Re-embodied Intelligence

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Abstract:
Re-embodied intelligence can be defined as the translation of media elements and/or processes into a symbolic language enabling those elements and processes to become part of an operative computer-mediated system. The ability to "translate" the aesthetic conceptions of an author into a form that is operative within a technological environment, is fundamental to the creation of interactive artworks. We will consider "intelligence" as referring to activities we have in the past considered *intelligent*, like "playing chess say or recognising visual images." (Aleksander, p13) In the creation of artworks the artist employs modes of thinking that might be considered illogical, nonsensical, intuitive, metaphorical, non-linear. The *intelligence* embodied in an individual's art practice, functions in the service of their poetics. Already, in 1962, Eco saw the need for the use of multi-value logics, in terms of art production, which were "quite capable of incorporating indeterminacy as a valid stepping-stone in the cognitive process." (Eco, 1989, pps.14&15) How can the artist develop systems which re-embody multi-value logics, to work inter-dependently with systems which have traditionally been seen as singularly logical and non-emotive? Is there a set of salient properties intrinsic to interactive art production, that the artist can explore to become an "author" of responsive, self regulating systems, enabling "intelligent" emergent poetic responses to viewer interactivity?

Re-embodied Intelligence

Re-embodied intelligence can be defined as the translation of chosen media elements and/or processes into a symbolic language enabling those elements and processes to become part of an operative computer-mediated system. If we think about the creative processes artists go through in the making of non-computer-mediated works of art, is there a way to model these processes and re-embody them within a computer mediated environment? Along with the transformation of traditional media: photography, collage, concrete poetry, music etc. into the digital domain, how can artists generate models which are entirely driven by the new potentials of recombinant image, sound and text space inherent to the computer. In a sense we can think of a novel as a kind of condensed

re-embodiment of the focused perceptions of the author, as presented via the technology of a book. Computers present a medium which heightens the potential for an intermingling of the intelligence of the viewer with the "re-embodied intelligence" of an author or set of authors. I am seeking to define a set of processes which are relevant to the production of interactive art, where the computer might function as a mediated extension of focused perception, both in terms of "sensing" and "responding?" The ability to "translate" the aesthetic conceptions of an author into a form that is operative within a technological environment, is fundamental to the creation of interactive artworks.

A work of art can be seen as a container or vehicle of content. It contains the artefacts of thought and/or action of the artist. As works of art are authored that explore "operable" media, technological environments which enable the generation of emergent content open up entirely new fields of poetic investigation. We could think of these technological artworks as self-organising synthetic organisms which generate new vehicles of content based on a series of rule based procedures. These processes can reflect and embody the poetic sensibilities of the artist and function as a sensual extension of those sensibilities. It is intersting to note that Alan Turing speaks of "input" and "output" organs in his *Turing's ACE Report of 1946* (Turing, 1986), suggesting notions of sensing in the discussion of an Automatic Computing Engine.

Computers function via code. We can look at the code in terms of a series of 'authored' layers on a number of levels. We start at the bottom, with assembly language, we then have various other logical layers which now enable the construction of an upper layer of code which metaphorically floats on the surface of the system, being potentially non-hierarchical as well as non-linear. One can examine media objects as having a punning functionality; outwardly to the viewer, these media elements are carriers of content; inwardly - these elements enable the functionality of symbolic logic. I am examining computers as being expressive vehicles, propagating operative poetic elements via this series of interdependent levels of responsive "code" authoring.

The genealogy of such ideas can be historically traced. One could say that it was the intersection of poetics and mathematical logic which enabled the intuition in Ada Lovelace that eventually led to what came to be called computer programming. In the year 1842, in her *Notes by The Translator* written to clarify the work *Sketch Of the Analytical Engine Invented by Charles Babbage* which was authored by L. F. Menabrea, Ada Augusta, Countess of Lovelace, made some very enlightened remarks.

> The Analytical Engine is an embodying of the science of operations, constructed with particular reference to abstract number as the subject of those operations... Again, it [The Analytical Engine emphasis the author] might act upon other things beside *number* were objects found whose mutual fundamental relations could be expressed by those of the abstract science of operations, and which should be also susceptible of adaptions to the action of the operating notation and mechanism of the engine. Supposing for instance, that the fundamental relations of pitched sounds in the science of harmony and of musical composition were susceptible of such expressions and adaptions, the engine might compose elaborate and scientific pieces of music of any degree of complexity or extent... It may be desirable to explain, that by the word operation, we mean any process which

alters the relation of two or more things, be this relation of what kind it may. This is the most general definition and would include all subjects in the universe. ([Lovelace as found in]Babbage, 1961, p.249)

I find it fascinating that one of the first remarks related to computer programming would be to suggest that such mechanisms could become the vehicle of aesthetic inquiries.

In interactive works, viewers access processes which have been specifically authored enabling them to interact with the system which houses them. Emergent content can be generated as a product of this interaction. It is now possible to author interactive art works that exhibit "intelligent" responsiveness to viewer input. In *Thinking Machines, The Search for Artificial Intelligence* by Igor Aleksander and Piers Burnett, the authors state:

> Rather than becoming embroiled in the controversies which surround the nature of human intelligence, the practitioners of artificial intelligence have generally chosen to define their goals in empirical or operational terms rather than theoretical ones. An intelligent machine, they suggest, is able to do things which, if done by people, would be judged to require intelligence. On this basis, a definition of intelligence becomes unnecessary: The researcher simply choses a task that seems to require intelligence (playing chess say or recognising visual images) and tries to build a machine that can accomplish it. (Aleksander, p13)

In this case, I am suggesting that the creation of works of art, which are intelligently responsive to viewer input, are thus exhibiting a form of intelligence. Like Aleksander and Burnett I also choose to leave the definition of "intelligence" open. Here, "intelligence" will be explored in the context of a new form of poetic construction which I call "Recombinant Poetics."[1] Artworks which explore "Recombinant Poetics" are characterised by the interaction of a viewer with a system of meaning which carries compressed potential meaning constructed of operative language, image and sound elements within an authored technological environment. The term "Recombinant Poetics" coined by the author in 1995, utilises the concept of recombinant DNA in a metaphorical manner, referring to technologically manipulated modules of sound, image and text which are "spliced" and/or recombined.

In works of art, processes which enable "intelligent" responsiveness within a computer-mediated system, may take many different forms, each related to the vision of the individual artist. In this way, the definition of "intelligence" can be slightly different than the machine "intelligence" associated with AI, although it would be inclusive of the definition mentioned above. An art work can intelligently explore nonsense, paradox, shifting fluid states of meaning, intentional displacement, sarcasm, irony, specific sonic qualities, poetic language/image/sound relations etc. Areas which might be seen as too difficult or absurd to tackle under the auspices of Artificial Intelligence. For me, these areas of artistic investigation represent a rich exploration of potential content and exemplify machine-mediated intelligence.

As stated above, the translation of specific aesthetic processes into an operative computer-mediated form can be facilitated through the modelling. In recent works I have

modelled the artistic processes of writing a sentence in *The Exquisite Mechanism of Shivers*;[2] of writing short poems in *Passage Sets / One Pulls Pivots at the Tip Of the Tongue*;[3] and of constructing virtual "installations" or 3D Image/Sound/Text worlds in my work *The World Generator / the Engine of Desire*.[4]The responsiveness of these works, to viewer interaction, could be considered "intelligent" based on the definition presented above. The machine functions as a vehicle of my sensibilities which are activated and explored by the participant during poetic construction and navigation, enabling various levels of inter-authorship. I have "translated" models of particular processes, incorporating chosen/constructed recombinant elements, so that they can be explored within operative computer-mediated interactive art works. For example, In The World Generator / The Engine of Desire, one menu selection constructs an entire "world" based on a set of aesthetic parameters which have been authored by myself working in conjunction with the programmer Gideon May. It must be noted that re-embodied intelligence seeks to answer problems on an individual level of artistic production as opposed to the "universal" attempts of artificial intelligence. Thus different artists will re-embody their sensibility differently. It has been suggested that such a system actually functions as a re-embodied mind set. Chris Dodge also observed in conversation that the goal of such a system might actually be a form of re-embodied wisdom. The *intelligence* embodied in an individual's art practice, functions in the service of their poetics. Already, in 1962, Eco saw the need for the use of multi-value logics, in terms of art production, which were "quite capable of incorporating indeterminacy as a valid stepping-stone in the cognitive process." (Eco, 1989, pps.14&15)

Eco from The Open Work:

> The notion of "possibility" is a philosophical canon which reflects a widespread tendency in contemporary science; the discarding of a static, syllogistic view of order, and a corresponding devolution of intellectual authority to personal decision, choice, and social context.

> If a musical pattern no longer necessarily determines the immediately following one, if there is no tonal basis which allows the listener to infer the next steps in the arrangement of the musical discourse from what has physically preceded them, this is just part of a general breakdown in the concept of causation. The two-value truth logic which follows the classical aut-aut, the disjunctive dilemma between true and false, a fact and its contradictory, is no longer the only instrument of philosophical experiment. Multi-value logics are now gaining currency, and these are quite capable of incorporating indeterminacy as a valid stepping-stone in the cognitive process. In this general intellectual atmosphere, the poetics of the open work is particularly relevant: it posits the work of art stripped of necessary and foreseeable conclusions, works in which the performer's freedom functions as part of the discontinuity which contemporary physics recognises, not as an element of disorientation, but as an essential stage in all scientific verification procedures and also as the verifiable pattern of events in the subatomic world. (Eco, 1989, pps.14&15)

Contemporary art practice is in a continuous state of redefinition. Thus, any operative contemporary definition of poetics would have to include that which the artist deems as poetic. The intention of the artist becomes central, in that

speculative works of this nature may function as the computer-mediated positing of a question as well as an answer.

The definition of "embody" follows:
1. to give bodily form to; to incarnate; to make corporeal; to invest with matter; as to embody the soul or spirit; a form embodied.
2. to give definite, tangible, or visible form to; to make concrete; as his speech embodied democratic ideals.
3. to collect and include (material) in a book, system, statue, etc.
4. to make (something) part of an organised whole; incorporate; as our ideas are embodied in the committee's report.
Synonyms- methodise, systematise, codify, incorporate, aggregate, integrate, compact, introduce, enlist, combine, comprehend.

Each of the different spokes of this definition are explored in terms of my art practice, as they are applied to the term "Re-embodied intelligence." The notion of "giving bodily form to" and "incarnating" is explored in my work in that I include my digitised voice. This presents a paradoxical examination of presence/absence as related to the sonic artefacts of the body via the presentation of emotive spoken language. Poetic language, image, and sound elements are given "definite," "tangible" form within the operative networks which characterise my work; they form a "collection" of variables within a "system;" like a "statue" the works embody aesthetic, representational elements; and each work is presented as a particular system of "organisation" for media material.

Central to a technological history relevant to Recombinant Poetics, is the notion of viewer association triggered via "conceptual machines." A "conceptual machine" can be defined as a machine engendered by language and in some cases via images. Such language can be in the form of a description, a recipe, a poetic text (as in Duchamp's Green box, Fluxus Boxes and operative poetic works by Raymond Queneau), a working virtual model, as well as in the form of language "translated" onto a punched card (as in the Jacquard loom and Analytical Engine); via an algorithm or through the operative properties of computer code as linked to a graphical user interface and/or expressive external device (robot, videodisc, etc.).

Artworks which explore 'Re-embodied Intelligence' do so on a case by case basis, where the author and programmer translate a particular art related process or aesthetic into a computer mediated, operative form. Art embraces a myriad of expressions. In Recombinant Poetic works, relative shifting fluid states of content can be explored by the viewer in the process of navigation and poetic construction. We might see this as a paradoxical exploration of smooth and striated space in that discreet modules, when recombined enable emergent content. I will end here with a final quote by Ada Lovelace:

> In abstract mathematics, of course operations alter those particular relations which are involved in the considerations of number and space, and the results of operations are those particular results which correspond to the nature of the subjects of operation. But the science of operations, as derived from mathematics more especially, is a science of itself, and has its own abstract truth and value; just as logic has its own peculiar truth and value,

independently of the subjects to which we may apply its reasonings and processes. Those who are accustomed to some of the more modern views of the above subject, will know that a few fundamental relations being true, certain other combinations of relations must of necessity follow; combinations unlimited in variety and extent if the deductions from the primary relations be carried on far enough. ([Lovelace as found in]Babbage, 1961, p.249)

I find it a lovely irony that the computer, a mechanism entirely based on logic, can be used to explore non-sense as well as illogical and elusive resonant content through navigation and poetic construction in Recombinant Poetic works.

1 Recombinant can be defined as follows, "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."(Parker, 1989) Recombinant DNA technology can be defined as follows, "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." (Parker, 1989) The term "Recombinant Poetics" utilises the concept of recombinant DNA in a metaphorical manner, referring to technologically manipulated modules of sound, image and text which are "spliced" and/or recombined. 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 withing the application title in December, 1995. Work delineating the concept was first published on the World Wide Web in April, 1996 on the CAiiA website: 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). 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*. The notion of modular, recombinational systems can be witnessed in my work as early as 1981.

(2) The Exquisite Mechanism of Shivers   c 1991 Seaman

(3) Passage Sets / One Pulls Pivots At The Tip Of The Tongue   c 1995 Seaman

(4) The World Generator / The Engine of Desire   c 1996/97 Seaman

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