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Between Play and Politics: Dysfunctionality in Digital Art

Marie-Laure Ryan

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Let me jump right into the heart of my topic, by presenting two examples. The first, *Image Fugurator*, a project by Julius von Bismarck which won the Prize Ars Electronica 2008 in the category Interactive Art at the Cyberarts Festival in Linz, Austria, inverts the functioning of a regular camera. Whereas in a normal camera the light projected by objects is captured unto film, with *Image Fugurator*, an image stored on film within the camera is briefly projected onto the external world when the flash goes on. The whole process is triggered when the camera senses other flashes in the vicinity - this is to say, when other people are trying to photograph the same scene. When they look at their pictures, these people see something that they had not noticed on the original scene, as if the camera had captured a ghost. The originality - and efficiency - of *Image Fugurator* lies in its use of a highly functional technology to disable another technology. We have all seen crowds of tourists swarming around a landmark such as the Mona Lisa or the Manneken Pis, and fighting each other to take pictures, rather than looking at the scene with their own eyes. What these tourists do is use their camera as a substitute for their own senses. Who needs to take a passing glimpse at a cultural landmark, when the eye of the camera can capture it for ever? By smuggling foreign information unnoticed into pictures, which means by rendering photography unreliable as a representation of the real, *Image Fugurator* satirizes our growing habit to create memories through digital technology. Or rather it forces unwanted memories, for the tourists who notice the intrusion of physically non-existing elements into their pictures are not likely to forget the experience.
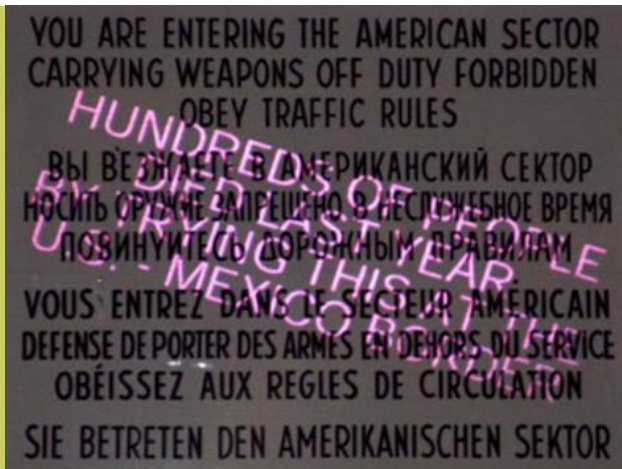

Julius von Bismarck's *Image Fugurator*

Image Fugurator at Checkpoint Charlie, Berlin Wall

My second example is *Grafik Dynamo*, a mock graphic novel ⊰⊟⊱ by the Canadian Web artists Kate Armstrong and Michael Tippett. ⊰ 1 ⊱ True to its title, *Grafik Dynamo* is a constantly changing work. It loads narrative fragments presumably written by one of the authors into speech bubbles or text frames, and combines them in real time with images randomly captured from the Internet. The images came originally from a live feed to Livejournal, a social networking site where people maintain illustrated blogs, but more recently they have been taken from Flickr, a site where people display their prize pictures. The work mimicks the looks of a comic strip by displaying three frames separated by what is known as "gutters" in the jargon of the trade. Every few seconds - barely long enough to read the text - a new image-text combination appears in one of the frames. Sometimes image and text come into view simultaneously and all at once, sometimes the text appears first on a black background and the image reveals itself slowly from top to bottom, one line of pixels at a time. The order of replacement does not follow a left to right sequence, but jumps capriciously among the three frames, so that the eye does not know where to look next.

Grafik Dynamo subverts the reading habits associated with graphic narratives in multiple ways. We expect the relation between image and text in every frame to be narratively significant, which means, to contribute to the construction of a coherent storyworld, but here the juxtaposition is the product of random selection, a procedure which cannot produce narrative meaning except, precisely, by extraordinary chance. The sequence of frames should represent the same world, and correspond to a temporal sequence of events, but here there is no visual unity nor semantic relation between the frames. The diegetic narration in the text at the bottom of frames should provide the context for the dialogue or thoughts mimetically represented in the speech bubble, but here the narration and the dialogue are often disconnected: the content of the bubble may change, while the bottom text remains the same. The frames should be read from left to right, but here the eye is attracted to the frame affected by the most recent transformation, and this results in a parsing of the display that moves randomly in all directions. I could go on and on with these violations of familiar reading protocols. But what does *Grafik Dynamo* offer in exchange? Readers (or viewers) can concentrate on the text alone, by reading it as a parody of "Superman" style comics; they can focus on the images, by asking what kind of story people are trying to tell by posting them on the Web; or they can treat the random pairing of text and image as a stimulant for the imagination, by trying to create their own stories out of individual frames. But the short-lived appearance of the data does not give the user sufficient time to construct a narrative context for every frame: reading in this case will not be a systematic processing of all the materials presented by the project, but a highly selective activity. The best way to use *Grafik Dynamo* is to run it in a background window, and to make quick grabs to look at its current state, hoping that randomness will occasionally produce interesting couplings.

Screenshot from *Grafik Dynamo*

The common feature of these two examples has been given away by my title: they are both examples of the fascination of digital artists with the dysfunctional. This fascination is endemic to contemporary art, but it takes unique forms in digital media. To investigate these forms, I propose to review four types of dysfunctionality: political, ludic, programmatic and inadvertent. Except perhaps for the last one, these types are fuzzy categories, rather than rigid, mutually exclusive features, and a given artwork can consequently represent more than one of them.

Politically motivated dysfunctionality

Here the name says it all: disruptive tactics are put in the service of political action. This is the dominant purpose of *Image Fugurator*. The project has been used by its creator to convey disturbing political messages at popular tourist attractions, for instance by projecting a text protesting the building of a wall to prevent illegal immigration into the US at Checkpoint Charlie, a remnant of the Berlin wall which should stand as a witness to the infamy of separating people with walls. ‹ 2 ›

The destructive character of *Image Fugurator* is rather mild - the project affects only occasional photos, without damaging the functioning of cameras - compared to the program of the most radical form of political dysfunctionality: the sabotage of computer systems associated with oppressive forms of power. In the early part of the twentieth century, artists were drawn to abstractionism, Dadaism and Surrealism as a reaction against realism, which was seen as an artform reflecting the values of bourgeois society - values we would attribute today to consumer capitalism. Political dysfunctionality continues this trend, by using the computer to undermine the infrastructure of the social and economic system that was build in a large part through digital technology. The most strident voice of this radicalism is the artists and activists collective Critical Arts Ensemble, founded in 1986. ‹ 3 › The overt goal of CAE, expressed in its numerous manifestos, is to exercise electronic resistance to the governmental and corporate forms of power that rule capitalist society by attacking the databases maintained by these institutions. As we read in one of CAE's manifestos: "A small but coordinated group of hackers could introduce electronic viruses , worms, and bombs into the databanks, programs, and networks of authority, possibly bringing the destructive form of inertia into the nomadic realm." The use of the term nomadic realm, inspired by Deleuze and Guattari, suggests that CAE views power as a decentralized force that propagates itself within society through a rhizomatic, or networked structure allowing perpetual displacement of activity from one site to another. This nomadic power cannot be defeated in a head-to head confrontation, since it is a hydra with thousand heads, but it can be resisted through an activism that propagates itself through viral reproduction. "There could be cells of crackers hovering unseen, yet poised for a coordinate attack on the net - not to attack a particular institution, but to attack the net itself (which is to say, the world)." Rather wishfully, CAE concludes: "A coordinate attack on the routers could bring down the whole electronic power apparatus" (quoted from Liu 2004:364-366). But what will happen, one is tempted to ask, when the networks of power are brought down? With the end of the cold war and the collapse of the political other of capitalism, anti-establishment hacktivism no longer operates in the name of an ideology, but rather conceives electronic resistance to power as an autotelic, self-validating activity. To quote again CAE: "the writing of the source code, that is, the text that programs a virus to be set loose and do its work can be seen as an aesthetic product" (qtd from Liu 370). The creation of a virus, which requires the outsmarting of increasingly sophisticated anti-virus software, represents a tour de force

highly valued in the exploit-worshipping culture of computer hackers. The beauty of the virus is of the same nature as the beauty of a chess move, of a mathematical proof, or of a clever invention. But this kind of aesthetization involves the same estrangement of ethics from aesthetics that has led some people to see the September 11 attacks as art. ⊰ 4 ⊱ The artistic status of viruses, or of any kind of infiltration that renders a database dysfunctional and results in a denial of service, has recently been called into question by the use of such tactics as genuine acts of war. When Russia launched cyberattacks that temporarily disabled Georgian government web sites during the conflict of August 2008, the agenda was far too clear, and the code far too functional for the operation to be to regarded as art. ⊢☰⊣ As for the practice of CAE, it has remained way short of the destructive effects that its theory advocates: the group's artistic activity has largely consisted of videos and installations shown in public places that remain well within the bounds of legality.

Not all politically motivated forms of dysfunctionality involve the sabotage of external objects: Gonzalo Frasca's "games that cannot be won" demonstrate how the creation of an inherently dysfunctional artifact can be used to articulate a political message. In the game September 12 ⊢☰⊣ , for instance, the user is instructed to kill terrorists by throwing bombs at them; but every successful action ends up killing as many civilians as terrorists, and results in the radicalizations of the rest of the population. The more terrorists are killed, the more are created, and the player's actions can only lead to a deteriorating situation. ⊰ 5 ⊱ It is not uncommon for games to lead to the inevitable defeat of the player: Tetris, PacMan or arcade games typically end when the player is overcome by the system; but these games keep score, and they maintain interest by giving players a chance to beat their previous best performance. Not so in Frasca's game: no points are given for killing terrorists, and players usually quit out of frustration, after realizing the futility of their efforts. The lack of entertaining gameplay is meant to reflect on the hopelessness of the military action depicted in the game. Deprived of the usual pleasure of shooting and being rewarded for hitting the targets, the player has no other option than to focus on the political message of September 12 - a message that would be lost with a more traditional, smoothly functioning game engine.

Ludic dysfunctionality

Ludic dysfunctionality lacks the seriousness of the political brand. Whereas political dysfunctionality asks: how can I subvert this technology to encourage critical thinking, ludic dysfunctionality grows out of the question: what can I do with this technology, other than what it was meant for? It is in this category that I place *Grafik Dynamo*, but *Image Fugurator* also presents a strong ludic spirit, in spite of its predilection for political messages.

The spirit of play is very close to the spirit of art - so close indeed that some scholars (Huizinga, Brian Boyd) attribute art and play to a common instinct, or see play as the origin of art. (It could not be the other way around, since animals do play, but do not produce art.) Both play and art are activities that we engage in for the sake of pleasure, both involve actions that "do not count" in real life (in the artistic domain this is more particularly true of fiction), both are deprived of a primary practical function (though a case can always be made for their value as a learning tool), both stand somewhat outside of everyday life: there are special times and spaces devoted to ludic activities, while art has the unique power to transport us into imaginary worlds. Play is notorious for transforming functional objects of everyday life into something else: in a game of make-believe, a cooking pot may becomes a drum or a manhole counts as the lair of the big bad wolf. In the same spirit, technologies can be deprived of their primary function and turned into art toys: for instance, the limited graphic capabilities of the ASCII code have been used to produce images; poetry has been created out of computer languages; short fiction has been written through Twitter messages and whole novels punched on cell phone keyboards and posted on the Web. Common to all of these cases is the negation of real-world practicality and the creation of a new functionality - the autotelic and self-reflexive functionality of art. Ludic dysfunctionality is only dysfunctional as far as it rejects the subordination of technology to material pursuits.

One of the most productive areas of ludic dysfunctionality is "codework," the use of computer languages for aesthetic purposes. The term codework covers a variety of practices that challenge the standard criteria of good programming: writing code that performs a useful task in a reasonably economic way (i.e. that does not take too much processor time nor memory), and that other people can easily understand. There are many different types of codework, and they present different forms of dysfunctionality. All

standard programming languages presuppose a "universal machine," that is, a machine that can perform every task that is computable. This makes it possible to perform the exact same task (for instance, printing "hello, world") through different languages, or through different programs written in the same language. Computer languages, in contrast to the natural kind, are therefore perfectly translatable into each other. This translatability has given rise to two forms of play with code.

The first is the invention of "weird languages," i.e. of language that can do everything a well-designed computer language does, but in a way that is almost incomprehensible to the human programmer. While efficient computer languages use key words whose meaning is transparent, because they that read like English words (e.g. repeat, go to, begin, end, if…then), obfuscated languages may double-code meanings, so that, to take an imaginary example, "purple" could stand for "subtract" or "kiss good-bye" for "jump" to a certain address encoded in "good-bye." The computer language Shakespeare, –< **6** > for instance, is read differently by humans and by the computer. For human readers, words maintain their normal English meaning; but for the computer, every word correspond to a specific value or executable operation. The names of characters from Shakespeare's plays are interpreted by the computer as variable names; all positive nouns ("lord," "angel," "joy") are constants with the value +1; negative nouns ("bastard," "beggar," "codpiece") have the value -1, and adjectives before nouns multiply their value by 2. The scene indications are locations for jumps. Verbs stand for operations; for instance, enter and exit statements indicate which variables are active at a given point, and return performs a goto statement. It takes of course a list of translations to turn the dialogue into executable code; the compiler could not decide on its own what counts as a positive and as a negative noun. The purpose of the exercise is to create a program that runs without crashing, that performs some kind of task (asking for a useful task would set the bar too high) and that resembles a play on the surface level. In his discussion of weird languages, Michael Mateas quotes a fragment of a Shakespeare program that "reads an input and prints it out in reverse order" (Mateas 2008:270):

[Enter Othello and Lady Macbeth]

Othello: You are nothing!

Scene II: Pushing to the very end

Lady Macbeth: Open your mind! Remember yourself.

Othello: You are as hard as the sum of yourself and a stone wall. Am I as horrid as a flirt-gill?

Lady Macbeth: If not, let us return to scene II. Recall your imminent death!

Othello: You are as small as the difference between yourself and a hair!

Rather than inventing a new language from scratch (a langue, in Saussure's terminology), programmers can play with code by writing needlessly complicated program in a standard language, such as PERL, Java or HTML. Here obfuscation is not inherent to the language itself, but rather, to a particular use of this language: Saussure would assign it to parole rather than to langue. I will give Nick Montfort, who has thoroughly studied the issue, the last word on these obfuscated programs:

> All obfuscation - including naming obfuscation [i.e. the choosing the names of variables and constants by the programmer] as well as language-specific ones, such as choosing the least well-known language construct to accomplish something - explore the play in programming, the free space that is available to programmers. If something can be done one way, it cannot be obfuscated. It is this play that can be exploited to make the program signify on different levels in unusual ways. (Montfort 2008:197)

Another form of ludic dysfunctionality is the creation of a machine that performs absurd tasks. Following in the footsteps of the Swiss sculptor Jean Tinguely, who created mechanical contraptions that crank their wheels without doing anything, Adrian Ward's Auto-illustrator (downloadable from **CNET** ⊁⊟−) subverts the utilitarian spirit of commercial drawing software by turning graphic tools into autonomous agents with a will of their own. We take it for granted that in a graphic program the code listens to our input: if we selects the straight line tool, we do not expect the program to draw an arabesque. Auto-illustrator breaks this basic contract between the software designer and the user by complicating (rather than completely severing) the relationship between the movements of the hand and the behavior of the tools: the program does listen to the position of the cursor, but it translates it into output through a mysterious algorithm. If you select the freehand pencil tool, the system draws unpredictable (though rule-

governed) graffiti; if you select the text tool, the system picks the letters and invents nonsense words. The square and the oval tools do not draw regular geometric shapes, but give you a choice between "shabby" and "precise" shapes, as well as between "childish," "artistic" and "regular. (The illustration shows a combination of childish and shabby). There is also a bug tool, which places moving creatures randomly on your screen. They will create art for you by crawling around and drawing lines. If you don't like the result, there is an exterminator tool that will let you get rid of the creatures.
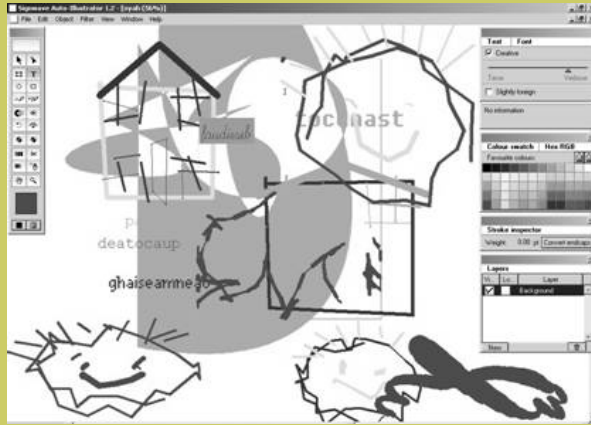
Adrian Ward's Auto-Illustrator

In an article included in a user's guide to Auto-illustrator (no longer available), Florian Cramer observes that in commercial applications, "programmers are frequently considered to be mere factota, coding slaves who execute other artist's concepts." The dysfunctionality of Auto-illustrator takes a stand against this situation by asserting the creative dimension of the programmer's activity.

Experimental dysfunctionality

According to Russian formalists, the role of true art is to create estrangement from our thinking habits. This is why major artistic innovations are usually greeted with scandal - a reaction that movements like Symbolism, Dadaism, Surrealism and Situationism actively courted by devising ever new ways of "epater le bourgeois." Before a movement succeeds in imposing new forms, if it ever does, it is perceived as destroying existing forms. All experimental art, in this sense, is born dysfunctional, but in the case of electronic art, this may be more than a passing phenomenon. Alan Liu regards "being cool " as one of the leading concerns of digital culture, and he views "creative destruction" (or destructive creativity) as the primary way to achieve this status.

If art is a form of play, playfulness permeates artistic experiments, and individual forms of dysfunctionality cannot be neatly classified as either playful or experimental: many of the examples that I discuss below participate in both types. The main difference is one of attitude and ambition, and these features are a matter of degree. Whereas ludic dysfunctionality is individualistic and humorous, experimental dysfunctionality is systematic and programmatic; whereas ludic dysfunctionality does not take itself seriously, experimental dyfunctionality believes that digital media will promote posthuman forms of subjectivity and new ways of thinking: rhizomatic, networked, viral and, paradoxically, non-binary; whereas ludic dysfunctionality lets its creations speak for themselves, experimental dysfunctionality tends to wrap its projects in elaborate theoretical statements that tell the user what they are supposed to mean. Whether you judge a work experimental or ludic (or both) depends largely on the fun factor; experimental art is notorious for sacrificing pleasure to critical thinking.

To grasp the difference between ludic and experimental dysfunctionality, let's compare the Shakespeare program discussed above with the use of graphic elements inspired by computer code in Mezangelle, the hybrid language developed by the Australian author Mez: ≺ 7 ≻

($gene (x y)

chambered

((not? (promise? y))

(iambic.pent((up))a)meter

(set-(h)eart(h)! (var x) y) ;

(set-earth! (var x) ()) ; delete y)

(quoted from **Net Behaviour** ⋊⊟−)

The Shakespeare program tries to hide that it is a piece of computer code, by imitating a dramatic script. Here it is the other way around. The poem tries to pass as computer code, by imitating the syntax of a computer language (it most resembles LISP), and by using special graphic elements, but it cannot be executed: there is no compiler for this pseudo language. The purpose here is not to communicate with the machine, but rather, following a tradition that runs from nineteenth century Symbolism to twentieth century Dadaism, Surrealism, Lettrism, and concrete poetry, to produce a new poetic idiom. The use of parentheses is symptomatic of an ambition to fight the linearity of language by rendering symbols semantically polyvalent: for instance, in the Mez example, " (h)eart(h)." can be read as "heart," "earth" or "hearth." Whether of not these language experiments produce dysfunctionality or a functionality of a higher order depends on how much effort readers are willing to devote to their decoding, and on whether this effort is found worthwhile. Similarly, there are people who find the language of **Finnegans Wake** highly dysfunctional, and others who admire it as a synthesis of different languages that overcomes the disaster of Babel. (Incidentally, Mezangelle has been widely compared to **Finnegans Wake**.)

Many of the operations developed by digital authors to produce a new literary (or more generally artistic) idiom rely on randomness as generative principle, even though the product of randomness is semantic entropy. The resources of the computer are used to produce endless variations on the Dadaist recipe for producing poetry: ⊰ **8** ⊱

To make a Dadaist poem

Take a newspaper.

Take a pair of scissors.

Choose an article in the newspaper of the length you wish to give your poem.

Cut out an article. Then cut carefully all the words that make up the article and put hem in a bag.

Shake gently.

Then remove each cutting one after the other in the order in which they emerge from the bag. Copy consciensciously.

The poem will be like you.

You will now become an infinitely original writer with a charming sensitivity, although misunderstood by the common people. (**Dada Reader**, 199-200)

This algorithm rests on two ideas: random combination, and the recycling of ready-made objects. In the digital age, the product of these two ideas has been rebaptized remix. For the remix practitioner, however, randomness is no longer a force that shakes the dust of habit and provides access a higher, more poetic reality, as it was for the Dadaists and Surrealists (who adopted as their own Lautréamont's conception of beauty as "the chance meeting on a dissection table of a sewing machine and an umbrella"), it is above all an easily programmable algorithm. Genuine randomness may be that which, by definition, cannot be programmed, but all that is needed in remix is an algorithm that gives an impression of random choice from a database. As a composition technique, remix is most popular in music (where it allows everybody to produce their own albums out of their favorite songs), but the technique has been adapted to other modes of signification. An example of visual-graphic remix (not quite randomly chosen from a plethora of digital works that use random combinations) is **Talan Memmott's Self-Portrait(s) [as Other (s)]** ⋊⊟− . **Self-Portrait** cuts into pieces, shuffles and reassembles portraits of famous artists, as well as randomly combines sentences of a stereotyped biographical sketch into a collage reminiscent of the mad lib party game. But the author has obviously greater ambitions than creating amusing non-sense, for he writes in the short text that introduces

the work: "The piece deals with identity in an art-historical context, self-identity for any given artist, and identification as a process. There are over 120,000,000 possible recombinations."

This comment suggests that there is something important at stake in the textual algorithm, as if the work's ability to explore the mysteries of identity were a function of the number of combinations. A digital author once told me that he expects a large proportion of the pages he writes never to be read. If we think of proper reading as parsing a text with the eyes and the mind from beginning to end, pondering how every one of its words contributes to a global meaning, many digital texts transgress this criterion of functionality by inviting partial browsing rather than complete processing. *Chemical Landscapes*: [Digital Tales by Edward Falco] ⊱⊟⊰ consists for instance of landscapes generated by manipulating chemicals in a dark room, and of texts inspired by these landscapes. But the texts dissolve so quickly on the screen - not unlike an image of an undeveloped film exposed to light - that the reader's eye can only parse a fraction of their words. It is possible to complete the reading by recalling the same screen, but by that time most readers have probably forgotten the meanings collected during their previous visit.

Another digital work that challenges memory is *The Jew's Daughter* ⊱⊟⊰ by Judd Morrissey and Lori Talley. The text looks like a standard book narrative, but the reading method is uniquely digital. When the reader mouses over specially marked words on the screen, part of the text replaces itself, and part remains the same, but the replaced area is not marked, and the process is so fast that the reader does not know what is old and what is new. Rereading the page does not help, because the new passage blends perfectly, visually and syntactically, with the rest of the text. But even if the reader were able to compare the current and the previous page - an operation that the interface does not allow - it would be impossible to read the text as descriptions of events that take place in a temporal or causal sequence, since the two pages overlap in content. The text, consequently, cannot be read as a sustained story. This hasn't prevented critics from looking for - and finding - all sorts of hidden meanings; of all the texts of the ELO collection of digital literature, none has inspired more commentary than *The Jew's Daughter*. Experimental dysfunctionality has an uncanny way to spur a search for higher functionality. In the playful type, by contrast, the object that presents itself to the mind and the senses is so entertaining that there is no need to look for a secret layer of signification. What you see is truly what you get.

Chemical Lanscapes and *The Jew's Daughter* are already quite efficient at frustrating readers, but frustration turns into exasperation in the work of Young-Hae Chang Heavy Industries, a Franco-Korean artist team who have produced in industrial quantities a type of text that follows a fixed formula. (See for instance [Nippon] ⊱⊟⊰ .) In these texts, language is flashed one word - or a few words - at a time, at a variable pace dictated by the rhythm of a musical soundtrack. The art resides here in the skillful synchronization of music and text. Words explode on the screen, assaulting the user visually and giving a literal meaning to the expression "in your face." This visual aggression is compounded semantically by the often crude erotic content of the work. Not only does the segmentation of the text make it difficult to construct sentential and textual meanings, the reader is brutally deprived of the fundamental freedom that came with the invention of writing: the freedom to parse language at her own pace. In contrast to movies, the soundtrack does not reinforce other channels of signification, but rather creates a shock effect that distracts attention from language: the user can either try to read the text, or pay attention to the synchronization of music and text - in which case words become mere shapes rather than linguistic signifiers - but she cannot do both at the same time. While some of the texts of Young-Hae Chang Heavy Industries vaguely suggest a narrative meaning (*Nippon*, for instance, represents in both English and Japanese the thoughts of workers and patrons in a house of pleasure), the deciphering of this meaning requires far too much effort to create the pleasures typical of narrative: the mental construction of a world, emotional attachment to the characters, and a desire to know how it ends. With *Nippon*, the main object of suspense is not how but when it will end, and the music is far more efficient than the text at producing a sense of closure. But this sense is short-lived, because as soon as the program terminates, it starts again in an infinite loop.

Do the textual practices I call experimental affect the way we think? Katherine Hayles argues that digital media have promoted a new cognitive mode which she calls "hyper-attention," and opposes to the "deep attention" typical of print culture: "Generation M [the 8- to 18-year old generation] is undergoing a significant cognitive shift, characterized by a craving for continuously varying stimuli, a low threshold for boredom, the ability to process multiple information streams simultaneously, and a quick intuitive grasp of algorithmic procedures that underlie and generate surface complexity" (Hayles 2008:117).

Whether this cognitive mode is a gain or a loss compared to the kind of attention called for by other media, and whether the fascination of new media with dysfunctionality reflects critically upon it or takes an active step toward its promotion is an open question. In the first case, works like **Grafik Dynamo**, **Chemical Landscapes**, **The Jew's Daughter** or **Nippon** will be interpreted as allegories of our inability to master the overflow of data that digital media have brought upon us, to remember what we have just read, or to process efficiently conflicting channels of information; in the second case, they will be regarded as exercises that teach us to read faster, to hold more in memory, or to become more efficient at mental multitasking. Is dysfunctionality a step toward the higher functionality of enhanced cognitive abilities, or the allegory of a situation to be deplored? Partisans of the first, progressive interpretation will insist that the brain is a malleable, plastic organ capable of forming new connections between neurons, or of strengthening existing ones. The development of new media can therefore have a crucial impact on our brain power and thinking habits. Partisans of the second, conservative interpretation will argue that the brain is an organ that has evolved over millions of years, slowly acquiring the ability to perform certain operations, and that no media revolution will change its hardware over a single generation.

Inadvertent dysfunctionality

Most readers of digital works have experienced situations where the text does not seem to work properly. This can lead to a feeling of distress, especially when users cannot tell whether the apparent problem is a feature, a bug, or simply results from their inability to operate the textual machine. By inadvertent dysfunctionality, I mean situations where failure is due to the designer or to the system and not to the user's incompetence.

A common form of inadvertent dysfunctionality is the result of inadequate coding. It is most commonly found in those systems that attempt to emulate the creativity of the human mind through artificial intelligence techniques, such as dialogue systems or automated story generation. Computers perform marvels of instant communication, visual simulation, information retrieval, and of course arithmetic computation, but they are still seriously challenged in the domain of language understanding and text generation. Alan Turing prophesized in the fifties that by the year 2000 it would become impossible to tell apart the conversation of humans and computers, but so far no computer program has received the Loebner prize, created for a program that would pass the Turing test for a few minutes by being indistinguishable from humans when answering questions. It is therefore no wonder that in the cyberdrama **Façade** (downloadable from http://www. interactivestory.net/), by Michael Mateas and Andrew Stern, in which the player interacts through language with computer-created characters, the responses of these characters to the user's input are frequently dysfunctional. **Façade** is about a couple of yuppies, Grace and Trip, who are successful in their career, but who come to realize during the play the disastrous state of their marriage. In these examples, they simply ignore the words of their guest, Heather, who is played by the user:

Heather: Let's not talk about marriage.

Grace: Heather, when you get married you are supposed to forgive and not think about the past, yes or no?

Heather: It's not your fault, Grace.

Grace: Heather, you blame me for all of this.

Grace: I need your opinion about my decorating.

Heather: You don't have any decorating talent.

Trip: It always amazes me when Grace comes home after a day at work and starts decorating.

Grace: It's just the artist in me trying to get out.

In the first example, Grace responds to the word "marriage" rather than to the whole of Heather's utterance; in the second she grabs "fault" and wrongly feels accused; in the third, neither she nor Trip respond to Heather's attempt to insult her - a reaction rather out of character with her prickly personality. If the work retains a global coherence, it is

because the human interactor plays the role of a relatively passive observer. The plot is driven forward by the canned dialogue of the system-created characters, much more than by the contributions of the player.

Rather than being produced by a faulty AI, inadvertent dysfunctionality can be the result of an experiment gone wrong - or wrongly conceived at the start. Consider the project A Million Penguins, conducted in 2007 by Penguin Books and De Montfort University in England. The purpose of the project was to use the newly developed Wiki technology - which allows users to access and easily modify texts on the web - to answer the question: 'Can a community write a novel' (Mason and Thomas 2008:1).The project was seeded with a first line from Charlotte Brontë's *Jane Eyre*: 'There was no possibility of taking a walk that day.' For a five weeks period, the public was invited to expand the text or to edit other people's contributions. Inspired by current theories of collective intelligence, the organizers were hopeful that self-organizing patterns would arise, but they also had a more practical goal in mind: the hope that the experiment would result in a publishable novel for Penguin. Not only would this publication be produced at low cost, since it would not be necessary to pay the volunteer authors, it would also benefit from the media hype generated by the project. The experiment did indeed benefit from considerable viral publicity, but what came out of it was a shapeless monster whose most prominent literary quality was a turgid prose worthy of the Bulwer-Lytton bad writing contest. (That such contests are being held speak eloquently for the appeal of playful dysfunctionality in media other than digital.) According to Mason and Thomas, the lack of any kind of top-down guidance produced the following features:

- A heap of opening chapters, resulting in several nascent novels unconnected to each other.

- A steady emergence of new motifs and plot lines that never gelled into a whole. There were only two ending chapters.

- A concentration of editing changes to the welcome page (modified 4686 times) while the vast majority of the other pages remained untouched. This pattern is symptomatic of a quick loss of interest.

- A proliferation of so-called "walled gardens," not linked to the rest of the work and therefore accessible only by their author. This suggests that even in a communal writing project, the individualistic stance typical of writing endures: many authors do not want others to alter their text.

The product of these practices was not only dysfunctional as a novel, it was dysfunctional even if regarded as a new literary genre: it is a safe bet that hardly anybody, beside perhaps the organizers of the project, will have the patience to read more than a few pages. But this does not mean that the experiment was a waste of time: its principal value lies in the demonstration of social behaviors, such as the efforts of the "gardener," who tries to impose order by exhorting other contributors to adhere to global scripts, or the sabotage of the "vandal," whose only purpose is to destroy the work of other people and to turn the text into chaos. The project tells us what people do, when they are let loose in a space where they are protected by masks (every contributor used a pseudonym). As Mason and Thomas observe, A Million Penguins embodies the spirit of Bakhtin's concept of the carnival: it represents "a moment of excess, featuring competing voices and performances" (Mason and Thomas, 2). The text may be ultimately unreadable, but what matters in this case for the contributors is the process and not the product - just as what matters in the carnival is to participate and not to spectate.

This explains why the formula, even though it can only lead to nonsense, has been recuperated as the live writing performance of multiple "authors" on Timestamp: 24 hours of Network Writing ⊁⊟⁻ , a one-time web-based happening organized by Subito Press of Boulder, Colorado on December 5, 2009. In this experiment, which took place in a limited time frame, participants did not contribute substantial narrative developments, but modified the text only a few words at a time. The result was a screen that changed almost continuously. Rather than trying to produce a text that will be worth reading, once immobilized, the project invited readers/writers to revel in the dynamic mutations of the text. Here writing becomes a game, a nearly instantaneous dialogue with unknown other writers, and an inscription as ephemeral as the thoughts that produce it. The project's subversion of the permanence of writing goes far beyond the type of volatility that one finds in works such as *Nippon*, *The Jew's Daughter* and *Chemical Landscapes*: it is always possible to replay these works and bring back their content to the screen, since their data is inscribed as code in the computer's memory. With a wiki project running in real time, by contrast, individual words are irremediably lost once they disappear from the

screen. Writing has come full circle since the oral stage of culture, negating its own ability to serve as preservation device and as external memory. The only feature of writing that is maintained in this experiment is its spatiality, for it would be impossible to amend the purely temporal flow of oral expression.
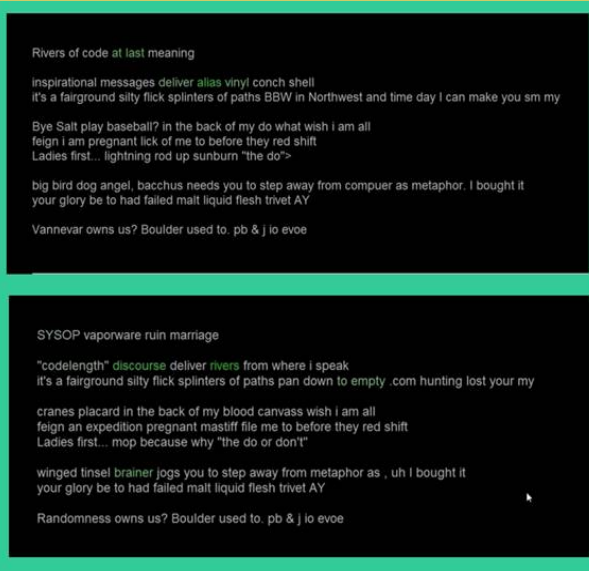
Two stages of Subito Press' Wiki writing project, taken at a few minutes' interval

The most harmful source of inadvertent dysfunctionality stems from the fact that many layers of software and many types of hardware are interposed between a project and its execution. A digital work is supposed to run on many platforms, and each of these platforms has unpredictable idiosyncrasies, resulting in slightly or widely different behaviors. (Computer games simplify the problem by being designed for a specific platform, such as the Sony Playstation, the Microsoft Xbox and the Nintendo Wii.) Variations from system to system may concern the fonts of the text, the color of the display, how much of the screen the work occupies, the speed of animation or the responsiveness of the system to user input. In the best of cases, the differences are unnoticeable or insignificant; in the worst, they destroy the artistic effect. The more a work relies on a precise coordination of kinetics, sound, graphics, and linguistic meaning, the more susceptible it is to unpredictable behavior. In the worst situations, an application may refuse to run under a certain operating system or on a certain type of machine, and become totally obsolete. Dysfunctionality, like death for living creatures, is the fate that ultimately awaits all digital works, unless we solve the problem of preservation.

Conclusion

Why in the end is dysfunctionality so prevalent in New Media art? In the course of its history, humanity has created art out of sensory data (sight for the visual arts, sound for music, taste for gastronomy, smell for perfume), out of the symbolic code of language, and finally out of technologies (the camera for photography and cinema), but never before has an art form been dependent on a machine designed to perform many different tasks, most of them non-artistic. The use of the computer as an entertainment and artistic machine came relatively late in its evolution. It is their origin in a highly functional technology, one that played a crucial role in the development of contemporary culture and economy, that makes new media so enamored with the dysfunctional: for if art is an aesthetic object, and if aesthetics is a "purposefulness without purpose" ("Zweckmägkeit ohne Zweck"), as Kant defined it, art cannot be subordinated to a practical end. To become an art machine, the computer must therefore be taken out of the world of business, of work, of science, and of everyday life. The practice of creating art by depriving an object of its practical use goes back to Dadaism and Marcel Duchamp's urinal, but the versatility of the computer makes the pursuit of dysfunctionality much more diversified than with non-programmable objects or media: there may be only one

way to turn a urinal into artwork, namely to take it out of the restroom and put it in the museum, but with the computer, every application and every layer of its architecture can be potentially disrupted for an aesthetic effect.

But dysfunctionality in new media art is not limited to play with inherently digital phenomena such as code and programs: in many of the examples discussed above, dysfunctionality affects language itself, by making it either physically unreadable or semantically inconsistent. How can one explain this sustained assault on the most fundamental, the most versatile and powerful mode of signification - the one that makes us truly human? The computer has shown extraordinary efficiency in the visual domain; computer graphics, digital photography, and animations have not only taken realism to new heights, they have also made possible genuinely novel forms of graphic art, from the mapping of fractals to the creation of visually stunning virtual worlds that users can explore. The contributions of the computer to language are much more debatable. ‹ **9** › The networking capabilities of digital media - e-mail, twitter, blogs, and web sites - have greatly facilitated textual communication, but most of these uses have been focused on social relations rather than on aesthetic experience. The other distinctive properties of the computer - interactivity, code-driven operation, multi-media capabilities, and volatile inscription - are not particularly well suited at directing attention to the semantic, rhythmic, and phonic qualities of words, nor at helping language transport readers into imaginary worlds, tell spellbinding stories, and articulate intriguing ideas. Videogame designers and digital artists have for instance devoted great effort to the creation of interactive narrative, in the hope of reaching a wider audience, but the magic formula that puts active user participation in the service of a spellbinding story has remained elusive: the best game stories are created by temporarily taking control away from the player.

Seen in this perspective, the dysfunctional use of language in electronic literature makes virtue out of necessity. Are new media unable to improve on the book as an instrument of reading for pleasure? ‹ **10** › Let them produce anti-books, by creating liberties where the book constrains reading, and by creating constraints where the book affords liberties. Rather than letting a bound spine prescribe a rigid ordering of pages, let's have a variable sequence; rather than expecting readers to parse the entire text, as do most book-bound literary works, allow them to pick and choose; rather than letting readers choose their own pace, let's impose a tempo; rather than presenting a stable text, to which readers can return at will, let the screen modify itself and render previous displays inaccessible, or only randomly accessible. Above all, rather than using language to construct worlds, tell stories and present logical arguments, let readers focus on what Katherine Hayles calls the materiality of language - which means, mostly, its visuality - by making signifiers dance on the screen, by playing with their appearance, and by turning code into a ringmaster who makes words perform on command like circus animals. Let meaning arise from the disruption of reading habits, rather than from the propositional content of sentences. ‹ **11** › These practices literalize Roland Barthes' call for the replacement of the "readerly" with the "writerly." The negative theology of dysfunctionality is a refusal to let literature yield any content - a notion which, not coincidentally, plays a major role in the culture of technological efficiency (cf. the replacement of the term of author with "content provider" in the language of Internet business). This refusal puts dysfunctionality in line with the signifier-worship that has dominated literary criticism from New Criticism to deconstruction. But what do we get in return for the loss of content? In the best of cases, dysfunctionality can reach a higher functionality (for art can indeed be useful, as long as it is not in a crassly material way) by making users aware of the codes and processes (technological, linguistic, cultural and cognitive) that regulate our social and mental life. It is indeed in moments of malfunctioning, of rupture, of interference that the processes that habit makes us take for granted achieve visibility, and stimulate critical thinking. Dysfunctionality could for instance promote a better understanding of the cognitive activity of reading, or of the significance of the book as a support of writing.

All in all, we should not pass a global judgment on the predilection of new media for dysfunctionality: some of it may be an easy cop-out, some of it may be a cocoon, out of which a beautiful butterfly will emerge some day (interactive narrative? AI-based projects such as *Façade*?); and some of it is a cocoon so well-crafted, so amusing, so original, that it makes us forget about the butterfly (the most successful ludic applications). Here however I am adopting the point of view of the reader, and this may be beside the point for digital writing. If we take Barthes's conception of writing as "an intransitive verb" literally, what matters most in new media art is not reading but writing - the fun of inventing new games with machines, language and code, and the fun of participating in a community of like-minded authors.

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