Recombinant Poetics:

Emergent Explorations of Digital Video in Virtual Space

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The authorship and inter-authorship of virtual space opens out a new set of potentials for the exploration of digital video. In this text I will focus on the use of digital video in relation to other media elements *in The World Generator / The Engine of Desire*[1], authored by Bill Seaman with Gideon May programmer. *The World Generator* is an artwork that has been shown in Galleries, Museums, The UCLA Visualisation Portal, and in the context of IT conferences. The work is shown as a large-scale data projection and is interfaced from a table with built in navigation and selection tools. Central to the contemporary exploration of digital video is the ability to operate on and spatially position video within virtual environments. We must remember also that video can be a container for entirely synthetic computer-graphic material, recorded images of differing physical environments and/or any combination of the two.

I have been investigating what I call Recombinant Poetics[2]. Works that explore Recombinant Poetics enable the examination of operative media-elements within specific, construction-oriented virtual environments. Inter-authorship is achieved through use of such systems. Recombinant Poetics is concerned with the combination and recombination of media-elements in the service of generating emergent meaning through interactivity. Context, de-contextualisation and re-contextualisation are explored in a dynamic authored environment by a vuser (viewer/user)[3] operating within the constraints of the authored system. Such environments are characterised by Rhizomatic[4] space, and differ from the earlier combinatorial exploration of interactive video, as generated via interactive laserdisc (although one can address earlier interactive video through the conceptual lens of Recombinant Poetics).[5] In terms of video functioning as a media-element, a series of potentials are opened up within virtual space. The ramifications of these potentials are relevant to questions of both form and content. It must also be noted that many different artists can be seen to be exploring Recombinant Poetic processes at this time.

I am exploring a contemporary application of the word "poetics." The definition needs to be seen in terms of an art practice in which "imaginative" and evocative relationships are explored through the interactive experience of media-elements of language, image and music/sound within a computer-based, digital environment.

Eric Vos, in journal *Visible Language,* edited by Eduardo Kac, in a text entitled "New Media Poetry — Theories and Strategies," describes a poetics

of "new communication and information technologies" that he suggests "could not have been created and cannot be experienced in other environments." He describes "a poetry based on the integration of characteristic features of these technologies in the strategies that underlie the writing and reading of poetic texts." He states:

> …We are dealing with a virtual, dynamic, interactive, immaterial poetry…We call this basis theoretical rather than poetical because it expands the habitual domain of poetics to include considerations of communication and information theory, semiotics and interart relationships. (Vos, 1996, pp.216-217)

This definition is to a large extent exemplary in terms of my own objectives, although I do not value written and/or spoken text above other media-elements in a hierarchical manner within Recombinant Poetic works. Recombinant Poetics is not primarily a logocentric poetics. My work enables the exploration of a conflation of logocentric and non-logocentric language-vehicles. It is by all means an "interart" poetic that I refer to.

In Recombinant Poetics, like in New Media Poetry, the work is "not already there; it is not a package for but a parameter of the poetic communication process. (Vos, 1996, p.219) Emergent meaning is also experienced through a "virtual existence." Digital Video becomes one of many media-elements to potentially be addressed through authored computer-based processes.

A Virtual Video Environment

The World Generator / The Engine of Desire is a generative virtual environment. The virtual interface is comprised of a series of spinning container-wheels and is physically interfaced through a table, track-ball, positioning ball and two selection buttons. This interface enables the participant to generate and navigate virtual worlds in real time. One spins the container-wheels and selects from a vast collection of media-elements and digital processes. The media-elements that can be positioned and repositioned in this mutable world include 3D objects, sound objects, digital video stills, digital video loops, and an elaborate poetic text.

Video As Time Based Object in a Virtual World

Video is explored in the environment in a number of ways. On the rotating container wheels are miniature video-based icons. The participant rotates the wheel and activates the video to play in a thumbnail version. This small video appears as a video still until it is activated. When the user chooses a video it is entered into the space as a 2D digital projection in space. This is like a small screen that one can navigate around and/or through, within the virtual space. This video screen is surrounded by an "Aura". This "aura" is a sphere that designates that the video is the selected object in the space and can be operated upon. Thus the video functions as a time-based object in the virtual space.

When the video-object is selected a number of different functions can be accessed via the container-wheel menu system. These functionalities can be applied to the selected video object potentially altering: the level of transparency, the scale, and the aspect ratio. Behaviours can also be applied.

Behaviours

Media-behaviours can be described as pre-defined behavioural attributes authored into the functionality of the generative virtual environment. These behaviours become activated or are encountered by the vuser (viewer/user) during interaction. A specific behaviour can be attributed to a particular media-object. The selected element subsequently behaves in a particular manner, i.e. the element spins, rotates, levitates, moves in a spiral, etc. A behaviour can be selected by the participant through a specific menu choice of a particular "glyph" presented on the menu system. When a selected media-element is highlighted by the "aura," (the selection device that enables functional choice of media-elements within the system) then a behavior can become attached to the video-object. Behaviours are pre-authored as one set of menu choices and can potentially be attributed to any of the media-elements. Potentially, behaviours could also be triggered in relation to particular actions or human behaviours that the vuser of the system undertakes. There is great potential in the implementation of higher levels of authored behavioural attributes. This might include the authoring of intelligent behaviours that could reconfigure media material in a "meaningful" manner through voice or gesture recognition programming.

Video Approached in Differing States Within the Virtual Environment

If a participant uses the container-wheels to place a 3D object into the environment, a moving video texture map can be applied to the object. This becomes a dynamic use of video in the virtual space. Hybrid media-objects are generated by this technique, which abstract the video based on the shape of the 3D media. An emergent aesthetic is here achieved through combinatorics. Berge, one of the founding members of Oulipo (Ouvroir de Litérature Potentielle) – a group that early on explored both analogue and digital combinatorial poetic methodologies. In the book Principles of Combinatorics, Berge provides this definition:

> What is 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,…, n." nevertheless, one is only interested in mappings satisfying certain constraints. (Berge, 1971, pps. 1-3)

One can not help but see the relevance of OULIPO as a precursor to the "configurations" and reconfigurations of Recombinant Poetics. As we trace the development of Oulipo we see an expansion of Olipian explorations including the employment of computer-based systems as well as extensions of Oulipo into many other fields. OU-x-PO (where x = the field in question) was articulated by François Le Lionnais (Mathews and Brotchie, 1998, p. 320) and functions as a generative means to enable infinite expansion into new fields i.e. Painting, Mathematics, History etc.(Mathews and Brootchie, 1998)

In *The World Generator* the spatial juxtaposition of multiple objects to multiple movies enables a vast number of possible aesthetic reconfigurations. An object can be selected via the "Aura" and differing functionalities can be applied as described above. Thus the same initial video material can take on very different states during the exploration of inter-authorship of the virtual environment. The proliferation of video-objects in a virtual environment is computationally intense. The environment has been optimised to play only one video-object at a time. This object is turned on and off based on the virtual proximity of the participant within the environment. All of the still images included in the system are also derived from digital-video and can also be applied as texture maps and/or viewed as flat virtual stills within the environment.

The very nature of exploring the contextually controlled dynamic of a work of art is extended through this computer-based mechanism. The potential for generating complex abstract images arises as the vuser moves through a series of meaning states. They can witness how meaning becomes emergent through personal interaction within a generated context. The work strikes a balance between order and chaos, enabling the vuser to take an active role through experiential examination. This environment is always constrained by the media-collection that is made available to the vuser during use. Having a specific collection of media-elements is central to focusing the probability of generative meaning production.

As media-elements are combined, both in real time and through temporal arrangement, a depth of subtle experience is generated, enfolding many different meaning-states through interaction. A specific loading of the fields provides a set of potentials which is experienced as the vuser conceptually positions and negotiates the collection of media-elements. Each media-element provides a field of potentiality, lending to an ongoing perceptual summing. The engaged activity of the vuser drives, in part, the potential conveyance of media-elements. There is an intermingling of the intention of the artist/author with that of the vuser. This is brought about through the use of a specifically authored media-collection, as examined through the alternate intentions of the vuser as they manipulate and explore that collection through environmental interaction. The mutable architecture of this variable media-collection is carefully considered to heighten the potential for combinatorial media resonance.

Video Abstraction Facilitated Via Texture Maps

It is interesting to observe the levels of abstraction that one can generate through the exploration of variables inherent to the system. One can begin with a recognisable moving video image or video still. From this initial state a heightened level of abstraction can be achieved via interactivity. Abstraction is here achieved through texture mapping, spatial positioning, multiple behaviours and transparency. The dynamic use of video enables one to add a differing quality of aesthetic "warmth" to the environment lending a unique feel to the generated virtual world.

Video As a Potential Media-element in a Non-logocentric Mixed-Semiotic Space

Form and content are always inextricably linked in a circle-like manner – a work that focuses on content must always take some form and a work which explores form always carries content. They can not be separated. The World Generator / The Engine of Desire enables the poetic construction of spatial configurations of differing signs. Peirce's definition of the sign is extremely elegant in that it is sufficiently open to help elucidate the complexity of sign usage in a generative virtual environment. All of the media-elements that are contained by my generative virtual environment can be considered as signs in terms of this definition, including digital video and video stills:

> A sign [or representation] stands for something to the idea, which it produces, or modifies. Or, it is a vehicle conveying into the mind something from without. That for which it stands is called its object; that which it conveys, its meaning; and the idea to which it gives rise, its interpretant. (Peirce, 1931, p.171)

My artwork is a conveyor mechanism that enables the spatial configuration and reconfiguration of signs, as well as the inter-penetration of signs. These signs can potentially function by "conveying into the mind something from without." Each individual media-element "stands for something to the idea that it produces, or modifies." I use the term recombinant sign (used by many authors) to refer to the operative nature of signs within the work. Signs function to qualify or "modify" other signs in alternate generated media-contexts. The conveyance of digital video shifts in relation to constructed contexts that are generated through the operative use of the work. Here, digital video and video stills function as poetic language-vehicles.

Fields of Meaning – An Emergent Approach to the Perception of Virtual Context

One approach to meaning is through the concept of Fields of Meaning. Derrida in *Writing and Difference* [Différance] (Derrida, 1976, p.23) suggests that meaning can only arise through qualities of difference (différance). The term "différance" is a pun in French, simultaneously pointing to difference and to deference or to put off until later. The World Generator is a contemporary "difference"["différance"] engine (Babbage, 1961) that enables a non-logocentric spatial approach to emergent meaning through computation. In Writing and Difference (Différance) Derrida speaks about force and "a certain pure and infinite equivocality." (Derrida, 1978, p.25) It is this particular quality of meaning production that I am exploring through my techno-poetic engine. In this form of spatial environment, or authored virtual "volume," there is a play of forces, each contributing in a subtle manner to the nature of how meaning arises in the mind of the vuser. Derrida points to the complexity of these forces, which extend far beyond simple binary relations. (Derrida, 1978 p.20) *The World Generator* enables a specific play of forces, visualising , making literal and rendering operative Derrida's notion of meaning "force." The evocative nature of video is just one of these meaning forces.

The World Generator is an engine of location, dislocation and re-location of media-elements – An engine of spatio-temporal simultaneity. It is the operational nature of this device, a "fissuring" and fusing engine that enables one to explore emergent meaning. Meaning arises at the demise of any singular fixed meaning. Saint-Martin, in Semiotics of Visual Language, posits this notion of "difference" from another perspective – "a spatial continuum is not a given datum but a construction of perception itself." (Saint-Martin, 1990, p.71) Navigational exploration as well as differing generative qualities of interactivity, present an exciting aesthetic experience of emergent meaning production. The concept of the field, as borrowed from physics, becomes central to an emergent approach to the complexity of media within my generative virtual environment. Umberto Eco in *The Open Work* speaks about the field suggesting "now a complex interplay of motive forces is envisaged, a configuration of possible events, a complete dynamism of structure. (Eco, 1989, p.14) The dynamic play of multiple planes of forces of difference [différance], (Derrida, 1976, p.23) contribute to the perception of a perceived or evoked sum. Meaning is always in a state of becoming in

such a work. A finite set of media-elements is entertained through a vast set of potential combinatorial abstractions.

In terms of the visual field, Saint-Martin, in Semiotics of Visual Language, speaks about relations between coloremes, where a coloreme[6] exhibits a visual field of force. Thus, we shift from the force of the word to alternate visual forces. Saint-Martin attributes this notion of forces to Gurvistch from his Théorie Du Champ de la Conscience, (Gurvistch, 1957) where the "percept" arises out of a "field of forces." The World Generator enables the dynamic arising of juxtapositions or neighbourings of coloremes. It also enables the interpenetration of alternate coloremes to form the perception of emergent coloremes. Saint-Martin further examines relations between this approach as it relates to the "phonetic unit of verbal language:"

> This definition of the element of visual language as a continuous and spatialised topological entity, endowed with somewhat fuzzy boundaries, would appear incompatible with the accepted view of the phonetic unit of verbal language, only if one neglected to consider the actual elasticity of this latter notion. In effect, the phoneme is constituted by a cluster of auditory variables within extended limits and it can also, according to the individual case, play the role of a morpheme or even of an entire phrase. (Saint-Martin, 1990, p.7)

Virtual exploration makes palpable the "elastic" nature of both visual and textual language. Saint-Martin goes on to specifically elucidate the field-like quality of visual perception and the notion of meaning force. (Saint-Martin, 1990, p.9) The notion of the summing of meaning forces becomes central to the production of meaning and moves away from examining language from the perspective of individual signifying units toward a perception of dynamic perceptual energy processes. Saint-Martin states:

> Considering the agglomerates of matter which constitute the semiotic carrier of visual language, visual semiotics has every reason to abandon previous paths and to adopt an epistemology which is more in agreement with the dynamism of observed phenomena. it will recognise that matter is not inertness, but energy. As Bachelard expresses it:
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> > It is energy, which becomes the fundamental ontological notion of any modern doctrine of matter, even the principle of individualisation of material substances. Any atomistic philosophy must, because of this fact, be reformed. One must decide whether the real has a structure in relation to its qualities or whether it produces dynamic phenomena as a result of its structure [(Bachelard, 1951, p.135) as found in (Saint Martin, 1990, p.4), emphasis Seaman]
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> ...In a certain sense, the basic element of visual language can only be a psychophysical entity defined by both the subjective and objective aspects of a percept. (Saint Martin, 1990, p.4)

My work seeks to approach a virtual/literal world of energy processes, exploring both the "subjective and objective aspects of the percept." Along these lines, in a paper entitled "Toward A Field Theory for Post-Modern Art," Ascott has outlined an approach to meaning in the arts. In it he discusses the potentials of a specific behavioural 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. (Ascott, 1980, pp.51-52)

The notion that meaning is contingent on context and that context can be generated through viewer interaction is pivotal. This device can act as a conduit of exchange between the author of a generative media-world and a vuser, further co-authoring an emergent space. Interaction promotes an engagement with an environment populated with media-elements: recombinant music/sound, spatial text, juxtapositions of computer-graphic objects, images, digital movies, as well as attached behaviours, all functioning as relative fields of meaning force. These fields act upon one another and form this recombinant cyber-polysemic field of fields. Digital video can not be isolated in terms of the work, but must be seen in relation to the meaning force of other media elements. Each media-element potentially functions as a "field of meaning" and exhibits a form of force that influences the perception of other chosen media-elements during interaction.

Video as Qualified by Virtually Adjacent Text, Image, and Sound

The reading or understanding of a recombinant poetic environment will be perceived by a vuser as the sum of the evocative "forces" exerted by the various media-elements brought into relative proximity. It must be noted that this environment is time-based and is not fixed; the sum of these "forces" is cumulative and transitory in nature. Brian Massumi in a Users Guide to Deleuze and Guattari's A Thousand Plateaux states that "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, and 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 analysed indefinitely in any direction. (Massumi, 1992, p.11)

Media-elements have been authored with an intentional polyvalent nature in *The World Generator*. An individual media-element may exhibit a set of divergent forces enfolded within one "modular media variable," arising in relation to alternate contexts of juxtaposition that are brought about through interaction i.e., a pun has more than one evocation, contributing to an environment of "forces" moving simultaneously in differing directions. Polyvalence can manifest an experience that is potentially greater than the sum of its parts, depending on the media-collection employed. Media-elements become nodal and define a set of relations over the distance of virtual space and time; later becoming related to a series of alternate authored media-elements, which add to the connective nature of the environment. Multiple conceptual relations are brought about through recontextualisation. Writing about emergent examples of virtual architecture in *An Evolutionary Architecture*, Frazer describes another perspective on the employment of the notion of the "field." He states: "The history of the form is the history of the field." (Frazer, 1995, p.112) As digital video is employed and variously juxtaposed, it also takes on an accretive meaning. It is this dimensional holistic quality of a virtual environment that separates it from many past poetic forms. Even a fragment of a media-element can contribute to the summing of a set of conveyances, as evoked within the configuration of conjoined fields. This environment is "always whole," (Frazer, 1995, p.112) and each "fragment" is both whole within itself, as well as part of a larger whole.

Hayles has chosen to elucidate a notion of fields of meaning in her book The *Cosmic Web: Scientific Field Models and Literary Strategies in the Twentieth Century*:

> The field concept, as I use the term, is not identical with any single field formulation in science… In marked contrast to the atomised 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. (Hayles, 1984, Preface II)

The World Generator experientially enables the examination of the interpenetration of media-elements. These elements are always "interconnected." They are paradoxically simultaneously modular and are available for processes of aesthetic alteration, abstraction, interpenetration and interchangeability. In a computer-based context there is always a conflation of matter and energy processes that enable interaction. It was the analogy of the paradoxical characteristics of light – being alternately a wave and a particle, that led me to the exploration of poetic elements that could take on different meanings based on their substitution in alternate contexts. It also led me to acknowledge how different meanings can arise depending on how the vuser is conceptually approaching the media.

Media interrelations are brought about through the operative nature *of The World Generator*. Time-based exploration of mutable context and emergent conceptual material are generated through poetic construction and navigation of intermingled fields. I have explored notions concerning the field in poetic works and artistic statements beginning in 1980.[7] Hayles further develops her thoughts on the concept of the field:

> The Twentieth Century has seen a profound transformation in the ground of its thought, a change catalysed and validated by relativity theory, quantum mechanics and particle physics. But the shift in perspective is by no means confined to physics; analogous developments have occurred in a number of disciplines, among them philosophy, linguistics, mathematics and literature... The essence of this change is implicit in the heuristic models adopted to explain it… A dance, a network, a field - the phrases imply a reality that has no detachable parts, indeed no enduring, unchanging parts at all. Composed not in particles but of "events" in constant motion, rendered dynamic by interactions that are simultaneously affecting each other. (Hayles, 1984, p.15)

I seek to metaphorically invoke the paradox of complimentarity where the environment can either be seen in the light of waves (an intermingling of fields) or particles (modular-media elements) depending on how it is observed. One can look at individual media-elements as presented in a menu system within my techno-poetic mechanism, or one can view a constructed world of interrelations generated from those individual elements. The mechanism does represent a "network of events" as well as a changing "energy field." In terms of energy fields, the layers of authorship in my techno-poetic mechanism enable a focused procedural set of artefacts to be generated. The economy of means – condensations, puns, polyvalent imagery etc. act as vehicles of this compression and when unpacked reveal various spokes or alternate layers of meaning.

One can begin to address the idea of environmental context in terms of "flows," and approach the notion of a "reciprocal precondition between expression and content." (Deleuze and Guattari, 1983, pp.241-242) One can observe my techno-poetic environment in terms of an enfolded set of energies functioning on different levels of abstraction and codification. The entire process functions through a series of translations and interminglings of enfolded energy flows.

Pataphysics and E-phany Physics

In the light of the emerging experiential media-domain that is made operative within *The World Generator*, "Pataphysics" can be seen as a relevant "authored" precursor. Pataphysics was coined in 1911 by Alfred Jarry in his book Exploits and Opinions of Dr. Faustrol, Pataphysician. Jarry developed a fascinating set of ideas concerning a new science within this self —proclaimed "Neo-Scientific" novel. In this fiction Jarry presents the following definition of Pataphysics:

> An Epiphenomenon is that which is superinduced upon phenomenon….Pataphysics … is the science of that which is superinduced upon metaphysics, whether within or beyond the latter's limitations, extending far beyond metaphysics as the latter extends beyond physics. Ex: an epiphenomenon being often accidental , pataphysics will be, above all, the science of the particular, despite the common opinion that the only science is that of the general. Pataphysics will examine the laws governing exceptions, and will explain the universe supplementary to this one; or less ambiguously, will describe a universe which

> can be–and perhaps should be– envisaged in the place of the traditional one, since the laws that are supposed to have been discovered in the traditional universe are also correlations of exceptions, albeit more frequent ones, but in any case accidental data which, reduced to the status of unexceptional exceptions, possess no longer even the virtue of originality.
>
> Definition. Pataphysics is the science of imaginary solutions, which symbolically attributes the properties of objects, described by their virtuality, to their lineaments. (Jarry, 1965, p.192)

It is interesting that Jarry would be discussing virtuality in 1911. There is a larger contemporary context that this definition can be seen to inform. I am here concerned with the authorship of a poetic physics in virtual space. One important relation that figures into new approaches to digital video with virtual environments comes from what I have coined E-phany Physics. E-phany Physics is defined by an author/programmer, encoded to become relevant within a constructed computer-based environment and need not adhere to the laws of actual physics. E-phany Physics is the art/science of a physics that is authored with a computer-based system, conjoining an actual space with a virtual or illusion-based space – this may also be a psycho-acoustic space. A computer-mediated environment may be actuated through differing constructed interfaces that enable a set of relational media-artifacts to be made to appear in a consistent manner. The sensual stimulus generated through interaction with such environments can be more or less palpable. An E-phany Physics can define the relative "appearance" of the behaviours of virtual objects, video-objects and/or characters as they are interacted with in a virtual space. Although such an artificial physics is authored, the illusion of such an environment can be articulated back into physical space through various forms of haptic stimulus – imagine Alice in Wonderland rendered physical… Thus an odd co-mingling or superimposition of virtual artificial physics and actual physics can be explored. There is always an actual physics, which becomes involved in the production and transmission of the artificial physics to the participant. This points back to Jarry's "science of that which is superinduced upon metaphysics."

The Slippery Nature of the Field

Barthes notion of "anchorage" – in the age of the hyper-link and virtual space, the morph – is no longer adequate to address the unfixity of the recombinant sign. Navigation in cyberspace is about mobility, passage, linkage, processes of association, "lines of flight" (see Deleuze and Guattari, 1987, p.21) and Barthes' "relay." I am not suggesting that I want to destroy the precision of language-image relations; on the contrary, I seek to observe their actual complexity in relation to the mutability of this techno-poetic environment. No single media-element is potentially more important than another in terms of signification within environments that are mutable or reconfigurable. In fact, various hyperlinks, virtual proximities and/or trajectories through media, as chosen by an interactant, can potentially (if not wilfully) shift a particular "anchorage." Specific forms of drift (non-anchorage), as well as shifting and temporary "anchorage," as Barthes describes it, have long been explored in poetic works. In the techno-poetic mechanism, the removal of anchorage enables the experiential observation of mutable context. In this case *The World Generator* enables an experiential understanding of how meaning can shift in relation to contextual change.

It is understandable that one would seek to be entirely articulate with text. Alternately, I am very much interested in the nature of ambiguity as a poetic vehicle and in how meaning is emergent over time within particular contexts. By intentionally loading a system with a resonant selection of specifically ambiguous media-elements, each carrying multiple potential conveyances, one can experientially observe how meaning is emergent in relation to context through the process of inter-authorship.

In terms of pictorial elements, I have intentionally loaded the system with computer-graphic objects that may suggest alternate readings when juxtaposed with one of the other members of the collection of media-elements housed in the techno-poetic mechanism. An emergent, time-based context of meaning is generated. Snippets of information are constantly encountered in hypertexts. We do not begin with the assumption that they are meaningless, we observe the construction of the context and how it articulates the meaning.

All language depends on context for understanding. The subtlety of context can not be underestimated nor the environmental relations which inform it. In the use of language-vehicles, we continually revise our understanding and augment, or layer with previous understandings that which we have derived from alternate contexts. In other words, thought draws upon the patterns of use that are made available to us through memory. Thought is weighed against current circumstance. This on-going process of perceptual awareness always impacts on the understanding of context.

This notion of a persistence of conceptual "presence" takes on a pivotal role in the volatile electronic environment that characterises *The World Generator's* "virtual" space. Peirce's process of "modification" is always in an ongoing mode of application. (Peirce, 1931, p.171)

I am suggesting the need for the formulation of a contemporary theory of environmental meaning as it is generated and explored within computer-based environments. The concept of Fields of Meaning present a rich set of constructs to build upon.

Eisenstein's Relevance

In *How I Became a Director*, Eisenstein suggests the following about the birth of montage:

> From the process of production, a technical term has passed into linguistic currency, designating a mechanical assembly, a set of water conduits, or machine tools. The beautiful word for such a construction is – 'montage.' (Eisenstein, 1945, p.245)

Eisenstein also spoke about "montage" in relation to the notion of a machine-like juxtaposition of fragments: "Montage is a beautiful word: it describes the process of constructing with prepared fragments." (Aumont, 1987, p.150)

The World Generator, made operative through computer-science, literalises the operational nature of a juxtaposition of "prepared fragments." I am seeking to construct a bridge between science and art exploring a concept analogous to the employment of media "fragments" as a poetic construction strategy. The "fragments" spoken of above suggesting that this system could be "like a machine," elucidated in terms of film technology, is central to my discourse. In the historical sense, this again re-states the notion of a hardware/software paradigm: film (software), working in tandem with a machine (hardware) – the projector, whereas computers enable random access to data, as well as abstraction and manipulation processes, film is a linear, time-based medium. It is the computer that facilitates ease in the ordering, re-ordering and complex virtual spatial positioning of time-based digital video. In film, montage is facilitated by the cut, where film passes in front of an illuminating source, bringing about the viewing of an alternate image. In Virtual Reality, the image is constantly being generated through light emissions. Although the space appears continuous, it is generated through on/off alterations of pixels, comparable to the filmic cut but functioning on a minute, computer-based scale. The appearance of designated media-objects is generated by the virtual proximity code, which activates changes in pixel states. These changes are made in groups and thus generate the illusion of the particular spatial media-relation. The filmic cut occurs in the time/space of the film pull-down, between individual frames; virtual change occurs in the time space of a grouping of pixel changes and is equal to the refresh rate of a given computer.

The mechanism created for my project makes potential filmic (digital video) "fragments" and other media-elements operative to the user of the system, dimensional in a different way to that of film. These fragments can potentially be organised in a virtual space – positioned and repositioned across a media landscape.

Like Eisenstein's montage, media-elements, when juxtaposed, generate a "creation" which is greater than the sum of its parts:

> The basic fact was true and remains true to this day, that the juxtaposition of two separate shots by splicing them together resembles not so much a simple sum of one shot plus another shot – as it does a creation. It resembles a creation – rather than the sum of its parts – from the circumstances that in every such juxtaposition the result is qualitatively distinguishable from each component element viewed separately. (Eisenstein, 1974, p.8)

It is this aspect of "creation" that is central to the generation of emergent meaning. Eisenstein further articulates his concept of creation:

> The strength of montage resides in this, that it includes in the creative process the emotions and the mind of the spectator. The spectator is compelled to proceed along that selfsame creative road that the author travelled in creating the image. The spectator not only sees the represented elements of the finished work, but also experiences the dynamic process of the emergence and assembly of the image just as it was experienced by the author. (Eisenstein, 1974, p.32)

Unlike Eisenstein, there is not a pre-edited entity that the participant experiences, but there is, however, an operative realm of probability, in which the menu system functions as a constant. The participant becomes actively involved with inter-authorship – a heightened engagement, in which the participant "experiences the dynamic process of the emergence."

Eisenstein was influenced to some degree by Japanese poetics, in particular the compressed form of the Tanka. He was well informed about the use of Hieroglyphs: "Hieroglyphs developed from conventionalised features of objects, put together, express concepts i.e. the picture of a concept – an ideogram." (Eisenstein, 1949, p.25) He went so far as to suggest that a Tanka (a short Japanese poem) could be seen as a kind of shot list. He wrote, "From our point of view, these are montage phrases. Shot lists. The simple combination of two or three details of a material kind yields a perfectly finished representation of another kind – psychological." (Eisenstein, 1949, p.32) It is this psychological space, generated through the perception of the spatial juxtaposition of media-elements, that contributes to an exploration of emergent meaning. Eisenstein pointed toward the conjunction of the denotative (text) and the depictive (picture) in Japanese arts, stating "Not only did the denotative line continue into literature, in the Tanka, as we have shown, but exactly the same method (in its depictive aspect) operates also in the most perfect examples of Japanese pictorial art." (Eisenstein, 1949, p.32)

The functionality of *The World Generator/The Engine of Desire* presents a new technological form of spatial montage. Where Eisenstein explored fixed splices of filmic time, I am exploring a splice of volumetric space, or virtual graft. Visually, this is manifested in two ways in the generative world – the vuser sees menu items and when one is selected, observes this media-element entering the space through a spatial dissolve and/or digital cut. The vuser, through their choice, brings about dynamic cut-like changes in the dimensional space. These decisions enable instantaneous, evocative, collisions or interpenetrations of media-elements.

Eisenstein, in speaking about montage, suggests that it was a form of "collision." "A view that from the collision of two given factors arises a concept." (Eisenstein, 1949, p.37) He continues, relating such an idea to metaphors from physics:

> Recall that an infinite number of combinations are known in physics to be capable of arising from the impact (collision) of spheres. Depending on whether the spheres be resilient, non-resilient or mingled. (Eisenstein, 1949, p.37)

This quote falls neatly into my discussion of fields of meaning, E-phany physics and meaning force as described earlier. Eisenstein explores this notion of force from the perspective of "conflict." He goes on to say:

> So, montage is conflict. As the basis for every art is conflict (an "imagist" transformation of the dialectical principle). The shot appears as the cell of montage. Therefore it also must be considered from the viewpoint of conflict. (Eisenstein, 1949, p.37)

Although virtual reality is spatial, it is constructed through the presentation of a sequence of spatial two-dimensional views of a three-dimensional space. Immersive virtual space is simultaneously generated by presenting two slightly different perspectives of the three-dimensional space. I have chosen to show only a singular high-resolution data-projection in displaying The World Generator. Although the technology has changed from film to the computer, we are still experiencing an expanse of vision – individual frames that are merged through engagement with the persistence of vision facilitated within this time-based technology. Conflict, or meaning-forces (as I have referred to them above) are juxtaposed within this virtual terrain, both through spatial location (at any given moment arising from the perspective of the vuser), and time-based relative proximity (derived through vuser interaction with the system). Media-elements can be juxtaposed presenting digital cut-like transitions within the environment through slow spatial revealing (as derived during navigation), radical juxtaposition brought about through media-behaviours, and selected engagement with computer based processes presented on the menu and by vuser selection and placement within the environment.

Eisenstein outlines a series of relevant "cinematographic" conflicts, which I believe directly, relate to the operational nature of the techno-poetic mechanism:

> Conflict of graphic directions (lines-either static or dynamic).
>
> Conflict of scales.
>
> Conflict of volumes.
>
> Conflict of depths.
>
> And the following conflicts, requiring only one further impulse of intensification before flying into antagonistic pairs of pieces:
>
> Close shots and long shots.
>
> Pieces of graphically varied directions.
>
> Pieces resolved in volume, with pieces resolved in area.
>
> Pieces of darkness and pieces of lightness.
>
> Conflicts between an object and its dimension - and conflicts between an event and its duration.

> The compression of all cinematographic factors and properties within a single dialectical formula of conflict is no empty rhetorical diversion.
>
> We are seeking a unified system for methods of cinematographic expressiveness that shall hold good for all its elements. The assembly of these into series of common indication will solve the task as a whole.
>
> Experience in the separate elements of the cinema cannot be absolutely measured. (Eisenstein, 1949, pp.38-39)

I would suggest that the word "conflict" specifically embodies Eisenstein's interest in certain heightened forms of meaning-force. I have outlined earlier the dynamic functionality of my device. We can see the parallels to Eisenstein's list of "conflicts" to operations that are made interactive within the generative virtual environment (although "meaning-force" can be seen to be functioning on a more subtle "force" level). I have spoken of the time-based summing of meaning forces and my interest in loading fields of meaning with particular subject matter to achieve an outcome which is greater than the sum of its parts, although I am pushing beyond the confines of film. Eisenstein posits this description which also sheds light on experience in my generative virtual environment:

> These stimuli are heterogeneous as regard their "external natures," but their reflex-physiological essence binds them together in iron unity. Physiological in so far as they are "psychic" in perception, this is merely the psychological process of a higher nervous activity.
>
> In this way, behind the general indication of the shot, the physiological summary of its vibrations as a whole, as a complex unity of the manifestations of all stimuli, is present. This is the peculiar "feeling" of the shot, produced by the shot as a whole.
>
> ... The basic indication of the shot can be taken as the final summary of its effect on the cortex of the brain as a whole, irrespective of the paths by which the accumulated stimuli have been brought together. Thus the quality of totals can be placed side by side in any conflicting combination, thereby revealing entirely new possibilities of montage solutions. (Eisenstein, 1949, p.67)

Eisenstein foresaw the neural collage that makes up experience – a registering of experience that happens "irrespective of the paths by which the accumulated stimuli have been brought together." He is keenly aware of the emergent conceptual realm brought about through the exploration of media. He even foresaw the genetic relations that are also inherent to my approach: "As we have seen, in the power of the very genetics of these methods, they must be attended by an extraordinary physiological quality." (Eisenstein, 1949, p.67) It is the operational characteristics of my device that takes my practice to a different communicative space than filmic montage. My virtual environment is constructed of a multiplicity of visual media-elements and can be seen as singular computer-based shots, which nest these varying components.

The nature of spatial "patterning," brought about through interactive techno-poetic construction, enables one to explore "neighboring" (Saint-Martin, 1990, p.69) relations in a dynamic manner. The World Generator functions as a discourse mechanism that seeks, as a subtext, to help us understand a set of dynamic meaning-relations and to potentially apply that knowledge to situations which may arise outside of the device.

Conclusion

The exploration of digital video within a generative virtual environment presents a series of exciting new potentials for computer-based media. The non-logocentric approach to media-elements through various

forms of generative abstraction presents a new emergent form of evocative media exploration. The concept of fields of meaning and meaning-force suggests the beginning of a new approach to understanding interactive media in a dynamic manner where meaning is emergent based on individual interactivity within particular authored and inter-authored environments. The re-understanding of montage in terms of virtual space helps to illuminate such a non-fixed media space. Virtual space presents an exciting new environment for engaged exploration of video imaging.

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1 The World Generator / The Engine of Desire - See my Ph.D. dissertation entitled Recombinant Poetics: Emergent Meaning as Examined and Explored Within a Specific Generative Virtual Environment, (Seaman, 1999)

2 Recombinant Poetics: The term "recombinant poetics" was created by the author in 1995. It was introduced to Roy Ascott as a potential area of investigation at CAiiA during ISEA (September 1995) and registered within the application title in December, 1995. Work delineating the concept was first published on the World Wide Web in April, 1996 on the CAiiA web site: <http://caiiamind.nsad.gwent.ac.uk>. 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) and Diana Gromala. Gromala is currently working on a book called Recombinant Devices: Ideologies of Virtual Design. 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, recombinational systems can be witnessed in my art work as early as 1981.

3 The term Vuser was coined by seaman 2/5/98

4 Rhizomatic space — DELEUZE, G. and GUATTARI, F. 1987. A Thousand Plateaus: Capitalism and Schizophrenia. vol.2. Trans. by Brian Massumi. Minneapolis: University of Minnesota Press. P. 21

5 See such artists as Lynn Hershman-Leeson (then Lynn Hershman), Luc Courschesne, Grahame Weinbren, Peter D'Agostino, Michael Naimark, Ken Feingold and myself (among others) working with interactive video.

6 The coloreme defined: A zone of the visual linguistic field correlated to a centration of the eyes. It is constituted by a mass of energetic matter presenting a given set of variables. This primary element of visual language is made up, from a semiotic point of view, of a cluster of visual variables... (Saint-Martin, 1990, p.5) He goes on to say: The coloreme is immediately structured as a topological region. Visual perception is realized through a positioning of the eye in the direction of the visual field, called an ocular centration or fixation... Given the richer visual potentialities of the two central sources of vision, we have defined as a coloreme the area of the visual field which is the product of two interrelated zones: (1) a central area more

precise, dense and compact, corresponding to foveal vision; and (2) some peripheral layers, less dense, but still rich in colors, corresponding to macular vision. On the objective plane of representation, the coloreme corresponds to any colored quality located at the termination point of an ocular fixation and contributing to the formation of a visual percept. The very definition of the percept as an entity structured as a field of forces (Gurvitsch, 1957, p.114) requires that the minimal unit by semiotics to a visual language be a material zone sufficiently large for perceptual mechanisms to be realized. (Saint-Martin, 1990, p.6)

7 The exploration of notions related to the field concept began in 1980 with my work "One Around Which / A Substitution Trajectory in Relation to Subatomic Particle Observation - Congruent Circular Architecture" Seaman 1980; I have also used the concept of fields of meaning to describe my work for many years i.e. see the artist statement "Foci / Resonance" Seaman 1986.