

# Conversations, P-individuals, Avatars: A Cybernetic Learning Strategy for the Metaverse

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The Groundcourse was a revolutionary art educational strategy, based upon Cybernetics and Radical Constructivism, developed and implemented in England during the 1960's, by Roy Ascott. Today, almost 50 years later, the principles and the underlying cybernetic theories of the Groundcourse are being adapted towards an artistic learning domain called ground<c>, which will be situated in online user generated builder's worlds, also called the metaverse.

While Ascott worked in the physical world and through physical means only; ground<c> will be able to enjoy the affordances which a digital world brings to bear upon such a venture. Of particular interest is the three dimensionally embodied virtual avatar, with its shape-shifter attributes. Alongside the usage of a singular avatar, the ability to create “*organizationally closed*” systems through constellations of multiple avatars, all belonging to one learner is of primary importance. Such systems, evoked by one person, may carry potentialities to “*know by themselves*”, as well as possess intrinsically enhanced creative capabilities, much akin to literary pseudonyms and heteronyms. In terms of a creative learning strategy however, confronting multiple facets of one's own persona may evoke oftentimes much needed behavioral change – the fundamental aim of the Groundcourse.

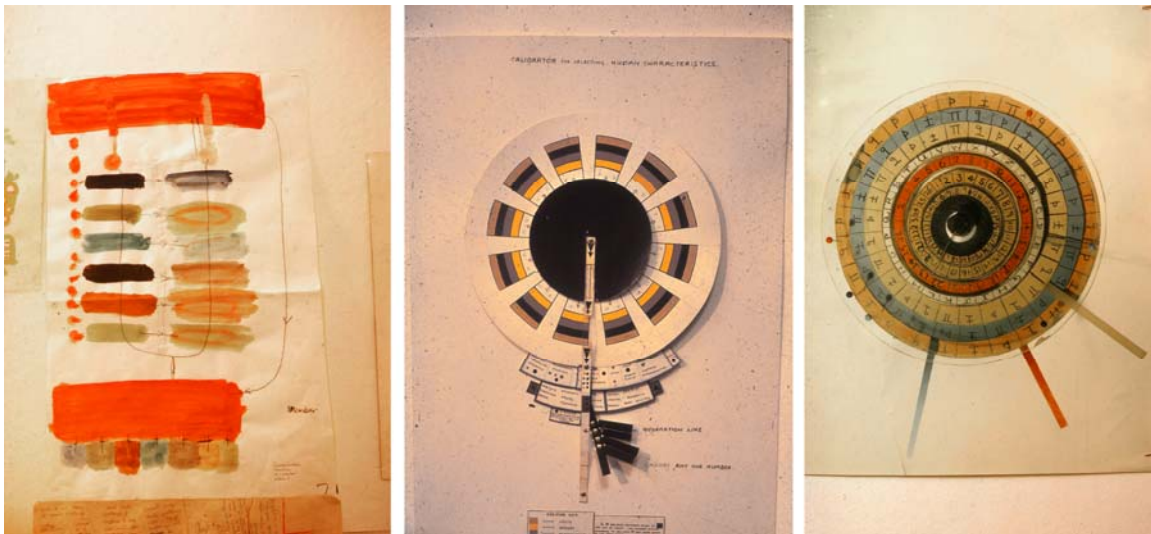
## Origins

Combining Cybernetics and constructivist educational theory, the Groundcourse devised a flexible structure, “*within which everything can find its place and every individual his way*”. The outcome was a 2 year art foundation course, which created an environment that would “*enable the student to become aware of himself and the world, while enabling him to give dimension and substance to his will to create and change*”, achieved through a drastic breaking down of preconceptions related to self, art and creativity. Thus the operative principle that was employed was one of providing a setting that fostered the rethinking of preconceptions, prejudices and fixations with regards to self, society, personal/social limitations, art and all the ensuing relationships through a carefully thought out, coordinated and orchestrated range of assignments and exercises that entailed behavioral modification and indeed change.

The first year was devoted to countless exercises of creative problem solving, ranging from drawing exercises to the acquisition of artistic skills and perception; that could at times seem

absurd, aimless, even terrifying. Empirical enquiry to precise questions was balanced by scientific study; irrational acts by logical procedures. At the core however was a concept of power, the will to shape and change, this indeed being The Groundcourse's overriding educational goal. Cybernetics and behavioral sciences were studied regularly. While the nature of drawing was re-examined, the values of perspective and mechanical and architectural drawing were practiced and tested against problems of space. Natural growth and form was examined in the context of scale and reproduction, while other studies examined the modes of human perception. Students set about analyzing and inventing games, logical propositions, idea sequences, and matrices in which codes were designed and broken. Thus, *“in this first-year course, the student is bombarded at every point with problems demanding total involvement for their solution. Ideas are developed within material limitations and in the abstract. For the teachers, the formulation of problems is in itself a creative activity...”*

The work environment devised by Ascott imposed physical restrictions upon the learner in that students were challenged to work under certain constraints on individual behavior and ideas. Ascott called these restrictions *‘irritants’* and defined them as the educational aids of limitation which were employed in the pursuit of creative enablement, further emphasizing that *“the intention of the Groundcourse is to create an organism which is constantly seeking for irritation”* (2003).



*Figure 1: Student work from the Groundcourse years.*

During the second year of the Groundcourse the problem that students had to address was the task of acquiring and acting out a totally new personality, one which was largely the converse of what they would consider to be their normal *‘selves’*. These new personalities were monitored with *‘calibrators’* that were designed to read off responses to situations, materials,

tools, and people within a completely new set of operant conditions. These responses were then used in the creation of mind maps which would be used as consultational charts enabling handy reference to behavior pattern dictated by change in the limitations of space, substance, and state. These 'new' personalities were asked to form hexagonal groups which had the task of producing an ordered entity out of substances and space, with severe impediments applied upon individual behavior and ideas, forming the 'irritants', the above mentioned educational aids of limitation. Thus, during the assignment the irritation of the organism was applied in three different directions, the biggest of which was towards the social relationship of the individual to his environment, given that he/she was operating under a novel and unfamiliar identity. This was further compounded by the fact that limitations inherent in material conditions and those involving novel conceptual possibilities, which would inevitably emerge through the enactment of an unfamiliar persona, would also have to be taken into account for a satisfactory conclusion of the work.

Students were then invited to return to their former personalities, making a full visual documentation of the whole process in which they had been engaged, searching for relationships and ideas unfamiliar to art, reflecting and becoming aware "*of the flexibility of their responses, their resourcefulness and ingenuity in the face of difficulties. What they assumed to be ingrained in their personalities they now tend to see as controllable. A sense of creative viability is being acquired*" (Ascott, 2003).

### **Avatar Constellations**

Roy Ascott employed the creation, enactment and observation of new personalities as an integral unit of his learning system. This is of particular significance in the virtual domain where not just one such new personality, but a whole pantheon of diverse identities can be created by a single individual. Ascott brought the above described second order cybernetic construct into being through groupings of individual students. This approach can certainly be brought into play in a metaverse through the participation of discrete individuals. However, a second approach, involving the many different facets of a single individual, engaged in self-reflective observation, may also be in the offering:

Avatars play an important role in structuring social interactions, as their inhabitants both consciously and unconsciously use them in ways very similar to their material body (Damer, 1997). While the basic avatar is a human of either sex, avatars can have a wide range of physical attributes, and may be clothed or otherwise customized to produce a wide variety of humanoid and other forms. Avatars may be completely creative or representational. Furthermore a single person may have multiple accounts, i.e. 'alts'. Also, a single Resident's appearance can vary at will, as avatars are very easily modified. Given that they visually portray an inhabitant and allow visual communication, Suler (2007) also contends that avatar

appearance is crucial for identity formation in virtual worlds to the extent that Reid describes them as a “‘*real*’ person’s proxy, puppet or delegate to an online environment” (1997).

Research conducted by Bailenson and Yee (2007), verifies the profound nature of the relationship of the individual to his/her avatar. Studies on addiction, on whether the changes in self-representation that virtual environments allow individuals affect behavior both in-world as well as in ‘*real life*’, the motivations of participation and play, related to demographics such as age, gender and usage pattern, investigation into the benefits of embodied perspective-taking in immersive virtual environments, research into whether social behavior and norms in virtual environments are comparable to those in the physical world all show that there is indeed ample material for implementing an educational methodology that embraces the breaking up of behavioral ruts due to preconceptions related to self, society and creativity through the realization and enactment of new personalities, through the avatar.

Yee and Bailenson further demonstrate the relevance of the physical attributes of the three dimensional avatar to online social success. Their studies (2009) showed that both the height and the attractiveness of an avatar determine how players interact within the online community. One of the most significant findings, however, was the ‘*Proteus Effect*’, after which the study itself was named – social interactions in the virtual world ‘*carried over*’ into the physical realm, so that their virtual bodies had considerable impact on subsequent ‘*real world*’ interactions amongst the participants of the experiment.

### **The Alt Avatar**

Alt avatars are supplementary accounts through which a virtual world resident can operate as a separate entity, together with or separately from the main avatar. While some users prefer to operate these alternative identities as standalone personalities, an equally common scenario is that many different alt avatars are logged into the system concurrently, creating setups which are almost akin to child’s play involving many dolls.

In most cases the main avatar represents the primary persona of the human handler, while alt avatars are supplementary virtual identities through which a virtual world resident can operate, together with or separately from the main avatar.

Although the main avatar is an essentially socially interactive being, most alt avatars are created to perform in full isolation. Boellstrof (2008) informs us that most alt avatar are created in virtual worlds for distinct reasons such as the pursuit of concentrated creative activity, the management of funds, and the testing of new design work. Solitary sightseeing as well as a diverse range of exploratory activities which require heightened levels of application are also amongst the reasons given for the creation of alt avatars. Such alt avatars can be defined as private alts, through whom a resident seeks to escape the social network temporarily in order to accomplish a specific task in an uninterrupted manner.



Figure 2: Virtual photograph of 4 alt avatars in Second Life®.

Of particular interest, however, are supplementary avatars who, just like the main avatar, are created for purely social reasons. These supplementary avatars fully engage in all social interactions, albeit of a different nature than those of the main avatar. They are the social alt avatars who are created to embody alternative selves “*in which the more fundamental personality of the real person is still driving in the background but filtered through a different surface persona*” (Boellstorf, 2008). Indeed, these social alt avatars would appear to be the ones created with the sole aim of exploring the multiple identities embedded within the psychic make up of their owners. This task is often accomplished through highly complex social interactions: In some cases social alt avatars will have entirely autonomous social lives, moving in circles that can be similar or very different from those of the main avatar. However, equally common are shared social lives between the main avatar and any number of his or her supplementary social alts.

The appearance of the social alt avatar begins to acquire considerable significance when placed in juxtaposition to the appearance of the main avatar. Typically, but not invariably, the main avatar is designed to look like or at least be the idealized version of the Real Life persona. Conversely, social alt avatars can manifest in vastly different shapes of both sexes. They can also be androgynous and may often possess non-human attributes. Very often these deviations from the physical attributes of the human being behind the keyboard are so

pronounced that virtual world residents often refer to their alt avatars as a ‘*costume*’ or a ‘*mask*’, thus emphasizing the difference between their Real Life selves and the alternative persona they project through the alt avatar. Furthermore, social alt avatars can also be expert shape shifters, manifesting in many diverse forms even within a time span of a few hours, if not indeed minutes.

One important consideration where social alt avatars are concerned is concealment. Since the attributes of social alt avatars will often diverge dramatically from the actual physical bodies of their handlers, a veiling of the Real Life persona would seem to be necessary as an almost built-in part of this self-exploratory game. So, as an example, the usage of voice-based communication in Second Life® resolutely remains unpopular due to the inevitable disclosure of social, cultural, national, as well as sexual identities, which the usage of voice (as opposed to text chatter) brings to the fore (Ayiter, 2010).



*Figure 3: Virtual photograph of 4 alt avatars in Second Life®.*

As is also the case with a single child’s play involving multiple dolls, the multiple alt avatars/identities of a single individual will come in many shapes. While some of these created personas will have distinct human character traits of either sex, as well as unique idiosyncrasies which are then underscored through apropos human appearances and behavior, others may also display non-human attributes such as animals, plants or mechanical

creations that have corresponding personality traits. And even further, many alt avatars are hybrid creations which incorporate characteristics and cross-characteristics from all of these domains – the human, the non-human, the animate and the inanimate.

Since a sizable amount of playful activity in the metaverse centers upon creative pursuits these multiple identities are often employed as the distributed actors of such undertakings. Mostly this type of activity is to be observed in virtual photography or video work in which alt avatars are used as the actors or models of the enterprise. Less common are cases in which groups of alt avatars are used for building activity. An experiment of the latter kind has been conducted for the past 2 years by the author who is operating a fashion design business in the builder's world of Second Life®. Thus, alpha.tribe is an enterprise wherein five alt avatars work as five fashion designers, each alt working with his or her distinctive style, reflecting different aspects of the creative persona of the human behind the keyboard (Ayiter, 2010).

On this account, this study aims to bring about this constituent pursuit of the Groundcourse through the avatar, the all important protagonist of three dimensional online virtual worlds. The efficacy of such a shift from the *'real'* to the *'virtual'* is also substantiated by cyberpsychological research which presents empirical evidence that the acquisition of novel characters creates behavioral change not only within the virtual environment itself but also, by extension, in real life.

### **Cybernetics, Learning and the Creative Fields**

Cybernetics is the science that studies the abstract principles of organization in complex systems. It is concerned not so much with what systems consist of, but how they function; focusing on how systems use information, models, and control actions to steer towards and maintain their goals, while counteracting various disturbances. Being inherently transdisciplinary, cybernetic reasoning can be applied to understand, model and design systems of any kind: physical, technological, biological, ecological, psychological, social, or any combination of those. Second-order cybernetics in particular studies the role of the human observer in the construction of models of systems and other observers (Heylighen, 2001).

Cybernetic learning theories are closely related to radical constructivism, which holds that any kind of knowledge is constructed rather than perceived through the senses. Radical constructivism was promulgated particularly by Ernst von Glasersfeld, drawing on Piaget; but also further developed through discussions amongst the group of cybernetic thinkers who gathered around Heinz von Foerster in the 1960's and 1970's. Radical constructivism stands in direct contrast the *'transmission model'* of learning, where content is directly taught and knowledge is conceived of as being a representation of an external objective reality (Scott, 2001).

Heinz von Foerster insisted that the circularity of the observer/as learner/as observer was inevitable in the learning process. This is apparent in the titles of his publications, such as *'Notes on an Epistemology for Living Things'*, where the word epistemology is purposely used because to live, to inhabit an environment, is to be a de facto epistemologist. In the article which was written in celebration of the developmental psychologist and epistemologist Jean Piaget, von Foerster exploits an understanding that form and content interrelate, in much the same that way Gregory Bateson talks of the unity of the mind and body. And while Maturana came up with the encapsulating phrase "*everything said is said by an observer*", the aphorism, implicit but unspoken in von Foerster's earlier words that "*an observer is his own ultimate object*". Subsequently von Foerster also extends Maturana by adding that "*what is said is said to an observer*".

Following von Foerster's interest in the involvement of the observer, the "*dance of conversation*", as he also called it, comes an explicit concern for ethics: The observer is responsible for the observation, the sense he/she makes of it, and the actions he/she takes based on that sense. Since each observer is different, it is difficult to make general ethical points, because the responsibility belongs to each particular observer. Nevertheless, there are general points to be made, such as that the act which increases opportunities is the better one because it makes it easier for each observer to claim his own responsibility. Indeed von Foerster does give an ethical imperative: "*Act always so as to increase the number of choices*". This is joined by an accompanying aesthetical imperative: "*If you desire to see, learn how to act.*"

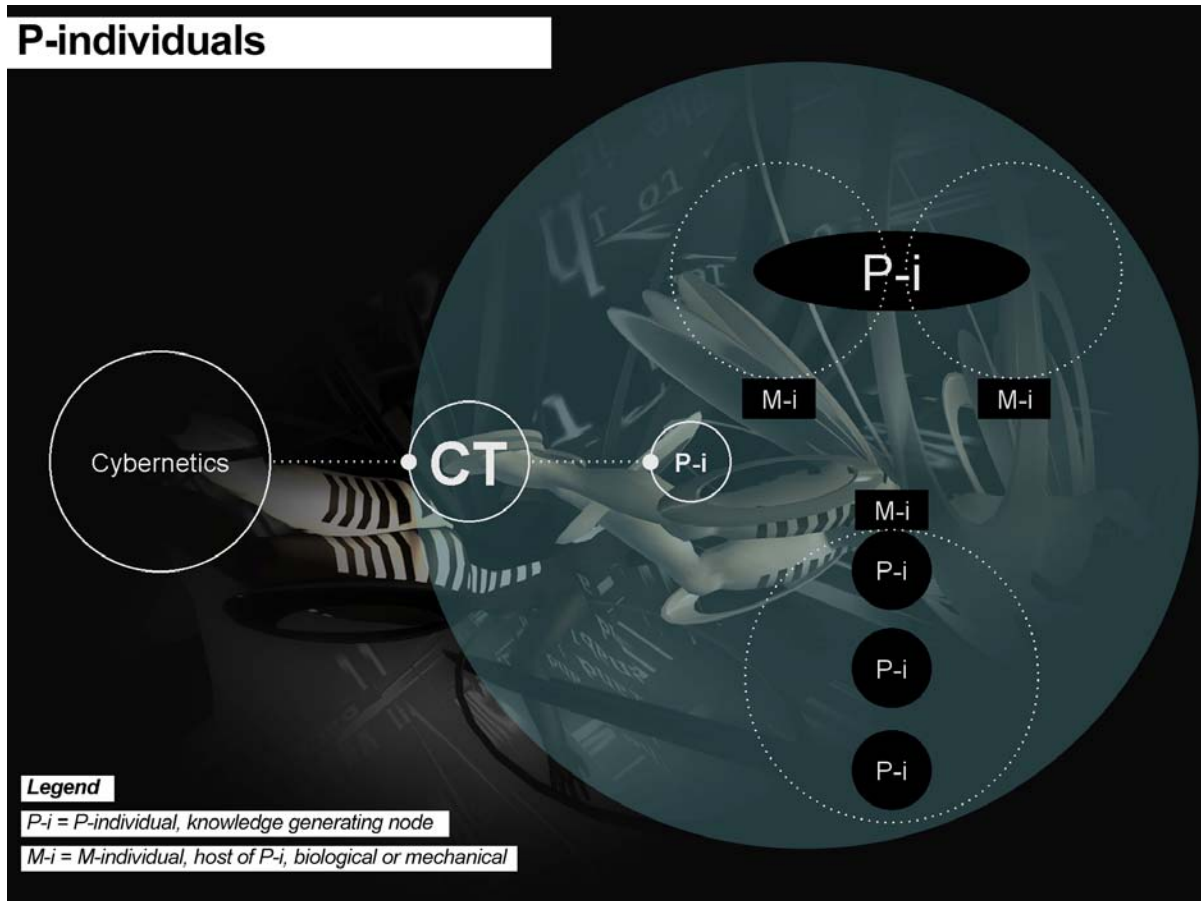
Finally, we construct our own realities: Von Foerster builds on earlier work on self-organizing systems, the work of Piaget and Ernst von Glasersfeld; as well as the logic of Spencer Brown. In his seminal paper *'On Constructing a Reality'*, von Foerster takes as his abstract the initial command of Spencer Brown's "*Laws of Form*": "*Draw a Distinction!*" When the observer cannot separate him/herself from his/her observations, it is impossible to know how these observations may relate to the fabled '*out there*', or what Herbert Muller, so appropriately refers to as "*Mind Independent Reality*."

Von Foerster's interest is in how we might compute stable realities, which he came to call "*objects*", through recursive observation; that is, perpetually re-distinguishing the distinction. To this end he proposed the term "*eigenbehavior*" (Rocha, 1996), through which a system asserts its autonomy from other systems and which, applied recursively, reaches stable and dynamically self-perpetuating states, a process that can be traced back to von Foerster's earlier proposals on the workings of memory. Notably social scientists have found, in von Foerster's central interest in recursion, the concepts that allow for theoretical development within their own field of study (Glanville, 2002).

This adaptability of cybernetic (and particularly second order cybernetic) reasoning to diverse fields of study appears to come into particular prominence within the creative domain, where a system involving a mere transmission of knowledge from teacher to student may not necessarily go beyond the acquisition of the requisite skills and technological know-how that are needed for the completion of an artistic task.

However, true creative enablement goes far beyond the appropriation of a set of skills through which such output can be brought about. Self-reflection, self-awareness, the ability to self-learn and to change through the new knowledge; the circular properties of observation and learning, the awareness that we are ultimately responsible for our own observations and the realities which we construct out of them would surely have to be primary considerations when it comes to learning systems which involve the creative fields.

**P-individuals/M-Individuals**



*Figure 4: P-individuals and M-individuals*

A transformation from unstructured playfully creative activity involving avatars to a fully fledged, structured learning strategy “*within which everything can find its place, and every individual his way, one which will enable the student to become aware of himself and the*

*world, while enabling him to give dimension and substance to his will to create and change”* (Ascott, 2003), will need substantial mechanisms of observation, guidance, documentation and assessment, regardless of whether such a structure is set up as a system of self-tutoring, or as an externally tutored process, or a hybrid of both.

In direct opposition to standardized art educational practices, for Ascott the examination and creation of systems takes precedence over a concern for standalone objects as the field of query for artistic pursuits. And so indeed, his learning strategy is preoccupied with enabling his learners to grasp the workings of systems, as well as their part and their function therein. A list of perception exercises for first year Groundcourse students illustrate his preoccupation in conveying to his students the importance of looking for the relations and circular influences present between ‘states’ and ‘objects’, rather than a mere objective examination/rendition of stand-alone ‘things’: “*Example 1. Imagine you wake up one morning to find that you are a sponge. Describe visually your adventures during the day. 2. List the sense data of an umbrella or a hot water bottle. Visually restructure the parts to form a new entity. Ask your neighbor to identify it. 3. If fifteen ragged criss-cross lines stand for a cough, how would you draw the BBC time signal? 4. Use only solid shapes to discuss your perception of: a bottle of ink; fish and chips; a police siren; ice hockey. 5. Show how zebras disguise themselves. 6. Invent a typewriter bird and show the kind of tree within which it could most successfully hide*” (Ascott, 2003).

Just like its predecessor, ground<c> looks at Cybernetics, particularly when it comes to the exposition, analysis and observation of systems which involve multiple identities, created through alt avatars, by a single learner: In Gordon Pask’s Conversation Theory the autonomous individual learner is re-understood as a collection of psychological individuals or a collection of rules. Alongside the individuality of biological organisms as self-producing, autopoietic, cybernetic machines, Pask distinguishes psychological, conceptual systems, incorporating processes of knowing and of coming to know which are “*productive operators which may be applied to entities belonging to a domain, or substrate, and which, if so applied, yield products. Among these products can also be products that are the productive operators themselves.*” (Pask, Zeeuw, 2001). These systems, according to Pask, are coherent, self-producing and, hence “*organizationally closed*”, with a potentiality to “*know by themselves*”, akin to meme-complexes (Hofstadter, 1985). Pask calls these entities P-individuals (Scott, 2001).

When we learn, we are said to acquire “knowledge”. In Conversation Theory, as is also the case in radical constructivist theory, ‘*having knowledge*’ is understood as a process of knowing and coming to know, which involves substantially more than a ‘*storage*’ of ‘*representations*’. Thus, Conversation Theory makes considerable usage of the Aristotelian distinction between ‘*knowing why*’ and ‘*knowing how*’. In the ‘*why*’ cycle, new conceptual

knowledge is integrated with existing conceptual knowledge to form a coherent whole, a Paskian P-individual. In the 'how' cycle, new methods are constructed and tried out and are subjected to pragmatic correction (Scott, 2001).

While P-individuals may operate distributed over numerous biological or mechanical domains, also referred to as M-individuals, there can also be several P-individuals operating within one M-individual. Thus, Pask asserts that what it is we are mainly helping to educate/self-construct is not simply one person but rather a wide variety of interwoven competitive P-individuals, some of whom may execute in distributed fashion across many bodies and machines (Boyd, 2004).

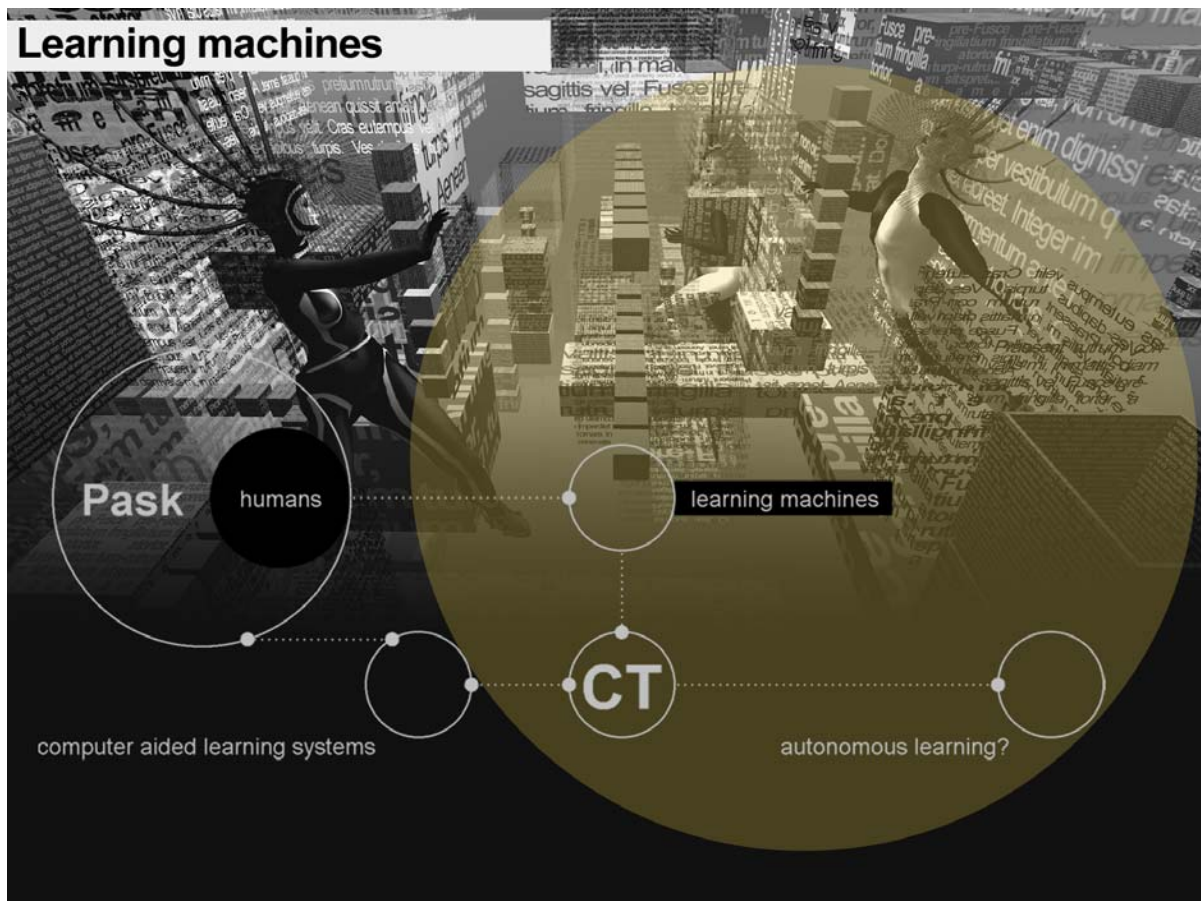


Figure 4: Learning Machines

Interestingly, at about the same time conversation theory developed, elsewhere another effort was made with somewhat similar aims, leading to the notion of autopoiesis by Maturana and Varela. The two differ considerably, although both owe to the work of Heinz von Foerster, as Pask was eager to recognize. The distinction between P- and M-individuals was meant to facilitate the study of "education, complex decision making, creativity, design and the like", while the notion of autopoiesis is mainly meant to improve observations in the study of living

beings (Zeeuw, 2001).

There appears to be a clearly drawn distinction between instruction/teaching and learning which Pask drew upon as he developed his computer aided learning system (CAL), which was based upon self-learning. (Sadly noted should also be that subsequent developments in CAL transmogrified it, at the hands of others, into computer aided teaching or instruction – a thing as far removed from Pask’s original intentions as could be possibly be imagined).

Pask’s work extended beyond the mechanism for exchanging and testing individual understandings to an actual analysis of the structural properties of the subject matter to be learnt, examining different ways of looking at what is to be learnt; which lead to an emphasis of diverse learning styles, depending upon content. The primary interest was in the learner, and he came to consider not knowledge but knowing as the primary issue. This consideration of the verb rather than the noun has similarities to the consideration of the ‘*process of living*’ rather than the fact of ‘*life*’, characterizing an autopoietic system (Glanville, 2002), as is already previously implicit in his concept of an organizationally closed system of learning which has a potentiality of knowing by itself/from itself.

Pask defined the human being as a “*machine for learning*”. His investigations into the machinery of human learning were directed into the development of teaching machines, seeking efficient computational means of offering learning content to students. His work has made him into the father of the computer aided learning field, particularly through the invention of the world’s first self-adaptive, and therefore learning, computer program SAKI, which was developed in the early 1950’s. With all of these variances in approach, aims and results duly noted, nonetheless Conversation Theory may well be adapted to the present work, which is essentially a process of autonomous learning. Heylighen notes that a befitting domain for the application of complex problem solving paradigms is education, which has reached levels of complexity which require life-long, self-instigated learning systems, saying that “*we must stimulate autonomous learning, i.e. without supervision by teachers. Hence we must develop systems or schemes which help persons to structure these complex problem domains*” (Heylighen, 1990).

### **Interaction of Actors**

While Conversation Theory brings to the fore the all important distinction between P-individuals and M-individuals, Pask also worked on a second theory called the Interaction of Actors theory, which in essence denotes a never ending conversation conducted by a self-observant, self-organizing system, also incorporating Pask’s famous last theorem “*like concepts repel, unlike concepts attract*”. This second theory brought forth “*a kinetic rather than a kinematic system in which the beginnings and the endings of the concepts of Conversation Theory had been replaced by eternal, evolving kinetic interactions between*

*organizationally closed and informationally open concept loops, comprised of toruses that maintain a boundary, a distinction” (Green, 2003).*

Pask held the view that “*there is not one iota of fundamental difference between art, philosophy and science, provided they are all conducted with an appropriate degree of delicacy and integrity*”. Consequently, the Interaction of Actors Theory emerged from his observations of performance arts where he came “*to realize that it is possible to couple people together with multiple mode oscillators, responsive to and regulating music, performers, lights and motions, provided the people are participants*”, in other words a state where production and usage merge into the same act. Whereas scientists tend to force all achievements which are not directly observational into the same mould (that is unusable); individuals in different walks of life appear able to occasionally step out of their prescribed roles in order to reclassify the observations they first classified for other purposes.

In the Interaction of Actors Theory the emphasis is placed upon the M-Individual: This allows new P-individuals to develop which co-ordinate the activities of the M-individuals into which they are embedded and also replaces the need to assume a preferred P-individual (the choice of what is to be taught) to which other learners have to adapt.

Some of the work in non-zero sum games tends to go in the same direction, in particular the work by Axelrod (1984) on the *Prisoners’ Dilemma*. It assumes two P-individuals (each having two alternatives to achieve a gain), embodied by two M-individuals. If both try to maximize their gain individually, the result will be less than if they try to do so together.

The theory can be exemplified by assuming two M-individuals, each embodying a P-individual, the values of which are realized while their two actions interact. This implies a process in which the P-individuals can change, but not disengage. They become part of a collective P-individual, co-coordinating the actions of the participating M-individuals. Since it cannot disengage, this P-individual may become sufficiently stable as implemented in a group of M-individuals to become observable to science.

The consequences are, first, that the M-individuals are now capable of realizing a collective action, which implements a novel collective value. Second, co-ordination of the activities of the M-individuals implies a change in the values or perspectives of the original P-individuals. Third, each value is maintained in and through the new collective, characterized by its co-ordination, as well as by the properties it ultimately makes visible/observable (Zeeuw, 2001).

### **Avatar Actors**

In terms of Conversation Theory there would appear to be no confusion as to what role multiple avatars, all belonging to one individual, would undertake – they would emerge as P-Individuals. The crux of the matter, in terms of employing multiple avatars when it comes to

the Interaction of Actors Theory, which situates events upon the M-Individual rather than the P-Individual, is in terms of definition: Is the M-Individual (the person behind the keyboard) relentlessly indivisible? Would such a split inevitably point at mental instability or are there situations in which such splits have been known to occur for specific purposes?

Harris (2000) describes children's Role Play using externalized objects, such as dolls or other toy artifacts, as a prop for projecting different persona; saying that children "*create such characters out of thin air, positioning them at various points in their actual environment*" (Harris, 2000). According to Harris, these extended play sessions need not necessarily involve outsiders but are also often performed by the isolated child. Role Play, says Harris, is further striking since the engaged child will temporarily immerse itself fully into the identity which they create, also often shifting mood and tone of voice appropriate to the part which they are enacting. Piaget (1962) also notes on the symbolic aspects of playful behavior which evokes such non-existent persona and situations, bringing to the fore the unconscious processes and associations which emerge as simulations during playful activity in the child's development.

While such extended capabilities of solitary simulation and make belief tend to be suppressed in most adults, Sutton-Smith (2001) nonetheless notes on situations where they can be re-evoked in grown up life as well. In what he terms the 'Rhetorics of the Self' he focuses on modes of play which stand apart from the traditional definitions of play activity in that they have their basis in the psychology of the individual player alone. In this context Sutton-Smith particularly draws upon historic literary examples which involve one individual's multiple selves manifesting as differentiated literary styles/view points, as pseudonyms or heteronyms. It is here, precisely in this co-relation between Sutton-Smith's explorations of the multiple identities residing within the psyche of an individual, employed for adult playful/creative activity, that alt avatars begin to acquire huge significance for a metaverse oriented creative learning strategy based upon the Groundcourse.

### **A self-observing system**

Second order Cybernetics which is also known as the Cybernetics of Cybernetics (von Foerster, 1979), was developed between 1968 and 1975 and is based upon an examination of circularity. Thus with second order Cybernetics, Cybernetics itself is subjected to its own critique and understandings. It is an approach in which the role of the observer is appreciated and acknowledged rather than disguised, as had become traditional in western science. Consequently, second order Cybernetics looks at observing, rather than at observed systems.

An educational strategy can be observed as a second order Cybernetic system which presents an exemplar in which the observer is circularly and intimately involved with/connected to the observed: The observer is no longer neutral and detached, and what is considered is not the

observed, as is the case in the classical standard, but the observing system. The aim of attaining traditional objectivity is either abandoned/passed over, or what objectivity is and how we might obtain and value it is reconsidered. In this sense, every observation is autobiographical. Therefore, second order Cybernetics must primarily be considered through the first person and with active verbs. The observer's inevitable presence should be acknowledged, and should be written about in the first person, not the third, giving us an insight into who these observers are (Glanville, 2002).

The feedback loop of such a system relies upon recursive observations which affect outcome through the input of the observation itself, potentially resulting in autopoietic constructs which "grow" and maintain themselves purely by referencing back to themselves:

*"The autonomy in living systems is a feature of self-production (autopoiesis) the basic consequence of the autopoietic organization is that everything that takes place in an autopoietic system is subordinated to the realization of its autopoiesis, otherwise it disintegrates."* (Maturana, 1998)

A challenging aspect of placing the observer as an intervening agent, one who is firmly a part of the feedback loop, is the unpredictability of the outcome and an element of obscurity as to how this outcome may have actually materialized. In this there is a strong correlation between second order Cybernetics and quantum physics. The Uncertainty Principle states that it is impossible to determine simultaneously both the position and the momentum of an electron or any other particle with any great degree of accuracy or certainty. This is not a statement about the scientist's ability to measure the quantities, but rather, it is a statement about the system itself, giving rise to an acknowledgment of the 'observer effect' and indeed a query into the nature of 'local realism' itself in theoretical physics (Norsen, 2006).

Second order Cybernetics works through a 'Deus Ex Machina', materializing as the conceptual 'Black Box' originally utilized by Maxwell (Benthien, 2009) whilst mathematically formulating the laws of electro-magnetic fields of Michael Faraday. A Black Box allows us to operate while remaining essentially ignorant of the underlying reasoning which drives the feedback loops of the observed system which we are also a part of. The principle of the Black Box is that, where we observe some change in a behavior for which we cannot find a logical reason, we insert a metaphorical Black Box into the feedback loop. This allows us to interpret the change as the result of the operation of an invisible mechanism, held within the Box itself, which is giving rise to the unexpected output. Through this the observer develops a description which accounts for the transformations of what are seen in the output but cannot be accounted for through tangible input data alone. The explanation is a result of the interaction between the observer and his inventive insertion, the Black Box, which 'opens' up the Black Box even if this 'opening' is excluded by definition since we can

not know the cause: We have no means of looking inside the Black Box and, therefore, cannot in actuality observe the causal elements which it may (or may not!) hold.

The Black Box was annexed to Cybernetics by W Ross Ashby, in his 1956 *'Introduction to Cybernetics'*, where he uses the Black Box artifice to permit the (scientific) observer to construct a description explaining the behavior of systems that are of interest. The Black Box contains a presumed mechanism, which cannot be seen and is the product of the observer's interaction with the *'whatever-it-is'*. Ashby went so far as to suggest the Black Box might not be just a useful device, but universal, suggesting that we never really see what is causing a change, only some explanatory principle we take to be a mechanism.

*Figure 5: A mind map (left) and two calibrators created by Groundcourse students.  
Photographs courtesy of Roy Ascott.*

Coming back to art education we find that Ascott provides us with a tangible case study of the principles of second order Cybernetics applied to learning systems. Through the self-observational components found in his previously discussed assignment it is easy to see that Ascott's art educational theory extends into second order Cybernetics. Ascott, who himself was a participating observer, enmeshed in all of the workings of the feedback loops of the system which he himself has brought about, could not have known what the underlying dynamics of exchange developing in these feedback loops were or indeed what their outcome would ultimately have been. In the event however, his emphasis on the importance of self observation as an integral part of a creative learning strategy brought forth some remarkable output: These were the mindmaps and calibrators with which his students were asked to monitor their emotional as well as their intellectual responses to the occurrences that they were caught up in. Looking at these artifacts alone we are presented with tangible evidence of the efficacy of his approach.

A conservative mindset might argue that such an approach would be cavalier - indeed especially so, in the prevalent ideologies found in today's educational milieu: A world of questionable assumptions in which institutions are rigorously monitoring learning outcomes (Harvey, 2009), where the primary concern is on applying the strictest standards and measurements on one of the most intangible and least understood of curiosities – the human mind. While this approach is problematic in all areas of learning it is especially of concern in the creative fields since output in these fields is open to debate and discourse by its very nature. Ascott's strategy is unique in its acceptance of the immaterially intangible, indeed inexplicable, mental processes embedded within the creative process.

## **Conclusion**

Today, in online builder's worlds such as Second Life®, Residents are actively pursuing creative tasks which require the presence of multiple alt avatars. Such occupations are

usually unstructured and would appear to lack the consciously directed, self-observational attributes which the above described learning system would entail. Thus, the primary questions to be addressed at this juncture revolve around the means to bring about such a shift from frivolous creative play sessions to a structured, autonomous learning environment wherein students acquire a sense of personal creative viability which was such a core consideration during the Groundcourse years.

How does an instructional strategy bring about such a transition? Can multiple identities, embodied through alt avatars be considered to be P-individuals in the full Paskian sense of the term? To what extent can an autonomous learning strategy be seen as a purely self-organizational construct? How does external input come into play? To what extent does the instructor, who, needless to say, is a part of the self-observational system as well, become involved once the learning process is underway?

The undertaking at hand is developing strategies, complete with learning templates, modules, exercises and diverse instructional material to bring about an intrinsically autobiographical undertaking harnessed toward the unfolding of creative potential.

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