grammar of potential substitution. This work was the initial move into thinking about new technological media as an extension of the potentials of language.

In terms of the concept of *lines of flight* mentioned above The work took many forms including the following: an interactive installation with a single projection; a 10 screen video wall version for the Biennale of Sydney; a Japanese/English Version — **Ex.Mech** (1994); a CD Rom version that was published in Artintact 1 (1994) by the ZKM. The work has been shown widely and was recently included in the *Future Cinema* show at the ZKM. A singular flowing video edit forms a particular addressable 30 minute sequence. The work has been shown as a linear video in this form. An audio/visual text/poem, the work enables the construction of a sentence with 10 segments. The importance of this to database aesthetics is that one version of the work being operative allows a different “in” into the understanding of other versions.

Each defined modular segment of the work includes a related piece of music, a specific spoken piece of text and time-based section of video. It is interesting to note that modules can be defined in terms of the database which either conjoin a set of media elements, or isolate each particular media comprising the module — again the potential of sets. The structure of the work is derived from 33 variables for each of the ten modular sections of the audio/visual sentence - thus the linear work is comprised of 33 sentences that are

broken into operative fragments. Thus a textual/media grammar was explored. The authorship was constructed from an initial sentence that was abstracted further and further until a vast network of variables was completed. These variables were then edited to the set of final sentences comprising the work.

Central to the operative database-related characteristics of the work is the following — media substitutions always facilitate the generation of a grammatically correct sentence. Yet, the poetics of the work explores image/music/text relations that are different for each module. Thus, the user of the system could substitute different modular image/music/text variables, based on a computer-mediated textual/grammatical substitution logic and generate new *un-canny* nonsense-related media sequences.

Such an approach relates historically to the cut-up method, yet automates it.

Historically the example of the "formula" or "recipe" (or shall we say analogue algorithm) is evident in different artists' approaches. Lewis Carroll, Leconte de Lisle and Tristan Tzara wrote related textual formulas. In the following excerpt from *Dada Manifeste sur L'Amour Faible et L'Amour Amer*, (*Dada Manifesto on Weak Love and Bitter Love*) is a translation from the French of Tzara's formula:

To Write a Dada Poem: Take a newspaper. Take some scissors. Pick out an article which is as long as you wish your poem to be. Cut out the article. Then cut out carefully each of the words in the article and put them in a bag. Shake gently. Then take out each piece one after the other. Copy them down conscientiously in the order in which they left the bag. The poem will resemble you and you will find yourself to be an infinitely original writer with a charming sensitivity even though you will not be understood by the vulgar. <sup>xix</sup>

In my case the cuts were of a technological nature and has a different but related logic. Each of my media modules was open in terms of its meaning and the recombination of the variables enabled the generation of emergent meaning. One could also explore computer-driven randomizing processes to generate alternate audio/visual sentences. Another early writer exploring the cut-up, recipe method was Lewis Carroll. In the poem *Poeta Fit, non Nascitur* Carroll lays out the following suggestion:

First learn to be spasmodic  
A very simple rule.  
For first you write a sentence,  
And then you chop it small;  
Then mix the bits and sort them out  
Just as they chance to fall;  
The order of the phrases makes  
No difference at all.

Then if you'd be impressive,  
Remember what I say,  
The abstract qualities begin  
With capitals always:  
The True, the Good, the Beautiful — Those are the things that pay.  
(Carroll, 1936, pp.880-881)

For each database related work one must define a classification system or set of systems to house the modules as well as to enable them to become operative in a meaningful manner. Yet, chance methods are also relevant to media redistribution and meaning production. Each of my works has explored chance as one particular operative strategy.

### **Site as a potential element of content production**

**Abstraction Machine / Erotic – The Voyeur of Light** (1994) was a temporary site specific installation in a hotel room in Sydney, Australia. A text was generated by randomly drawing from a pre-authored database of textual fragments. The security eyepiece was inverted to let people view into the room from the hallway. Expecting to be a voyeur, the participant unpredictably saw a text presented via computer, suspended just inside the door (obscuring the room entirely). The work was non-interactive in terms of operating on the database. The work functioned in an auto-generative manner. Often machine driven chance procedures are employed as one strategy in my works to derive new juxtapositions. The content of the interaction of “peeping” intermingling with the unexpected stochastic erotic text, gave this work a unique set of charged “readings”.

To return back to our genetic metaphor, Kahn, in *Wireless Imagination*, points toward the genetic metaphor in Burroughs work, in relation to the generation of context:

The cut-ups were derived from reworked Dada collage techniques, but Burroughs' ideas surrounding them, set forth in his novels, essays and audiotapes, elaborated a new system of recorded sound that metaphorically extended the idea of recording from a psychobiological recording at the level of the genetic code — formed the cipher of the four DNA bases — on out to the realms of political conspiracy and spiritist forces. This writing could tie together the proliferating genetic material of viruses, the syntax of language and the contagion of ideologies, the segmentations of bodies and systems. <sup>xx</sup>

The modular fragment of media in a database is potentially alive with content, the qualities of the original recording, and the nature of the initial context. The collision of these contexts facilitates a “felt meaning” merging site and generative media into a resonant experience. Gendlin describes a “felt meaning” in terms of everyday experience;

What goes through is much more than what we "have" [explicitly]... any moment is a myriad richness, but rarely do we take the time to "have" it.... Going through a simple act involves an enormous number of familiarities, learnings, senses for the situation, understandings of life and people, as well as many specifics of the given situation. <sup>xxi</sup>

As we explore material in an interactive work, meaning arises out of a subject/object unity. The participant draws on their past experience and defines their own approach to understanding the connections between media fragments selected from the database as these fragments fall together in a context that is being constructed in an ongoing manner. Thus meaning is always involved in a human process of becoming.

This work sought to extend Wittgenstein's concept of "the meaning of the word is its use in language" <sup>xxii</sup> I was beginning to explore how media could extend language. Where Wittgenstein was primarily interested in words, I sought to experientially illuminate how context and meaning became related as elucidated through the active exploration of media-element derived contexts as fused with their experiential site of interaction. One could watch meaning shift through the use of the system, as substitutions were derived through interaction. This work also became a meta-meaning, meta-machinic <sup>xxiii</sup> assemblage. The exploration of the permutation of media-elements presents a series of meaning forces operating on each other — In my dissertation I have written at length

about the concept of fields of meaning. I will also write about fields of meaning in relation to **The World Generator** later in this text.

The intuition that led to such a construction mechanism made operative in **The Exquisite Mechanism of Shivers** suggested another long term question — Could the modules that build a sentence be modules of code that actually construct a virtual world or actuate a particular set of modular processes? Thus, could we begin to build a database of modular potentially inter-operative code structures? This concept is still being developed in my work and has huge potential in terms of the construction of mutable computer-based tools and interface systems. The World Generator became the answer to this question. Before talking about this work, I want to talk about **Passage Sets / One Pulls Pivots at the Tip of the Tongue** (1995). The punning concept of “set” is directly pointed to in the title of this work, as are memory processes. This work is an interactive installation that functions as an elaborate navigable audio/visual poem. Seaman worked with Chris Ziegler as the programmer for this work.

Where **The Exquisite Mechanism of Shivers** explored a very structured grammar (historically one looks to *Cent Mille Millions de Poemes [One Hundred Million Million Poems]* by Queneau<sup>xxiv</sup>, 1961 as a precursor to such structures), **Passage Sets** explores a much looser / open poetic form. The pre-cursor/inspiration for this work (and Seaman’s **Red Dice**) is Mallarmé’s **A Throw of the Dice Will Never Annul Chance**<sup>xxv</sup>.

Three projections comprise the installation of **Passage Sets**— video and two data projections are presented as a full wall-sized triptych. The central interface screen enables the participant to navigate through a 150-image database with text superimposed over the image. The participant can navigate spatially by moving over the surface of the images— move left, right, up and down as well as zoom in and out of the panorama/collage through an image grid presented on the central screen. A trackball facilitated interaction although a suggestion for a hand-based gesture navigation system is explored pictorially in the work with the hope that a future interaction will be driven in this manner. Each individual interface text/image is tied to a related section of video. If selected, related music and text

can be played back (presented on the right hand screen). This video presents a spoken version of the same text that is scattered over the surface of the central image as well as video shot in an alternate location (shown on the right). One can select words and/or phrases from the central image which lead them to a hyperlinked database of all of the textual elements in the work (also presented on the central screen). Four scrolling lists enable the participant to build alternate short poems and/or semi-random texts. Thus, a participant could navigate pictorially across the surface of images including text scattered across the surface, or they could navigate through hyperlinks embedded in the text.

Puns and wordplays facilitate a shifting set of evocations based on interaction. Each of these selections can be used to navigate back to the context of the panorama that they are drawn from. The user can explore meaning in relation to dynamic shifting contexts. Thus the user explores context, decontextualization and recontextualisation as a meta-meaning strategy — again the work functions as a meta-machinic assemblage. On a third screen the computer is constantly generating new poetic lines, drawing from the same textual database used for the center poem generator and the scattered visual text.

In terms of content the work explores the notion that a person in one part of the world can interact in a sensual/sexual manner with another person existing elsewhere, or with phantom identities engendered by the computer. This aspect of eroticism is a central area of reflection in the work. There is a certain irony to the fact that that eroticism can be *addressed* through such computer-based mechanisms [pun intended]. It is as if the viewer is in one space, looking at another space (as menu system), navigating a superimposed alternate poetic linguistic space, which in turn triggers related associational video spaces. This conflation of digital and physical space is also germane to the content of the work. Simultaneously a poem generator constructs a second linguistic space which also triggers associations. One can compare the participant's derived poems to those derived by the computer. The conceptual superimposition of the entirety of these spaces defines an open work and generates a floating/shifting mind space for the viewer. Information technologies are forming new kinds of hybrid spaces. *PASSAGE SETS* poetically reflects on this potential environment of sensual communication and exchange. The work

has been shown widely and is in the permanent collection of the Medien Museum, ZKM, Karlsruhe, Germany.

**Red Dice / Des Chiffré** (2000) is the companion work to **Passage Sets**. It was commissioned by the Canadian National Gallery and is now in their permanent collection. Chris Ziegler did the programming for the work. The work is an Homage to Poet **Stéphane Mallarmé's - Un coup de dés jamais n'abolira le hasard, Dice Throw Never Will Annul Chance**. An interactive audio/visual meta-text by Seaman is a 'line of flight' flowing from and commenting on the original work. Large scale projections of both the interface and the visual portion of Seaman's audio/visual work are presented. The piece enables the user to view and listen to Mallarmé's text through the use of a Pen/Wacom tablet interface punning on the historical nature of the interface. When the pen touches on words, they are subsequently spoken. Small video icons are called up that register the potential to trigger related segments of an audio/visual text by Seaman. The work also enables the exploration of a "Recombinant" section — the user can re-order Seaman's video, generate a new soundtrack by choosing from 144 different musical sections — layering up to seven at a time, as well as recombine Seaman's texts via this pen interface. The work functions as a companion work to **Passage Sets / One Pulls Pivots at the Tip of the Tongue** which was also influenced by Mallarmé writing. Again, a highly abstracted eroticism is explored in both Seaman's and Mallarmé's texts. Central to the work is a comparison of differing technological milieus. Images presented in the video of technologies like the mill, player piano and the power loom (among others) are to Mallarmé as the computer is to Seaman. Again, dynamic meta-meaning production is explored through dynamic interaction.

One of the most important characteristics of the database aesthetic is the potential of bringing different fields of meaning to play in the service of meaning production. I earlier spoke of a 2<sup>nd</sup> major approach to the database aesthetic in terms of Recombinant Poetics. Where interactive video enables one to explore modular variables, virtual world generation opens out a differing set of operative potentials.

The field concept is particularly useful in talking about the work **The World Generator / The Engine of Desire** (1996-present). I will first describe the work and then show how fields of meaning are explored in relation to it. This work marks an expansion of interactive combinatoric work into the realm of virtual environments. Seaman, collaborating with the programmer Gideon May authored a complex virtual world generator that enables users of the system to construct and navigate virtual worlds in real time by making choices from a spinning virtual interface of container wheels, working in tandem with a physical interface table. These virtual container wheels house an elaborate multi-media database of media-elements and processes including 3D objects, 2D images and poetic texts, musical loops, and digital movies as well as processes relevant to different forms of media construction, and abstraction. Alternately, the participant can explore a set of elaborate authored chance processes to construct worlds. Participants can also do what Erkki Huhtamo calls "World Processing," enabling them to edit and alter the virtual world in an active manner. The interactant can also attach behaviors to the media-elements, apply still and movie texture maps, as well as make the media-elements transparent. When the participant navigates through the virtual world, a 'recombinant music' mix is made, relevant to each different navigation of the environment. The piece explores emergent meaning and is different for each participant. A networked version of the work has been shown internationally. This version enables people in two parts of the world to inhabit and operate within simultaneous copies of the same environment, communicate via video phone, and view the alternate participant as a video avatar. As the participant moves in the alternate location, their avatar also moves, positioning itself in a relevant manner. A Japanese Version of the work has also been authored. A third version has been authored for the Visualisation Portal at UCLA which is visible on a 160 degree screen, with literally hundreds of objects/images in the environment as facilitated by an extremely powerful computer— a Silicon Graphics *Reality Monster*.

The work provides a meta-text [a visual and sonic text included in the work] related to virtual environments as one set of media-elements for exploration. The text can be positioned in the virtual world and navigated. Central to the work is meta-meaning production. The user actually watches meaning change and be affected in a dynamic



manner as they interact with the work. The work was a response to the following question — if we think words are particularly inadequate in reflecting the complexity of media environments in terms of meaning generation, could we build a device that better enables one to come to understand the nature of meaning production? Though interaction, one can witness meaning as it is being formed and changed based on individual and group interaction. In particular the work seeks to provide a place to reflect on the combinatoric and projective qualities of thought as it intermingled with matter/energy processes and experience. It also seeks to provide a platform to explore an expanded linguistic form of media authorship. The work has been written about in my dissertation: **Recombinant Poetics: Emergent Meaning as Examined and Explored Within a Specific Generative Virtual Environment** (1999), discusses the work at great length, and is available on-line<sup>xxvi</sup>. In particular I believe we are on the path to a new expanded linguistics as brought about through the potential of computer-mediated media.

### **Fields of Meaning**

In "Toward A Field Theory for Post-Modern Art," Roy Ascott has outlined an approach to meaning in the arts in terms of fields. In this text Ascott lays out the potentials of a specific behavioral mode of psychic interplay as a particular generative methodology:

I would like to look at the attributes for a new paradigm for art, a field theory that would replace the formalist modernist aesthetic. It takes as a focus not form but behaviour; not an information model for sending/receiving of messages in a one-way linearity but the interrogation of probabilities by the viewer; it looks at a system in which the art work is a matrix between two sets of behaviours (the artist and the observer) providing for a field of psychic interplay which can be generative of multiple meanings, where the final responsibility for meaning lies with the viewer.<sup>xxvii</sup>

Such a field of interaction is central to the strategies in all of my works. Other writers have talked about fields of meaning. Brian Massumi in *a User's Guide to Capitalism and Schizophrenia: Deviations from Deleuze and Guattari* makes the following observation in terms of meaning production:

Meaning is Force: This gives us a second approximation of what meaning is: more a meeting between forces than simply the forces behind the signs. Force against force, action upon action, the development of an envelopment: meaning is an encounter of lines of force, each of which is actually a complex of other forces. The processes taking place actually or potentially on all sides could be analyzed indefinitely in any direction. <sup>xxviii</sup>(Massumi, 1992, p.11)

The incorporation of differing media elements in a virtual volume presents a very new space for meaning “construction” and elucidation. The author can load a database with poly-valent media variables. Differing spatial configurations of these media-elements evoke alternate understandings. The mutability of time is again here addressed. One defines their speed of movement through the virtual volume, and can define the distribution of media elements in alternate ways. In fact each user of the system will define the space differently. The space of **The World Generator** is often architectonic in nature. John Frazer writes about relevant emergent examples of virtual architecture in *An Evolutionary Architecture*. He describes another perspective on the employment of the notion of the "fields":

The idea of the field is not foreign to mainstream science, which uses the concept to explain gravitation, electromagnetism and other phenomena that can be perceived by their effect on matter, yet can not be explained in terms of matter. Field phenomena are exhibited in objects with holistic properties, such as a magnet or a hologram. A field is always whole. If a magnet is broken in two, each half will produce it's own magnetic field. If a hologram is shattered, each fragment will depict, not a shard of a three-dimensional image, but a complete two dimensional image. A field is mutually tied to the material in which it is manifested. The history of the form is the history of the field. Every type of material form in the universe, from subatomic particles to the universe itself, is conjectured by [Rupert] Sheldrake to have an associated field which guides its formation and maintains its structure. <sup>xxix</sup>

It is this dimensional holistic quality of a virtual environment that separates it from many past poetic forms. Thus the concept of field clearly relates to the notion of sets described above, where a series of fields (separate database variables) work together to form an emergent outcome through recombination.

N. Katherine Hayles speaks about fields of meaning in her publication *The Cosmic Web: Scientific Field Models and Literary Strategies in the Twentieth Century*. The world Generator also explores a new spatial literary form as one foci of meaning production.

Hayles has written of the use of "fields" as abstracted from physics, directly relating to those suggested by Ascott. She states:

The field concept, as I use the term, is not identical with any single field formulation in science. For the men and women who work with the various scientific field models from day to day, they have specific meanings and applications. The term "field concept," by contrast, draws from many different models those features that are isomorphic and hence that are characteristic of twentieth-century thought in general. The only way to approach a satisfactory understanding of the field concept is to examine and compare a wide range of phenomena that embody it... Perhaps most essential to the field concept is the notion that things are interconnected. The most rigorous formulations of this idea are found in modern physics. In marked contrast to the atomistic Newtonian idea of reality, in which physical objects are discrete and events capable of occurring independently of one another and the observer, a field view of reality pictures objects, events and the observer as belonging inextricably to the same field; the disposition of each, in this view, is influenced- sometimes dramatically, sometimes subtly, but in every instance — by the disposition of the others. <sup>xxx</sup>

I have been particularly interested in the way meaning arises through dynamic interaction with media-elements and processes. I see this as always involving a form of on-going *meaning summing* which integrates and enfolds a field of fields including the participant (and the history of events that informs their mindset), the interface system, and the media-elements explored through dynamic interaction, as well as the *lines of flight* that later change how one reflects on the initial encounter with the work. It is important to note that each media-element is of itself. In other words it has communicative properties that are significantly different in the manner in which they become operative and are understood. A visual text becomes evocative differently than a video loop, which in turn is different from an audio loop or a sonic text. Each media element contributes to the evocative nature of the whole. This approach to meaning is different from those that privilege text in meaning production. Also a virtual environment enables a very different approach to meaning production and meta-meaning production, in that one navigates through a spatial world and thus juxtapositions become operative in a different manner to the space of digital video or the written page.

To best approach the nature of meaning as it is evoked within this elaborate computer-based environment, configurations of media-elements can potentially be explored through experiential means. The media-elements of text (both written and spoken), image (both still and time-based) and music/sound are exemplified in the World Generator by the following media variables: 3D computer graphic objects (non-textual), 3D spatial text objects, 2D texts, video digital image stills, digital video-image stills applied as texture maps (wrapped around graphic objects), short digital video loops, digital video loops applied as texture maps (wrapped around graphic objects), digital audio of various looped musical compositions, digital audio presented as spoken text and a set of glyphs representing various behaviours on the menu-system. When I use the term *media-elements* in terms of the **World Generator**, I am referring to a particular authored collection of modular variables, as categorized by these potential media types.

The **World Generator** highlights the evocative qualities of language as extended through the exploration of differing forms of computer-oriented media. This is brought about through spatial and time-based interactive engagement, as well as through juxtaposition with alternate media-elements and computer-based processes. The incorporation of these media-elements can be seen as a conflation of different forms of articulation. All of these media-elements potentially contribute to the production of meaning. A conflation of operative poetic language-vehicles is incorporated in this work to articulate chosen computer-based aspects of language generation/use as well as to entertain emergent experience. A central question related to media production is as follows: if we see text as potentially limiting in terms of reflecting on the complexities of meaning production in a virtual environment, could we then author a technology that better points in an experiential manner at meaning production in such a space? **The World Generator** is the operative answer to that question. This environment includes a collection of various media-elements, where text becomes one media-element in a probabilistic set. There is no hierarchy to the choices that are facilitated by the *muser* (multi-modal user) in terms of the generation of the virtual world. I have chosen the term *language-vehicle* to discuss media-elements within this text in terms of their inter-conveyance in the production of language — an extended, computer-mediated language.

An Extended Linguistics

In the **Rethinking Linguistics**, writing about *Verbal and non-verbal signs*, Roy Harris states the following:

If an integrational linguistics starts from the premises that not all linguistic signs are vocal signs, then immediately it must reject most of what has passed for linguistic analysis in western universities for the past fifty years. For those forms of analysis were predicated precisely upon the assumption which an intergrational approach must disavow; namely, that the systematicity of speech is self-contained and can be described without reference to what lies outside the speech circuit. There can be no question of retrospectively accepting work based on that assumption as having provided a preliminary ground-clearing operation, on which it is now possible to proceed to construct fully integrated analyses. <sup>xxxix</sup>(pg. 45)

The database aesthetic enables new potentials for communication that even further extend notions of linguistics, where a participant can call forth a media vocabulary in the service of meaning production. We could say that each media-element is a kind of loaded field of conceptual force that is “negotiated” in relation to a series of other forces in proximity. We read the potential meaning of these elements in relation to a process-based context that is always in a state of becoming. Because of the complexity of this context, the *user* does not perceive a simple meaning, but a potential assemblage of thoughts and associations. A "constructed context" arises:

- as a by-product of interactive poetic-construction processes;
- through navigation and temporary perspective;
- through time-based viewing;
- through subsequent reflection related to a remembered context;
- through external conceptual framing.

In the **World Generator / The Engine of Desire**, the user of the system defines the media elements they wish to build a world from [their vocabulary if you will]. Each derived environment has a series of meaning forces that become active through interaction or what might also be called intra-action — where the entire system is seen as a unity. Thus, different media elements take on differing “weights” in relation to constructed context where human involvement through behavior and meaning production are central.

A second generative work exploring 3d space is the work **The Hybrid Invention Generator** (2001). This piece explores a "machinic genetics" of database combinatorics. Users of the system can explore a database of pre-rendered inventions via touch screen,

choose two different inventions and generate the visualization of a hybrid invention. An underlying logic defines a functional connection — articulating the potential of how one might make a functional version of the hybrid. The research was funded by Intel. A looped musical fragment is related to each invention such that one makes a generative musical score through interaction and linked combination. The work both points at the potential of computer-based systems to augment thought as well as pokes fun at the endeavor.

In each of these works the aesthetic is directly tied to what is loaded into the system — the media variables. The aesthetic is also derived through operative media-processes inherent to each work as well as the interface that enables dynamic interaction. Sometimes the works combine digital and analogue databases that are tightly coupled. This is a central strategy to more recent sensing technologies and ubiquitous computing. The probability of the aesthetic of certain kinds of events arising through interaction is central to the interactive strategies that inform all of these works. A particular grammar of potential recombination was defined for each of the works, although the The World Generator has a different spatial/temporal approach to this foci.

The operativeness I have explored in these works relate to the following concerns:

The potential substitution of variable media-elements or processes;

- 1) Contextualization, decontextualization, and recontextualization of media elements;
- 2) Sorting by encoded classification;
- 3) Editing modules of time-based media
  - a. Substitution of linear time-based modules
  - b. Layering of sound or the calling up of alternate sound modules
  - c. Sorting by encoded classification (code tags)
- 4) Manipulating media-elements in virtual space — The participant potentially brings about: interpenetration, juxtaposition and aesthetic alteration of media-

elements through interaction with the following categories of "operative" processes:

- poetic construction processes;
- navigation processes;
- processes related to authored media-behaviours,
- editing processes;
- abstraction processes;
- automated generative processes;
- processes related to distributed virtual reality;
- and chance processes of a *semi-random* nature.

- 5) Navigation as an operative metaphor for moving through, selecting and/or triggering choice media-data.
- 6) Specificity of interaction as mode of content generation.

I have coined the term *cyber-polysemic space* to refer to these differing media-conglomerate technological settings. These spaces explore the notion of a new multi-dimensional linguistic environment as exemplified within a performative media-space populated with mutable assemblages of media-elements.

A "constructed context:" arises through dynamic interaction:

- as a by-product of interactive poetic-construction processes;
- through navigation and temporary perspective;
- through time-based viewing;
- through subsequent reflection related to a remembered context;
- through external conceptual framing and/or alternate version of works.

In these works the mutable nature of context is brought to light through some form of inter-authorship and/or interaction on the part of the vuser (view/user) or what I have more recently called muser (multi-modal user). These works all explore the dynamic

nature of meaning-becoming. The interactive exploration of the database aesthetic enables a form of meta-meaning production that is central to my work.

### **Links Between a Physical and a Computer-mediated Database**

Another important pre-cursor to Recombinant Poetic practice is the **Large Glass**(1915-1923) by Marcel Duchamp. Duchamp opened the door onto this form of operational artistic experience with his *Large Glass*<sup>xxxii</sup> and the *Box in a Valise*. (1941).<sup>xxxiii</sup>

Duchamp's intentionality places authored, permutational elements of the creative process into the hands of the viewer/participant. Modular inscribed notes qualify the evocative nature of the *Large Glass* become highly suggestive. The role of the *muser* functioning as an active decoder and performer/participant within both Duchamp's work as well as my operative practice is a key notion. This form of operative, interactive work, marks a shift away from traditional forms of poetic works. Duchamp's early analogue approach to generative meaning production is to this day provocative. In this work a text is set against a physical work in an open an illusive manner.

One work of mine which explores a related interest between a physical "database" or set of physical elements and a more conceptual set of concepts is **Exchange Fields** (2000), commissioned by the Vision Ruhr Exhibition in Dortmund Germany. This work explores a elaborate database of recorded dance and choreography by Regina van Berkel. The programmer Gideon May facilitated the *associated* video. A dynamic physical interface was created comprised of a series of furniture/sculptures designed with a unique implied "suggestion" of how the body might be positioned in relation to that object. Thus a physical environment comprised of sets of potential interactive behaviors facilitates a layering of media dynamics as driven by muser action. A linked relation is brought about through the participant's embodied physical positioning. This punning *constrained* positioning functions as an input into a computerized database relational system that dynamically links output consisting of pre-recorded performance/dance images (video) and sound. For each unique furniture/sculpture a set of related dances was recorded — thus the database. Yet in this case we might say that a physical data-base or collection is



brought into proximity to a textual and sonic set of potential juxtapositions through focused computer-mediation. The database facilitates a set of linkages which now move out of virtual space into a different form of physical/media continuum.

A linear text and musical composition become layered with the sound and image that is triggered by users. It is the physical engagement of the participant relative to the visual and audible output that gives the work its artistic experiential content and power. The work is erotically charged and the participant becomes enmeshed in the experience with other participants, layering together images of the dancer when multiple physical interfaces are used simultaneously. Exchange Fields explores the energy exchange flows that bridge the physical with the digital and analogue.

### **Future Potentials**

I am currently doing research for a new work with Ingrid Verbauwhede, EE at UCLA and Mark Hansen, Stastics, UCLA, called the **Poly-sensing Environment**. The concept for this work is to develop a new chip with multiple sensors. A series of chips would be in a room and embedded in some objects in the room. The chips would be able to communicate with each other and/or a server. The notion is to focus the attention of the sensors via an object-based programming language — the *Emergent Intention Matrix*. This programming environment coupled with the work is a modular database of functionalities that are designed in such a manner as to become inter-operative by a participant through dynamic recombination. The work explores elaborate sensing methodologies — a form of what might be called a multi-modal machinic perception. The idea is to make anything in the room — any particular change as perceived by the system, the interface to an elaborate database of media elements and or processes. The work may also function to drive robotic resources. Like Exchange Fields mentioned above, the work enables dynamic associative media to be coupled with a physical environment.

### **Summary**

A definition of the term "recombinant poetics" follows. Artworks which exemplify recombinant poetics are characterized by the interaction of a participant with a computer-mediated mechanism that enables her/him to become actively engaged with aspects of experience arising from the combination and recombination of text, image and/or music/sound elements. The functionality of these works is made operative within an authored computer-mediated generative environment. It is the technological functionality of this mechanism that enables direct engagement with digital (and analogue) media-elements. These modular variables of text, image and music/sound can be observed as fields of meaning<sup>xxxiv</sup> experienced within a variety of constructed contexts through processes of interaction. It must be noted that each of the above works has been specifically authored to examine emergent meaning.

I have articulated some of the operative potentials of two different major approaches to Recombinant Poetics and the Database Aesthetic — One approach was through modular interactive video. The second approach was through spatial virtual volumetric media construction. For each of these approaches I described particular methodologies related to the exploration of meta-meaning as well as emergent experience as derived through dynamic interaction with computer-mediated media-elements and processes. The approach is embodied and sees this space conjoining media, interface and participant as a resonant continuum.

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<sup>i</sup> See Susan Leigh Star and Geoffrey C. Bowker in their text *Sorting Things Out: Classification and its Consequences*, <http://weber.ucsd.edu/~gbowker/classification/> "At this site, we present the introduction, first two chapters and concluding chapters of our book on classification systems published by MIT Press in 1999". (Also discussion with Sha Xin Wei concerning Boundry Objects)

<sup>ii</sup> Claude Berge, *Principles of Combinatorics*. Translated by John Sheenan. (New York, San Francisco, London: Academic Press, 1971), pps. 1-3

<sup>iii</sup> See Warren Motte, *OULIPO, A Primer of Potential Literature* (Normal, Illinois: Dalkey Press, 1998),

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- <sup>iv</sup> Claude Berge, *Principles of Combinatorics*. Translated by John Sheenan. (New York, San Francisco, London: Academic Press, 1971), pps. 1-3
- <sup>v</sup> YATES, F. 1966. *The Art of Memory*. Chicago: University of Chicago Press.
- <sup>vi</sup> See NYCE, J. and KAHN, P. 1991. *From Memex to Hypertext, Vannevar Bush and the Mind's Machine*. Boston: Harcourt Brace Jovanovich, Inc. and also JOYCE, M. 1995. *Of Two Minds, Hypertext Pedagogy and Poetics*. Ann Arbor: University of Michigan Press (p.22)
- <sup>vii</sup> See Seaman, Bill, *Recombinant Poetics: Emergent Meaning as Examined and Explored within a Specific Generative Virtual Environment*. PH.D. Thesis for CAiiA – The Centre for Advanced Inquiry in Interactive Art. University of Wales, Corleon Campus, 1999 (available in PDF form from the Langlois Foundation) and/or <http://billseaman.com/>
- <sup>viii</sup> Subsequent research has shown a related metaphorical use of the word "recombinant" by Mitchell in his discussion of "recombinant architecture" (Mitchell 1995, p.47). Other artists and researchers have used the term "recombinant" in a metaphorical manner, including Arthur Kroker (Kroker, 1994). Doug Kahn, in *Wireless Imagination* (Kahn & Whitehead, 1994, p.13) also suggests poetic relations to DNA in the work of William Burroughs and Brion Gysin. Sergei Eisenstein, in *Film Form*, (Eisenstein, 1949, p.67), speaks of the "genetics" of montage methods. The Critical Art ensemble have also written about the "recombinant sign." (Critical Art Ensemble, 1994) The exploration of modular, combinatoric systems can be witnessed in my art work as early as 1981.
- <sup>ix</sup> PARKER, S, editor in chief (1989) *McGraw-Hill Dictionary of Scientific and Technical Terms*. Boston: Kluwer Boston.
- <sup>x</sup> Seaman produced two works based on the text - **.apt.alt.** which was performed as a song in the Whitney Counterweight Concert Series, NYC in 1982, and a fragment of **.apt.alt.** — the compound formula for Adrenalin was performed as a song in **P.L.A.N.E.S — Punctuation, Letters and Numbers Entering Superimpositions**, presented at the Experimental Intermedia Foundation, NYC in 1983.
- <sup>xi</sup> "OULIPO|vs|Recombinant Poetics" Leonardo Digital Salon, 34:5 Edited by Christiane Paul
- <sup>xii</sup> **Elastic Movies** was team taught by Benjamine Bergery and Glorianna Davenport at the MIT Film/Video Section in 1983. Other notable members of the class who went on to explore interactive processes in their work were Luc Courchesne, Ellen Sebring, Peter Roos, Russ Sassnett, Roz Gerstein.
- <sup>xiii</sup> DELEUZE, G. and GUATTARI, F. 1987. *A Thousand Plateaus: Capitalism and Schizophrenia*. vol.2. Trans. by Brian Massumi. Minneapolis: University of Minnesota Press p.474
- <sup>xiv</sup> *ibid* p. 21
- <sup>xv</sup> *ibid* p.21
- <sup>xvi</sup> *ibid* pp. 330 & 331
- <sup>xvii</sup> *ibid* p. 145
- <sup>xviii</sup> In 1992 I listed the following *Generator Set* which has become an continuing sequence of works exploring the database aesthetic: *Abstraction Generator; Analogy Generator; Allegory Generator; Artificial Intelligence Generator; Invention Generator; Nonsense Generator; Question Generator; Actor Generator; Desire Generator; History of Music Generator; Paradox Generator; Title Generator; Fashion Generator.*
- <sup>xix</sup> PETERSON, E. 1971. *Tristan Tzara*. New Brunswick: Rutgers University Press. P.35
- <sup>xx</sup> KAHN, D. and WHITEHEAD, G. 1992. *Wireless Imagination: Sound, Radio, and the Avant-Garde*. Cambridge/London: MIT Press. p. 13
- <sup>xxi</sup> GENDLIN, E.T. 1973. *Experiential Phenomenology*. In: M. NATANSON, ed. *Phenomenology and the Social Sciences*. Evanston: Northwestern University Press, p. 370
- <sup>xxii</sup> WITTGENSTEIN, L. 1958. *Philosophical Investigations*. 3<sup>rd</sup> edn. Translation: G.E.M. ANSCOMB. New Jersey: Prentice Hall. P 20
- <sup>xxiii</sup> DELEUZE, G. and GUATTARI, F. 1987. *A Thousand Plateaus: Capitalism and Schizophrenia*. vol.2. Trans. by Brian Massumi. Minneapolis: University of Minnesota Press
- <sup>xxiv</sup> QUENEAU, R. 1961. *Cent Mille Millions de Poemes*. Paris: Gallimard.
- <sup>xxv</sup> MALLARMÉ, S. 1982. *A Throw of the Dice Will Never Annul Chance*. In: M. CAWS, ed. *Stéphane Mallarmé Selected Poetry and Prose*. New York: New Directions, pp.103-127.
- <sup>xxvi</sup> *Ibid* p. 7
- <sup>xxvii</sup> ASCOTT, R. 1980. *Toward A Field Theory of Post-Modernist Art*. *Leonardo*, 13, pp.51-52.

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<sup>xxviii</sup> MASSUMI, B. 1992. *A User's Guide to Capitalism and Schizophrenia: Deviations from Deleuze and Guattari*. Cambridge/London: MIT Press. P. 11

<sup>xxix</sup> FRAZER, J. 1995. *An Evolutionary Architecture*. London: Architectural Association. P.112

<sup>xxx</sup> HAYLES, N. 1984. *The Cosmic Web: Scientific Field Models and Literary Strategies in the Twentieth Century*. Ithaca: Cornell University Press (Preface II)

<sup>xxxi</sup> DAVIS, Hayley G., and TAYLOR, Talbot J, editors, *Rethinking Linguistics*, RoutledgeCurzon 2003  
p.45

<sup>xxxii</sup> DUCHAMP, M. 1989. The Green Box. In: M. SANOUILLET and E. PETERSON, eds. *The Writings of Marcel Duchamp*. 2<sup>nd</sup> edn. New York: Da Capo Press, Inc., pp.26-71.

<sup>xxxiii</sup> *ibid*

<sup>xxxiv</sup> See the Chapter on Fields of Meaning in Bill Seaman's, *Recombinant Poetics: Emergent Meaning as Examined and Explored within a Specific Generative Virtual Environment* — *ibid* 1