EXIT HUMAN. ENTER THE PLANT

An evolutionary study on interactive media use

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HOPE

In his 1932 essay 'The Radio as an Apparatus of Communication' the German poet, dramatist and theater theoretician Berthold Brecht stated that radio, which was the mass medium of his time, was not used to it's full potential. He proclaimed: "The radio would be the finest possible communication apparatus in public life, that is to say, it would be if it knew how to receive as well as transmit". Brecht envisioned a participatory medium to enable people to contribute to the message being broadcasted, be it politically oriented or meant as creative artistic content. By sharing the power of representation and supplying the public with participation in the performance of works of art and in the field of politics, he hoped to elevate the level of the people (referred to as proletariat at that time) to a politically engaged collectivity.

Nowadays the prerequisites for his futuristic ideas have become mainstream reality with the omni-present worldwide web, gradually becoming the foremost mass medium of our time. With the appearance of new electronic media, the passive consumption of a text or a work of art was proclaimed over. The democratic potential was praised, as "cyberspace was opening up the chance for a large majority of people to break out of the role of the passive observer following a spectacle staged by others, and to participate actively not only in the spectacle but more and more in establishing the rules of the spectacle.".

But even though the possibilities of our current interactive media are even far more advanced than Brecht's proposed mechanism of two-way radio, his idealistic visions of constructive citizen participation in both politics and art still haven't been realized to a satisfying extent yet. Although some attempts to create meaningful interaction system do sporadically succeed, just implementing two-way communication mechanisms is by far a guarantee to create a properly functioning context for collective authorship.

SPECTRUM

This text will start with a analysis of the problems that seem to inherently accompany interactive systems, generally bringing disappointment to both creator and audience. It's will trace the origin of that issue, which often arises from a mismatch between the ineradicable high expectations of interactivity and the persistent low return of value contributed by interactive components.

But instead of finding a response to the question who's to blame for the unbridgeable mismatch, it might be better to ask: should someone be blamed? And: is there someone to blame? Or is the problem more fundamental, say external? Could there perhaps be a

solution in redefining certain aspects of the classic model of interactivity, i.e. a user (traditionally a human) being actively participating in a system created by creator with good intentions and an openness to parse the received input with the proper respect? Altering the model intrinsically could be a way to solve the problems, exterminating them from the roots.

By providing an analysis of the profound changes occurring in our globalized networked world, I want to proclaim that the classic expectations and claims postulated by artists creating interactive media do no longer fit our contemporary society. I will hence suggest a couple of alterations in the perception of satisfying interactive media usage, reflecting the transitions our present day world is going through. The focus points are: eliminating the presumed distinctive difference between the roles of creator and audience, a lesser role for human input, and a lesser role for content.

The pathway I will follow in this paper to present a contemporary approach towards interactive media in accordance to these points, will include theoretical assumptions illustrated by means of phenomena that are currently shaping our heavily computerized world.

As the role of computers is shifting from being a tool to a universal media machine, we are increasingly "interfacing" to predominantly cultural data: texts, photographs, films, music, virtual environments. In short, we are no longer interfacing to a computer but to culture encoded in digital form. Digital features such as interactivity now play a role in the consumption of broad range of culture and media. The scope of this paper is limited to outings of new media created with the intention to be artworks, deploying or rejecting interactivity as an intrinsic part of the piece. Because a lot of theory on digital environments is defined in terms of users, systems, features and input this terminology will at times be applied in this paper texts' to refer to audiences, artworks, participation and contributions.

INTERACTIVITY IS BAD

Nowadays, every possible approach, method, form and appliance of interactivity has been explored and experienced. There's no more 'new' to the exciting interaction features of new media. It's an appropriate time to reflect and analyze why interactivity isn't bringing us the benefits as promised in idealistic visions dealing with an ideal interactive world.

To start with, it's important to define in what aspect doest interactivity not fulfill its promise. What exactly are the obstacles impeding the beneficial application of interactive features in our cultural and political landscape? How does the real world fail to meet the criteria of the envisioned ideal world in which interactivity was supposed to flourish? Can certain problems be attributed to improper implementation of interactive features? What are the foremost problems? What about the phenomenon of dubious entities misusing interactivity for questionable practices?

Viewed from a variety of practical, commercial, political and evolutional perspectives, the enumeration below covers a number of issues that give rise to skepticism about interactivity in its present condition.

MANIPULATION

What's wrong when an interactive installation or new media product seems to be all ok, even truthful, honest and very welcoming at first instance? Is it the overwhelming pleasant feeling originating from it's interactive controls, shiny buttons, requests for input being used to disguise the shabby, not so ingenious fundaments or plain old-fashionedness of an interactive product. A purpose it is very often misused for. A phenomenon the Antirom crew battled against back in 1994 with their critique of the poverty of contemporary multimedia. They stated that the linearly multimedia produced at that time, was not paying tribute to the medium. "Interactivity is something that gives individuals more choice, that takes mediation out of the media, and empowers all as free consumers in the marketplace of signs. Liberty, in this sense, is the defining illusion of interactive representations. By engaging with interactive media, this illusion, the illusion of liberty, crumbles. An interactive experience can be as tightly controlled as any other. In its form of spectatorship however, an interactive representation is always to some extent immersive, throwing the viewer inside the time of the representation.". Interactivity as a layer of bells and whistles. It's because of this that Lev Manovich dubbed this advanced form of audience manipulation a totalitarian art form. Drawing a parallel between interactive art and the an experimental setup of a psychological laboratory or a high-tech torture chambers of CIA or KGB.

NOT THAT INTERACTIVE

In contrast to popular belief, interactive media generally is even less interactive than so called 'non-interactive' media. All classical, and even more so modern art was already "interactive," requiring a viewer to fill in missing information (for instance, ellipses in literary narration; "missing" parts of objects in modernist painting) as well as to move his / her eyes (composition in painting and cinema) or the whole body (in experiencing sculpture and architecture). But computer interactive art takes "interaction" literally. Mental processes of reflection, problem solving, memory and association are externalized, equated with following a link, moving to a new image, choosing a new scene or a text. In fact, the very principle of new media just mirrors the process of human thinking which involves connecting ideas, images, memories. Now, with interactive media, instead of looking at a painting and mentally following our own private associations to other images, memories, ideas, we are asked to click on the image on the screen in order to go to another image on the screen, and so on. Thus we are asked to follow pre-programmed, objectively existing associations. In short, in what can be read as a new updated version of Althusser's "interpolation," we are asked to mistake the structure of somebody's else mind for our own.

SLAVERY 2.0

Besides the totalitarian use of interactive features, there's another genre of dubious interactivity fans: the commercial world. Pulling their target clientele along through clickable exciting commercials or misusing them to form a free work force. Grabbing their attention, opening up their senses, to launch a commercial message with maximum impact. Wasting their participants' time and energy while involving them in a false context of self-expression, often dismissing any contributed input anyway, or presenting a 15 seconds of fame in return. As Brecht already proposed: "the radio should step out of the supply business and organize its listeners as suppliers.".

Luis von Ahn, Assistant Professor at Carnegie Mellon takes this approach even a step further with experiments in crowdsourcing through gaming. In one of his ESP Games, two anonymous players are matched online without any means of communicating with one another. Both players are shown a random image (for example, a flowering plant under a clear sky) while a clock counts down two and a half minutes. The players must then type words that describe the image, such as "plant," "flower," "pretty," or "sky." When both players have typed at least one word in common, like "sky," they both score points and a new picture is shown. At this moment, the players have helped teach the computer that this picture contains a "sky."

This goes on until the players have run out of time. In an interesting twist, sometimes pictures get recycled by the game after they have already been labeled once. When this happens, the old label (i.e., "sky") is no longer accepted by the game, so players must come up with a second or third word to describe the picture. In this way, the game forces players to give each picture a more detailed description.

The ESP Game is undeniably addictive. Many people play for over 20 hours a week, and more than 20 million labels have been harvested in just a few years—the equivalent of several million dollars of free labor.

BAD CREATORS

Now that the potential of interactivity is clear from a totalitarian and commercial perspective, what's in it for the remaining league of creators, non-commercial non-politically powered ones, artists? Especially, bad artists. Their consistent overestimation of the magic effects of the concept 'interactivity' leads to a lot of superfluous misery. Applied as an automatic problem solver, to fix problems belonging to the author of a work. As happens when artists use an interactive shell as a trick to cover up a their own shortcomings or lack of inspiration, and delegate responsibility to an audience. Named 'co-authorship', interactivity is often being used to postpone the creation of content, by indecisive artists.

BAD INPUT

Let's state that people's contributions are generally not too sophisticated. Not everyone is a genius, even when using the right tools. In addition to this, the 'science' of speed ('Dromology') explains how the current speed at which information reaches us and the minimal span of time between reception and reaction, limits the time for

cricital reflection. (Re)considering a decisions is avoided In favor of a prompt near real-time reaction. Speed is the form of ecstasy the technological revolution has bestowed on man. Speed and intertia as a useful corrective to the more naive appraisals of the revolutionary capacities of information technologies.

COMPLAINING CREATORS

It's not necessarily worse than bad input, but collecting no input isn't an exception at all. Default expectations in relation to interactive media are no longer valid. The features of humanity and the requirements of interactive media are not in sync. From a technical and theoretical perspective, the amount of options to interact, participate and influence anything around us are on the rise, but from a practical perspective, our responsiveness to these new opportunities is shrinking, at least relatively. People are increasingly becoming unable to please the creators of interactive media, failing to respond to what interactive media is claiming them to deliver: creative and thoughtful input.

The next chapter will be dedicated to studying the causes of this development, but anticipating to those conclusions it can already be stated that from an artist's perspective that interactivity generally makes a creator unhappy. By involving an audience in the creation of an artwork, the responsibility to achieve a successful outcome is shared with the participating audience. Creators tend to blame their audience for the failure of their interactive concepts, frustratingly witnessing an audience ignoring their work, paying only minimal attention, or just unconsciously pushing buttons or entering thoughtless input. But the inability of an audience to perform the requested actions with proper concentration, shouldn't irritate the creator. One should simply try not be dependent on any (human) user involvement nowadays. The next chapter will explain why. The lack of attention of the present day audience should be recognized as a phenomenon inherent to the age we live in.

HARMFUL

Taking into account the range of dubious appliances of interactivity, unhappy creators and input being ignored, why isn't there a movement against interactivity, from a political, environmental and social point of view? Fighting slavery 2.0, fighting the ecological harmful activity of users wasting energy on delivering input to be trashed, following redundant interactive paths to view superficial interactive content? Perhaps because nobody even cares. An attitude suiting the our present day world, as will be pointed out in the next chapter.

WHERE'S THE AUDIENCE?

Another way to explain why the traditional concept of interactivity is a lost case, is to approach the situation from a users' perspective. Assuming the problems outlined in the previous chapter could be solved in some way or another, creators of interactive artworks will face a total absence of humans interacting with these work. It seems that nothing can be done to turn the tide of the increasingly unreachable present day user.

In this chapter I would like to research the origins of this development. Extrapolating the disappearance of the phenomenon 'audience' towards the individual project, which is awaiting a precarious faith, be it an interactive project or not. Fortunately, I'll eventually make a link to the next chapter in which ways of dealing with the newly arisen situation are explored, and a step towards a solution is proposed.

TECHNOLOGICAL DEVELOPMENTS

The developments in our technological and social context happen at an exponential rate. Our own personal and human development starts to lag behind. A lot of the misery surrounding interactivity stems from the fact that our world is in flux and it has already changed irreversibly. Old patterns of human behavior and social interchange are no longer valid, former expectations lead to disappointments. The Digital Divide Network saw the divide as the 'gap between those who can effectively use new information and communication tools, such as the Internet, and those who cannot.' But compared to that moment in time, we now live in a completely redefined system and world order once again. The world as described in any theory not rewritten within recent years, has ceased to exist. New digital divide gaps continue to happen successively, posing new rules of engagement in response to an expanding digital frontier. Digital and technological developments have such a profound impact on our daily lives, because we spend a more and more significant part of our times in a digital reality. According to Paul Virilio's 'Velocity' thinking, reality is even no longer defined by time and space, but it is positioned in a virtual world, in which technology allows the existence of the paradox of being everywhere at the same time and being nowhere at all. The loss of the notion of site, city or nation in favor of globalization implies also the loss of rights and of democracy that is contrary to the immediate and instantaneous nature of information. McLuhan's global village is nothing but a 'World Ghetto'.

LOST AUDIENCE

Expecting a receptive and willing audience to fulfill the obedient role of spectator has become something of the past, let alone be a participative spectator. In fact, the whole species of spectator has become extinct. The potential spectators are too occupied and busy with the creations they make themselves, and showing that to the world. Everyone has become an author. The rigid distinction between artists and 'ordinary' creatives is practically gone. Artistically shaky video recording is now done a zillion times every day, and it's all being published on Youtube.

Along with the widespread availability of professional tools narrowing the gap between professionals and amateurs, the professionals are moving closer towards the amateurs by entering the same social media spheres the general public inhabits too. Artists start profiling themselves, build up a network, connect to groups, and even though they could keep calling presence in the network an artistic exploration of the phenomenon media, the differentiation between their activity within the network and that of their former audience, is minimal, both being beginners and new to the techniques to be acquired.

META APPROACH

Besides a retracting audience of general art consumers, the league of art critiques showing interest from a professional perspective is shifting their attention away from the individual artworks as well. Whereas there were only a few hundred key works of art in the last century, there's no way to maintain a position of overview dealing with individual pieces anymore nowadays. The transparent and full accessibility of any thinkable information anywhere at real-time around the whole globe makes that the same inputs are provided at many locations at the same time, giving rise to identical combinations of thoughts. And because of the wide spread and easy availability of professional tools for the production of digital art, these inputs are transformed into artistic interpretations by multiple creators simultaneously. Resulting artworks might differ slightly, but it's not of any interest who was the first to have launched a certain concept. In this digital era with the increasing amount of information and it's abundant offer of opportunities to inform oneself, the only relevant cultural information is held by the description and visualization of the underlying or abstract patterns, a practice referred to as "Cultural Analytics". But even though the lack of attention for individual works is compensates by an increased activity on the meta level, attention erosion will also occur there. Vilém Flusser states that any perception is subject to the laws of entropy. We notice only what is unusual and new, yet only for a certain period of time. What was once new does not stay new for long.

NO AUDIENCE

The transition towards a more abstract way of dealing with art on a meta level has led to a shortage of audience for the individual artworks. A problem that needs to be solved. Not only because creating something without an audience is not a challenging or inspiring context for artist to work in. But also because there's a definition of 'art' proclaiming: whenever someone calls it art, it's art. But if the artwork is seen by no one, who's there to define it as art?

A duo of artist Erwin Driessens and Maria Verstappen, working under the artist label 'Notnot' have come up with a strategy to cope with this lack of audience, and thus missing a crucial ingredient in case of interactive or participatory artworks for example. Foreseeing a situation with people unavailable to provide input for interactive machines, they've automated the interactive process in a project titled "The Factory". The audience watching the artwork production and recycling system, takes just the very irrelevant role of spectator. The art production goes on, indifferent to whether it's being watched or not.

INTERPASSIVITY

Misinterpreted as fully gone, spectators still exists, be it through indirect constructions, delegating the experience to tools and devices, such as Robert Pfallers' classic example: the old-fashioned VCR, relieving us from the duty to enjoy things ourselves. Another agent would serve us as a "prosthesis" through which we could experience at least a little bit of it, if our bodily confines do not permit direct experience.

Behind the regret of not being able to attend a pleasant event, there's also a certain secret enjoyment of that fact. Delegation constitutes a new form of pleasure. Besides the limitations in time and space render it impossible to attend an event, there's an intrapsychic conflict at play. Pfaller refers to the science of "(libido-)economical aesthetics", as Freud had conceived it, to theoretically accounts for two phenomena: the "pleasure in pain" and the paradoxical inverse "pain in pleasure". According to Pfaller, these pains bring a discontent linked to the wish to enjoy itself. The substitutive act therefore substitutes something which is already originally lost. Thus the interpassive act is better than anything existing at all: it not only brings back a part of a bygone pleasure, but constitutes a new, original one.

Another observation Pfaller makes on the basis of the "pain in pleasure" principle, is that because the interpassive viewer feels such pain in pleasure themselves, they are able to let others experience their pleasure without any envy.

INTERTIA

In succession to this, even the indirect audience is about to disappear, as a next step of passiveness is on the rise. A situation in which we do not even bother to record things and store it on physical tape or devices in our vicinity. Trusting the content will simply be out there, somewhere on the internet, or in a virtual world, stored and archived by the broadcasters or by random fellow viewers with similar interests. It's there, if we would wish to access it.

The risk of some form of intertia is imminent. "Now everything arrives without any need to depart" stated Paul Virilio in "Polar inertia" in 2000. Telecommunications brought us the era of "staying on the spot" or "housebound inertia". It lets us cybertravel through electronic mediascapes in an static audiovisual vehicle, a substitute for bodily movement. In a similar way, media content originally made to be experienced online appears to suffer from 'digital inertia'. Users are settling for a partial experience, not making it to the virtual spots they're able to visit, but just parsing through endless lists of hyperlink references to interesting web spots, bookmarking, tagging and collecting these on their virtual journeys across the web, the actual content being massively ignored.

NUMERIC FETISHISM

Another habit obstructing the consumption of the content of online media, is the distracting number fetishism for numeric data seen ath both the viewer as the creator's side. Meta data such as the number of views, favorites and amount references has become more important than the actual content. The prominent visibility of statistical information and the wide array of opportunities to measure and quantify online media performance has created an atmosphere in which counter heroism prevails over content qualities. It has changed the way content is dealt with, the content becoming an interchangeable ingredient in a bigger quest, the hunt for visitors and views.

It's exceptional to witness artists being indifferent to the statistical success of their artwork. Nowadays' artworld is driven by numbers. Either because of the simple fact that the tools to count are available, on the other hand because the quantitative aspects

have in some cases become an integral aspect of the artwork itself, and thus fall within the scope of artistic explorations by the artist. The Publicity Plant project (Veenhof, 2009) is an exaggeration of this phenomenon, leaving out all content besides the growth algorithm based on online web2.0 statistical data.

THE NETWORK

Interactive new media and the web have formed a de facto symbiosis. A hundredfold increase in bandwidth has swept away the limiting factors that kept interactive media on CD's in the old days. Current interactive products not published online but on DVD's, generally do connect to the internet though, and with ubiquitous computing on the rise, every single thing around is getting connected to the network.

Early one-to-many experiences by writers to co-author a text have substituted by wiki powered collective writing tools, but a more fragmented and less centralized way of writing, linking and embedding content is unfolding with the opening up networks of our time. Facebook widgets to be embedded in Wordpress blogs, Wordpress plug-ins to embed Twitter content. The times of linear and hierarchical structures of writing are over, as the network is becoming the foremost operative structure to organize content. Without a starting point, with no end, no central node, but just an organically growing set of interconnected nodes containing pieces of content. The network has become visible and it has risen to the surface. McLuhan's classic statement "the medium is the message" provides an insight in how a medium affects the society in which it plays a role not by the content delivered over the medium, but by the characteristics of the medium itself. This does indeed apply to the networks of our time. A network adds to its content contextual information in the form of brand perception, and factual data about network related characteristics concerning the piece of content.

In the continuous race between the competing social networks of our time, the public image of a network is key. This image is a symbiosis of network and network users. People's choice to join and become active in a certain network influences the brand status of the particular network. In reaction to that, the dynamically constructed image of a network attracts new people or prevents people from joining. New networks come to life, existing networks morph, other networks die. The Twitter network has rapidly established its position as a worldwide 'IRC chat', Orkut has been conquered by the Portuguese community, musicians are on MySpace, Hyves is for teens and if you're still on a Yahoo network, you're probably unaware of the imminent risk of being abandoned and 'thanked for all the thrust and creativity' any day soon, when a new business restructuring program is enforced in an attempt to catch-up and please the web0.0 stock-holders of Yahoo. Summarizing: the type of network someone and his/her content is on, tells a lot about the creator and the content.

Other network related data tells a lot too. The amount of references in the form of social media references (such as Delicious bookmarks) is a mechanism to help lifting worthwhile material out of the pool of content, because it's an indication of content being handpicked and selected by people. Although the value of this outweighs the unreliable truths of straightforward views counters, the ratio between views, scores

and quality is often a unbalanced one because of the unsophisticated basic implementations of tracking and presenting 'score data'. Once an item is being parachuted, it's appearing on everyone's page #1, a guarantee for continued success because of the big numbers, which are the effect of being topped on every list. A loop without end.

In theory, networks could be the solution to bring partial intelligent and transparent access to content. But in the way today's big networks work, their own structure obstructs the proper presentation of their content by distracting people with meta layer white noise, seducing them to communicate on and about the meta layer instead of getting to the actual content.

NOW

The troubles and hopelessness outlined in the previous chapters are clearly visible in the explosively growing social network Twitter, in which all issues seem to culminate. In caricature proportions. The fact that Twitter is the uttermost trending phenomenon of today, indicates the actuality of the problems and the urgency to find solutions. Or not. Because fortunately, Twitter also provides the link to a solution, or at least, show us that there's still hope that all problems are reluctant to resolve.

Twitter's effect on our online society is that we're massively spending time on a system that's absorbing a lot energy, but giving nothing more than personal satisfaction in return. The publisher/reader balance is fully disturbed, and the mechanism the system does not offer any means to cope with this, frustrating any constructive form of collective conversation or knowledge build-up. Content is once again truly redundant, except for the purpose of being the energy the machine is operating on.

The focus of its users lays on statistics. The 'online followers counter' being the foremost content, a means to achieve and judge a person's status. On Twitter, status centric activity happens very abundantly and openly. It's illustrative for the phenomenon of the meta level becoming the main form of content. There's an immensely rapid growth in the development of Twitter related services offering features targeting the Twitter meta level: listing top Twitterers, auto-pilot 'Tweeters', keeping track of day-to-day statistics and trending terms.

Content on Twitter is also foremostly meta. A lot of communication is about new or freshly discovered website and the mentioned hyperlinks to these sites are being retweeted around the network instantly, instead of being visited, viewed or even read. Reaction time is another measure of quality. A popular activity is the near to real-time twittering of breaking news coverage or referring to a just 'Digged' onlin article.

The statistics show the constant struggle of a worldwide group of people trying to enter the attention stage. It's a dynamic mix of planned and unforeseen effects and reactions. Campaigning marketeers try their best to plug their messages and keywords to the massive audience, but stumble upon the hopeless effects of information

overload. In the enormous flow of new Twitter messages, only direct messages get the attention. In order to send out direct messages, the sender needs to be on the 'following' list of the targeted receiver. Follower-followee credibility plays a role here. A quickscan of the intensions of the requesting party can be done by viewing his/her list of recent Twitter contributions. To mimic being a credible and interesting contact, the publishing of semi-nonsense has started to become a major part of Twitter traffic nowadays, just as in e-mail. "Meltin Pacific time followFriday world environment david carradine TGIF SUSAN BOYLE gordon brown big brother muse labour http://bit.ly/PfmUb". As of yet, there aren't appropriate filter mechanism in to fight the nuisance of random content. Luckily for the spammers, a request is answered fully instinctive and unconsciously by the majority of Twitterers, leading to the following of 5000 or 100000 people in some cases, and thus the end of any practical use of the system, except for numeric ego boosting.

ORGANISM

Whatever the real content being swapped around, the growing Twitterverse can be seen as an organism, reacting autonomously and self-organized to both internal and external inputs. Besides processing the continuous attempts by people trying to position themselves on the stage, clamping to trending terms, trying to launch a trending term themselves, the system is under influence of external signals as wells, making it indeterministic. The morphogenetic capabilities of the system appear when world events start interfering with the mass created equilibrium. A crash of a plane for example, triggers the creation of Twitter accounts with the name of the airplane and airline. The whole world quickly utters its worries, and by mentioning the right words, they appear for 0.15 seconds on the worldwide auto-cue. Insignificant atomic actions when considered individually, but considering all experimental and boundary pushing responses as one united reflex, events like the plane crash shape the network, enriching it with the experience on how to react to a world event, as one entity.

The Twitter network is not a life-force, but it is a form of non-organic life, as proposed in the machinic phylum theory. According to Deleuze, the machinic phylum is the overall set of self-organizing processes in which a group of previously disconnected elements suddenly reaches a critical point in which they begin to 'cooperate' to form a higher entity. The notion of a machinic phylum blurs the distinction between organic and non-organic life.

SUMMARIZING

In short, bringing all previous observations together in one worst case scenario, we have a situation in which there's nothing to gain with interactivity, there's no difference between creator and viewer, there isn't even any viewer at all, content is being created in vain only to be misused to fuel one big meta entity, and this persistent organism occupies the spotlights all the time.

NEW AUDIENCE

A dramatic perspective, but fortunately in one of the most recent additions to the spectrum of art categories, lies a movement that could provide a solution to the problems sketched above: BioArt. Coined by Eduardo Kac in 1997 in relation to his artwork "Time Capsule", although it originated at the end of the 20th century through the works of pioneers like Kac and Gessert. BioArt started to be more widely practiced in the beginning of the 21st Century. Thus, it may be considered the first 21st century art movement.

The solution lies in the act of substituting the human being by a biological creature with less human intellect but more enthusiasm and dedication. This could solve some of the issues mentioned in the previous chapters because it's obvious how the creatures in the examples below are not bothered by their own creative ambition or any social network distractions and worries, but one question remains to be answered: do they possess the right physical and mental qualities to replace humans as users of interactive new media?

BACTERIA AND INSECTS AND ART IN PUBLIC ANIMAL SPACE

Actually, this question gives rise to the inverse question as well: what can we learn from studying insects or animals replacing our positions? The upcoming primary paradigm shift will be from biological thinking to a hybrid combining biological and nonbiological thinking. This hybrid will include "biologically inspired" processes resulting from the reverse engineering of biological brains. Experiments in this field are going on in science and in art, studying the biological but also the mental social aspects. Experiments involving animals as self-reflexive organisms. Helping them to communicate their self-reflexiveness by providing them with adapted tools or network connections.

Various artists have explored the physical features and possibilities of different natural lifeforms. Kacs reported communication between bacteria enabled by the growth of protrusions for connecting and communicating with each other and exchanging genetic information.

Garnet Hertz' experimental robotic system "Cockroach Controlled Mobile Robot" translated the bodily movements of a living, organic insect into the physical locomotion of a three-wheeled robot. Distance sensors at the front of the robot provided navigation feedback to the cockroach, striving to create a pseudo-intelligent system with the cockroach as the CPU.

Natalie Jeremijenko's OOZ consisted of a range of experiments. Communication technology for the birds effectively facilitate birds' control of people. Birds could make use of devices triggering short sound files that used a number of persuasive strategies and arguments to enlist, educate and endorse human behavior to share nutritive resources with nonhumans. An interface for bats allowed them to toggle a light switch on or off if, according to their preference for more or less illumination.

HOW DID THEY DO?

Although animals, insects and bacteria are welcome guests to feature in interactive installations, their deployment still shows common disadvantages too, as Garnet Hertz indicated. The robot controlling insects displays attributes like unpredictability, laziness, irrationality and emotional response, alike humans.

NEXT

Since no living creature of our time seems to qualify and be suitable to take the role of user of interactive new media, it might be time to widen our scope and look further for alternatives. Existing or not existing, yet.

NEW NATURE

In the scenario this text adheres to the cause of problems is man, and the solution is sought alongside the findings that we're gradually disappearing out of the picture anyway, losing the physical form and unity we possess today. There's no more need for our unique intelligence, we're becoming redundant as human input is delivered to the network by chatter bots communicating for us, while we are interpassively experiencing our pleasures. We should quickly find us a new role, and clamp on to it. Our future as humans in a traditional sense is over. We will no longer be able to cope with the speeds imposed on us by expansive technological advancements.

Ray Kurzweil's analysis of the history of technology shows that technological change is exponential, contrary to the common-sense "intuitive linear" view. So we won't experience 100 years of progress in the 21st century, it will be more like 20,000 years of progress, at today's rate. Computer chip speed and cost-effectiveness will also increase exponentially. There's even exponential growth in the rate of exponential growth. Within a few decades, machine intelligence will surpass human intelligence, leading to The Singularity - technological change so rapid and profound it represents a rupture in the fabric of human history. The implications include the merger of biological and nonbiological intelligence, immortal software-based humans, and ultra-high levels of intelligence that expand outward in the universe at the speed of light.

A welcome development in the eyes of the transhumanists, an international intellectual and cultural movement supporting the use of science and technology to improve human mental and physical characteristics and capacities. Transhumanist thinkers predict that human beings may eventually be able to transform themselves into beings with such greatly expanded abilities as to merit the label "posthuman". A posthuman was once a human, either in its lifetime or in the lifetimes of some or all of its direct ancestors. As such, a prerequisite for a posthuman is a transhuman, the point at which the human being begins surpassing his or her own limitations, but is still recognizable as a human person or similar.

Upgrading the human hardware isn't a new practice, as prostheses have already been fulfill that purpose for ages. But tweaking the human software, allows for a more radical increase of our abilities. Brain implants are on their way. Severely disabled people have already been fitted with hardware enabling them to interface with computers. Pioneered by neuroscientist John Donoghue at Brown University in

Providence, Rhode Island, the BrainGate technology allowed paralysed people to move a cursor on a computer screen, open emails, and operate lights or the TV. The gene variants pivotal to intellectual brilliance have yet to be discovered, so boosting brainpower by altering genes may still be some way off or even impossible, but our minds are fluid enough and open to enhancement due to what Merlin Donald of Queens University in Kingston, Ontario, Canada, calls "superplasticity", the ability of each mind to plug into the minds and experiences of countless others through culture or technology. "I'm not saying it's a 'group mind', as each mind is sealed," he says. "But cognition can be distributed, embedded in a huge cultural system, and technology has produced a huge multiplier effect."

PLANTS

With an ideal cyborg in development but not available yet, what about considering employing plants to use the interactive media in need of an enthusiastic user? Might they be the perfect candidates for this task? Do they possess the required characteristics to play such role? What could be the benefits of such a type of user? And how would this development fit within a bigger picture?

SPEED

In our fast and interactive world, everything is possible. At all times, at any required speed, but in contrast to that stressing extremity of our current times, a plant-performer will be able to withstand the pressure of our hectic manic times. Its ultimate slowness and lack of speed makes them highly concentrated and predictable, their style of control is nevertheless dynamic.

Current semi-scientific argue that the human intellect is actually a disturbance in proper decision making, as written in a semi-scienctific books named "Blink don't think" for example. The thinking brain is far more slower than the intuitive functioning of the incomprehensible unconscious intellectual brain.

INTELLIGENCE

At a higher level, the question is: what will be the relation between interaction and plant growth? Will a plant be able to learn? In one cycle of its existence, instead of evolutionary?

Plants are able to react instinctively, they are even able to communicate, as has been researched for decades. The creation of the right conditions and a relevant controllable environment, will allow the plant to balance on an exciting threshold of surviving, or committing suicide. Creation of such a plant/interface set-up will be key to achieve the following target:

If a plant does prove to have true agency, learning how to cope with its challenging situation, then that would mean the scope of possible participants to provide meaningful contributions to interactive art projects, is widened. A welcome next step in the ongoing contemporary explorations involving animals or insects in art.

PLANT HARDWARE

Empirical discoveries made throughout the century by researches such as Bose show that plants engage in dynamic conscious dialogue with the ground and other beings. Plants possess a sensitivity to external conscious and auric influences. Plants evidence a state, a condition of consciousness, in which they engage in active dialogue with the world. Michael Theroux employed plain biosensors from a local Radio Shack to monitor plant responses. The plant grows excited by the presence of a second plant. Plants are revealing capacities of response, expressing. both sensual, emotive, and semi-conscious variations.

The choice of a plant with the most appropriate capabilities depends on the context. Should the focus be on physical characteristics, such as speed of growth, or muscular reactiveness? A fast growing species, like beans, will better show the effects of choices made by the plant on the long term. In what direction will it grow, and how?

But a fast reacting one like the Mimosa Pudica ('The Sensitive Plant') will visually be more exciting for an audience seeing it control the interface. It's leaves fold inward and droop when they encounter a touch, re-opening within minutes.

SLOW INTERFACE DESIGN

What does it imply to use an interface? In general it 'means that the user/browser/audience has the ability to act to influence the flow of events or to modify their form, change the content and to co-author the work. In that sense, plants qualify.

PLANTS AND TEXT

Text is unique among other media types. It plays a privileged role in computer culture. On the one hand, it is one media type among others. But, on the other hand, it is a meta-language of digital media, a code in which all other media are represented: coordinates of 3-D objects, pixel values of digital images, the formatting of a page in HTML. It is also the primary means of communication between a computer and a user. If a computer uses text as its meta-language, cultural interfaces in their turn inherit the principles of text organization developed by human civilization throughout its existence.

W. J. T. Mitchell, an academic from Chicago, editor of the high-ranking Critical Inquiry, questions the almighty power of the linguistic turn and argues for the importance of a pictorial turn, an independent picture theory. According to him the pictorial turn is about that the pictures that surround us do not only transform our world and identity, but also form them more and more. In this way pictures are playing a more and more important role in the construction of our social reality.

Plants in the role of users could be communication textually through some form of translating equipment, but not doing so might in fact be a step into the future and communicate with a text-less, say graphic form of network communication.

PLANTS IN CONTROL

The perfect showcase of plant making use of an interface to a digital system, is Ola Pehrson's Invest Trading Plant (1999). In this case computer software to process investment strategies for the stock market. Sensors attached to the plant were picking up emitted electric impulses. All living organisms, humans animals as well as plants do emit these impulses. The amplitude of these impulses varied depending on the interior and exterior milieu of the organism. The Yucca Invest Trading Plant combined this information with stock market know-how. The plant had been exposed to six months of intensive 'market education', during which it had been fed with stock market rates encoded into electric currents, combined with an index related conditioning diet of either rich or meager rations of water and sunlight. This was an attempt to stimulate a market-adapted habitus, similar to that which years of financial transactions develop in the experienced stock brokers' nervous system. The welfare of Yucca Invest Trading Plant was generated by itself according to market logic when the financial result of the transactions is converted into a plants essential currencies - water, light and air."

When developing plant interfaces, the correct finetuning of the feedback loop of stimuli, reactions and the influence of these reactions on the stimuli, is a complex task. In the case of the Yucca plant operating in the financial domain, it remains questionable whether the logic of the financial world could be coded making use of the components and features of the installation, on the other hand, pure logic hasn't been a proof of control in the financial world either. Perhaps the intuitive intelligence a plant possesses on this subject matter will outperform any human attempt to understand the dynamics.

NETWORKED PLANT

Having a plant react on network communication was the central theme in the Publicity Plant project carried out by Sander Veenhof in connection to his graduating from the Gerrit Rietveld art academy in 2009. To color up the occasion and to attract attention to himself in the overly busy contemporary art world, a concept to serve both purposes in harmony was developed: raising a 'graduation bouquet' in an interactively controlled greenhouse. A custom designed greenhouse control system converted all online publicity into plant growth by switching on the grow-lights above his 'publicity plant' whenever new a weblog-posting, Twitter message or Delicious bookmark referred to the project. The plant's reaction was thus communicated by means of growth statistics which were under influence of the network connected greenhouse.

COMMUNICATIVE PLANTS

Collaborating in the Botanicalls project, Rebecca Bray, Rob Faludi, Kate Hartman, and Kati London are exploring the communicative skills of plants with the sale of Botanicalls Kits, "opening a new channel of communication between plants and humans, in an effort to promote successful inter-species understanding." The kits turn plants into active nodes within a network. Sending online Twitter status updates, a plant equipped with a kit can reach out for human help.

THE ULTIMATE PLANT

Combining each of the above features in one hybrid plant/machine construction will lead to the creation of an organism that will be capable of handling the difficult task of actively engaging in a contemporary interactive media context: forming a feedback loop with the network, parsing input and returning meaningful responses.

CONCERN

BioArt explorations involving life animals have triggered the critical voices of animal rights movements. Alka Chandna, a senior researcher with PETA, has stated that using animals for the sake of art is no different than using animal fur for clothing material. "Transgenic manipulation of animals is just a continuum of using animals for human end," regardless of whether it is done to make some sort of sociopolitical critique. The suffering and exacerbation of stress on the animals is very problematic."

Hopefully, there is not group concerned with the well-being and proper treatment of plants in interactive artworks.

CONCLUSION

Starting to stage experiments with networking plants will be a wise step to undertake at this moment. First of all, it will be an immediate solution to the problems addressed in the first two chapters of this text. But it might also provide us valuable preliminary insights into the dynamics of the hybrid future that awaits us as transhuman mankind, a situation being peeked into by the interactivity enabled plant.

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