LES CAHIERS DU MIM

N° 03

Passage
poème numérique
éléments
d'esthétique
et d'analyse

The work

The 2009 version of *passage* is a **MIM** & MOTS-VOIR coproduction for PC. It is available for free download on the **MIM** website (www.labo-mim.org) and coming soon on the MOTS-VOIR website (http://motsvoir.free.fr). A MAC version will soon be made, register you on the **MIM** website if you are interested on it.

Please note that institutions and organizations (multimedia libraries, museums, schools, universities...) are not allowed to download *passage*, unless they contact MOTS-VOIR and get an appropriate version.

Programming, visuals and texts: Philippe Bootz.

Music: Marcel Frémiot. The screenshots used in this file for the description and analysis of *la série des U* are taken from video files that you can download for free on the **MIM** website.

INTRODUCTION

We are fully aware of the fact that this file is demanding. It is not a document destined to the general public. It is rather willing to provide people who wonder about the state of creation in digital poetry with useful information, regardless of who they are. In fact, in reviewing the issues raised by *passage*, we have tried to be as general yet rigorous as possible. This file is neither a thorough analysis, nor a close-reading of *passage*. We did not look for exhaustiveness, but rather for significant examples of the (numerous) issues we have chosen to tackle in *passage*. Not all these issues are the fruits of our collaboration. A certain number of them have already been dealt with throughout the previous versions of the work.

We have introduced these issues, because they are necessary for readers to understand the aim of our approach. They would also prove useful if somebody wanted to dissect the work. This is why most parts of this file have been written by Philippe.

Despite the quite theoretical content of this file, our stance remains one of two designers (or "makers" if you prefer). This means that on the one hand, the file is written by two "I" persons and on the other hand, that we will not precisely define the concepts we use here, nor will we deal with the necessary reflection on their righteous extent. It takes several points of view to create meaning, of which one point of view serves as a guideline and it is this that we, as authors, have chosen to present in this file.

FORMS, THE FORM OF MY WORK

We believed it would be interesting to begin this journal issue with an imaginary correspondence. We say “imaginary” because this correspondence only consists of the e-mails that led us to write this file. Nevertheless, the issue we are tackling here is the cornerstone of our involvement in the artistic adventure that is the 2009 version of *passage*.

This correspondence has focused on the notion of artistic form, around which revolve most of the questions and propositions of answer presented in *passage* and which constitutes its central issue. In this file, we will give you our opinion on this issue as it is and as far as possible. Although we will establish the intention that lies at the centre of this work in the first place, we aim at showing that there is more to it than that, by proving that *passage* has indeed one *author***s**.

Philippe - *In my opinion, the artistic form is “a necessary structure”. I believe that the artistic conception of « form » encompasses two notions: the notion of structure and the vital need for this structure. In other words, a form is a structure as well as a modality*[1] *of artistic representation, as opposed to a structure that would only serve as a functional tool designed to "perform" this representation. To make it even simpler, we can say that as far as form is concerned, structure is neither*

[1] By modality I mean a method that is used to produce a representation.

the medium, nor the expression of representation, it is representation. In general, a same result can be achieved through different structures. However, when this result is not the only element of representation that the author wants to achieve - i.e. when this structure itself is an element of representation - then this structure is a form and changing it alters the form by cancelling the associated representation level. In a programming language, this means that the programmed form is neither bound to the result achieved when the program structure is run, nor to the active processes that are part of the running process – such as those producing temporal semiotics – this rather means that the layout of instructions is in itself a medium of artistic representation.

Marcel – *"Form" in the musical sense of the word is usually a determinant element in music, because "form" speaks. It is the "form" that determines whether music is a play with techniques (e.g. Variation), a discursive approach (e.g. the form of the "first movement of a sonata"), a particular emotional state - be it a loving one or a religious ecstasy (e.g. adagio) - a constructivist play (e.g. the fugue), to give only a few simple examples. Depending on the case, this form reveals itself instantaneously or as soon as the whole piece has been played. How can forms possibly be apprehended when the reference points are missing, when they are not obvious, or when the musical piece has not been heard in full? If we ask this question, it is because this is exactly what happens in* passage.

There are two levels of traditional musical "forms". The first one is an abstract "structure" that can be schematized as follows: AA'A''... (e.g. Variation), ABA (e.g. Adagio) etc. The second level is the materialization, the "coating" of the structure. It is this level that constitutes the real "form". Thus, the first movement of one composer's sonata is different from that of another composer's, even if they have the same structure. The first one may play it first in major and then in minor, whereas the second one may do the opposite. As well, the first composer may use only one theme, whereas the second one may use two, etc.

What form does passage *take? Many a false lead might spring in the composer's search for an answer. The composer could not superimpose – let alone impose – a so-called musical, or even a sound form on passage, because of the initial set of rules described in this file, just after the introduction. Given the multidisciplinary nature of passage, the composer could have referred to the forms detected in works that resort to video for example, although passage is not a video. To my knowledge, no form has been detected nor theorized in this field. Be that as it may, forms only come to life - in an abstract way – as the result of more or less conscious practices. Thus, the composer has only followed a way opened long before his intervention. What is the result of this?*

It seems to me that there are three levels to be distinguished. The first one could be called the abstract "model", making computer command files interact with one another. The second one would then be a structural (structuring) layout, applying this model in order to "express" it in the form of visual, sound and/or textual (literary) files. This "structure" (if we may call it a structure) then produces the "form" that is heard/seen by the spectator-listener through its possible self-modification (cf. Philippe's theoretical explanations given in this file). This constitutes the third level. The problem is that, contrary to a sonata that remains identical when the listener plays it again – and that for this particular is likely to be analyzed - , the spectator-listener of passage *will witness a different version of the work every single time he/she re-runs the system. That is to say that the structure, having evolved, means that "the" form becomes forever elusive. We are sent back to the aesthetics of frustration, with which we will largely deal in this file.*

What does passage *tell then? Well,* passage *tells exactly what its authors have meant it to tell. One might argue that* passage *is in three parts and that each of these parts is likely to unveil a musical form. This is not - and will never be - the case, for even if there is sound, it is made of a more or less random sequence of independent moments (we cannot talk of a "progression" in this case), though the listener may have the impression that they follow each other quite smoothly. Noticeably, digital poetry in its actual state is not the superimposition of several artistic disciplines, but a multiple approach. In the same way as we speak about "text" (and not poetry), "visuals" (and not paintings or canvases), we should talk about "sound" (or any other label yet to come) instead of "music".*

Philippe in solo: an object of time, a reasoning object

Passage is a special work in my poetic production. To this day, it is one of the most important pieces of my work, if not the most important. It links together all the elements of my artistic approach. I have worked on *passage* for 17 years now and it has not reached its final state yet.

Passage has evolved over its three successive versions. The first version was presented in 1993 at the university of Lille 3 during a symposium entitled *"Nord poésie et Ordinateur"* and was released the following year on a floppy disk going with the actions performed on this occasion. It introduced but a rather streamlined version of the principle of operation of the work's central phase, entitled *la série des U* (*the set of U*). In 1996, the second version was published in *alire* 10 and already comprised the actual "single-reading" form presented hereafter and which focuses on the reading process. It was during the presentation of this version that I first met a MIM member. The current version was published in 2009 on the MIM website and is the result of my collaboration with Marcel Frémiot. On this occasion, we paid further attention to the relation between media and digital writing, i.e. on the representations and aesthetic forms that exist in a program, but do not appear on screen. In each version, every stage - and practically every sequence - was a new challenge for us, as well as a new land to explore and discover, which I will further develop herein. In addition to this file, I will sometimes refer to video samples that have been broadcast on the MIM website.

Marcel in solo: challenged music, compelling music

What led me to accept Philippe's invitation to create the sound part of *passage* was the adventure of searching for as yet unexplored types of multimedia work *Passage* is a complex computer work that seems to be made, now of painting, music, literary poetry, now of spoken words, now of the reading performed by the spectator-listener. Moreover, each of these disciplines is in a perpetual state of mutation. This is why we call this kind of complex multimedia work "yet to be explored," because the plurality of media has to lead to the creation of a new "object," in which no one medium will predominate.

However, as we began to work on this version of *passage* in 2001, the spectator-listener felt there was a predominance of sound over visuals - or the other way round - in the multimedia propositions.

As I thought about how I would solve this problem, I told myself I would have to be more "discreet", all the more because, though far from being an epic work, *passage* nonetheless possesses an inner, intimate sense of dramatic art. We also had to acknowledge the fact that different media neither reveal different "personalities", nor different facets of a same “personality.” In fact, at each stage of the work, the different media have to contribute to a unique and ever different expression.

Set of rules proposed by Philippe (18-02-2000): "*You have carte blanche as regards the orientation of your music. Just make sure you comply with the two following rules:*
- the mixing of the voice singing a capella *at the beginning of the work and my own voice has to remain as such.*
- the spoken texts must be kept as they are.
- I think it would be useful to keep the same balance between sound and silence, as it is one of the characteristics of passage".

This is where technical problems are encountered. *Passage* is not meant to be played in a concert hall, but to be run on a regular computer. Hence the need to consider the quality, or non-quality of the listener's audio system.

Another constraint, due to the fact that *passage* is meant to be run on a computer - especially the musical sequences related to "text/image" - is the variation in the display speed of the written text that can go up to 50% from a computer to another. It is important to make sure that musical sequences can be stopped at different moments and then played from determined points of synchronization. It is the sad fate – or happy pastime – of every organ player during Catholic church services. This is absolutely essential during "PHASE 1" where the development of the work is linear. In "PHASE 2," where the work develops randomly, we will come up with another solution, as explained further down.

First decisions made to meet the aforementioned requirements:

- Only work in mono - 1 track
- Sound sequences shall be of an approximate length of 1 minute (40 seconds to 1 minute and 15 seconds according to visual/literary sequences)
- Renounce contrapuntal polyphony, to obey the "discretion" rule.
- Try to cover the widest sound range. Be careful, this must not prevent you from satisfying the need for variety.
- Try to work with "concrete" sound textures and acoustic instruments, in order to avoid the all-digital sound.

As in most cases, the choice of the instruments was not a real choice. Here, we had to find instrumentalists who would accept to "play" brief sound pieces, from which musical discourse and fulfilling virtuosity were excluded. Moreover, these instrumentalists had to be fully involved in their performance, despite their knowing they would not hear the result before years.

We have selected: the piano for its low and medium registers, the striking and resonance of its wires; the parallel wooden marimba; the vibraphone for its medium and low-high registers, as well as for its metallic resonance; the flute, essentially the piccolo for its high register and for the puff; finally some discreet percussions.

My wish was to have a soprano sing, but the relation the voice bore with the poetic texts - which the listener-reader had to read on screen or to listen to - was not one of empathy, even in the case of slow singing exercises. The reason for this was that in this context, every vocalized vowel was phoneme-related and disturbed the cohesion of the whole work.

This being set, we were faced with two other constraints that would influence our choices in musical writing: the grammatical gender and tense. The poem *passage*, in its literary substratum, had to be expressed - and in fact *is* expressed - in the masculine, as well as in the feminine and neutral genders from **PHASE 2** onwards. The sound elements we chose also had to comply with these constraints,

because of the initial principle of the unique "object". The same went for the grammatical tenses, for each of them had to be made available: the present and future tenses, the *imparfait*[2], the *passé simple*[3] and the conditional (used as a grammatical tense in the work). Moreover, "spatial" positions were to appear later on: below, lying, sitting, standing, above.

There is a guiding principle to the structure of every "musical" moment. This principle can be discovered just by listening to the work. However, I dare say that the listener does not care about it, unless he/she wants to be intellectually entertained. In my opinion, the important thing is to make listeners perceive the difference between how one temporality is expressed compared to another. As we explain further, we will see to what extent these guidelines shall be considered as personal and devoid of any scientific pretension. We shall also see that they directly depend on the context and time of the work.

This is to say that within such a complex – i.e. determined·indeterminate - "willful" work as *passage*, a musician can still play quite freely.

A duet playing a suite

Passage has been studied and analyzed in many anthology articles, digital and written reviews, as well as famous international symposiums. To cite some of them at random: the reviews *alire* (Fr.), *Leonardo* (USA) and *Texto digital* (Br.), *e-poetry* (Sp.), the anthology *Electronic literature collection n°1* (USA) and soon the review *Dichtung Digital* (D), not to mention the various public exhibitions and screenings.

PASSAGE: A WORK ON THE READING PROCESS

BY PHILIPPE

01 THE FOUNDATIONS OF MY WORK: A REFLECTION ON THE READING PROCESS

In the very first place, *passage* deals with a fundamental issue in my approach, i.e. that of the reading process. It is this issue that has been keeping me working - from 1978 onwards - on programmed poetry and consequently on computing, for programming and computing are, in my opinion, the most effective tools to deal with this subject. My poetic approach is not so much focused on the text itself as it is on the reading process as a fundamental literary issue. Treating the reading process indirectly causes the text to be transformed. However, the issue of the reading process is the primary one. I have

2 A French past tense that is usually used to describe a continuous action in the past, or an unfinished action. (Translator's Note)

3 A French past tense that is usually used to state something that is finished, that took place in the past. It is quite similar to the English preterite. (Translator's Note)

always considered the reading process to be an essential and vital act, a symbol of the creation of meaning and it just so happens that the creation of meaning is at the core of human societies and broadly speaking, of all the strategies displayed by men in order to survive, multiply, grow and blossom. In my opinion, the reading process reproduces the conditions for the creation of meaning in an iconic way, because it is a modality of the creation of meaning. What does the human species aim at by creating meaning? It aims at making the proper decisions before performing any action. In the real world, the creation of meaning – just like decision making - thus has some specific properties, as is the case for the making of decisions:

– In order to create meaning, the gathered information has to be sorted out according to the decisions made previously. This selection amounts to destroying some pieces of information in order to create meaning. The reading process as the fundamental act through which one performs the construction of one's identity, is then both a creative and destructive act and must be radically distinguished from the "informative" reading of a newspaper that aims at grasping the whole content of the information.

– Decision making and the creation of meaning are always performed by using incomplete information. They result from both a "data processing" and a gamble. In this sense, they are the total opposite of the informative analytic reading, which requires that the reasoning behind the creation of meaning take into account the whole information available, in order to be valid. In this case, we can no longer talk of a "bet," for meaning has to be "objective."

– The consequences of the creation of meaning are irreversible. It is indeed possible to change a meaning, but not the result of the actions it has led to perform. It is also impossible to get back to a state of information that is anterior to the creation of meaning, for *a meaning cannot but occur.* As well, it is impossible not to create meaning. Our mind cannot conceive of this.

– Finally, the creation of meaning is an individual act performed in a particular socio-cultural context and therefore a collective one. In these conditions, it is subject to a whole set of competing hierarchical powers. The same goes for the informative analytic reading, which may be subject to disinformation or under the pressure of propaganda.

Eventually, I wanted the readers of my works to encounter these characteristics. I wanted to show that reading – here an informative reading, as opposed to a self-building process – is a biased activity of a limited power, i.e. it is not sufficient to process information and fails to achieve its first goal, which is the analytic processing of information. It is the "journalistic" reading that is thus questioned, this same reading that is at the core of our communication and information society. If the reading process fails, then a work can neither be knowable nor subject to information processing. Any work that is created has this "reader trap" dimension, a term that I introduced quite early in my writings.

02 A WORK FOLLOWING ON FROM SYNTACTIC ANIMATIONS

The starting point of this work is thus a theoretical literary issue. Back then, I used to be part of one of the main digital poetry French collectives – the L.A.I.R.E collective, founded in 1988 – and I used to develop a specific form of digital poetry called "syntactic animation," which precisely questioned the principles of informative and analytic reading established in our culture based on printed texts.

This – then new - form cannot exist except on a screen, for it is closely related to the introduction of a temporality into the written form. Adding temporality to a written text can serve several purposes and modalities. I have explored several of these in the current version of *passage*, but at that time, what fascinated us were the situations in which temporality deeply modified the syntactic functioning of texts. By that time, I had become aware that this modification was related to the need for two different yet simultaneous grammars: the first one comes from the written form and is built on the spatial organization of words (spatial reading), the other one comes from the oral form and is built on the order of appearance of words (temporal reading). That is why I have been calling the origins of syntactic animations "the presence of the oral character within the written form". Just consider the following example as the simple occurrence of a syntactic animation. Imagine that the previous clause "Paul kills John" is displayed on screen in the same order and on the same line. Now let us change their order of appearance, "John" is first (yet at the same place as before), "kills" is second and "Paul" is last. Once the three words are displayed on screen, the sentence gradually fades to white. Obviously, the eventual meaning of the sentence will depend on the reading modality favored by the reader. This sequence shall thus be read as "Paul kills John" (spatial reading) or as "John kills Paul" (temporal reading): a Schrödinger's cat of sorts within the reading process!

In this example, the two reading modalities can be implemented one after the other. However, they are likely to superimpose themselves on the whole text when several sequences of syntactic animation unfold simultaneously in a desynchronized way. In fact, these modalities cannot be simultaneous, for they would need to draw the reader's attention to different kinds of information processing. At the time these works were created, readers found it very difficult to read them, especially if they enjoyed reading books.

Nowadays we are used to reading an animated text on screen, which makes it much easier to read these works. We more easily accept to creating meaning from the information we perceive, even if this implies losing some pieces of information.

What characterizes the reading of syntactic animations is in fact a singular phenomenon that does not occur while reading a book. Readers perceive and process some information as they read (depending on the reading modality that is implemented), but they also notice at some point in their reading that some things have been modified, which they have neither perceived, nor dealt with. To put it more simply, readers perceive an essential fact, i.e. their reading is both a loss of information and a processing of the information they have perceived. Channel surfing – that so disparaged activity - thus proves to be a necessary condition for the reading of syntactic animations. *Reading amounts to creating meaning while accepting the destruction of some meaningful information.* Far from regarding channel surfing as a reading defect, the authors of syntactic animations even make it the prevailing function in their works. To this effect, they multiply "short" meaningful structures between terms, i.e. relations that either use but a few words, or words that are spatially close to each other or words that are treated within a short lapse of time. Even if readers do not perceive the whole of these relations, they manage to grasp enough of them to create meaning throughout their reading. Although "long" relations are present in the work, they are more difficult to perceive. This play on relations that fit into each other in a complex way produces different "meaning strata", that are likely to contradict one another, as illustrated by the following example. In these conditions, rereading is an essential dimension of the reading process. In other words, a syntactic animation is meant to be reread.

CREATING AN INTERACTIVE FORM

BY PHILIPPE

01 THE "SINGLE-READING" FORM

This observation gave birth to the idea of the *passage* project. The aims of that project were to prevent readers from rereading, to turn the work into an entity that was truly irreversible and interactive and in which all of the elements that had been already read remained forever out of reach, so that no choice could be modified and no other possibility of the work explored. In other words, my aim was to create a work where every decision was irreversible. I wanted reading to become a mirror held up to life, always according to the idea that *a poem is a representation of the world we live in, not because of what it tells, but because of the readings it implies*. I had just used a mouse for the first time ever in my work, when I decided to reach for this goal. This was in 1992.

The first challenge was then to find the logic of creation of a work that would not be altered by turning off the computer, while remaining coherent throughout a relatively long time (several readings). It took me a year to find the logical form to apply to the work, a form that I decided to call "single-reading,"[4] for readers could not reread what they had already read on a given computer. Their only "choice" was to continue their reading. To be more precise, there were some cases in which they could not reread what they had already read, but in some others, they could read the running sequence as many times as they pleased. However, once they stopped the program, they could not come back to what they had read.

In order to do this, this work uses generators that interpret the reader's actions and produce multimedia sequences according to these. Their rereading a sequence is considered as an action. For some of the sequences, the running time depends on the actions performed by the readers. As for the other ones (considered as non-interactive by readers), they depend on the characteristics of the technological context in which the program of the work is run (speed of the computer, memory available...) In any case, this running length is finite. The reader's lack of reaction in an interactive sequence is also considered as an action by the program. Thus, the characteristic of the single-reading poem is that *it is physically impossible to perform no action*. Because the logic implemented in the generators is coherent and depends on the actions previously performed by readers, the poem is gradually shaped by their reading. Yet, this is not done "automatically" (i.e. in the way an automaton would do) or by following precise instructions, but rather in the way a plant grows depending on how it is watered. Indeed the program follows its own logic that is hardly ever perceived by readers. The poem is a response to the reading process, a response that comprises an author's intentionality that is delegated to the program.

[4] the term “unique-reading” can also be used before the reading is both unique and single. In French, the word “unique” has these two meanings

02 THE DESCRIPTOR

The technical solution to the logical problem raised by such a long form (long because it runs throughout the whole work and embraces all the readings performed by a given reader) consisted in creating a model that would instantaneously describe the state of the work, a description that would of course evolve as readers would carry on with their reading. This model does not describe all the characteristics of the work, but only the value of the information that is necessary to its evolution, i.e. the interpretation of the reader's actions. Hence the decision to call this model "descriptor", coined following the concept of the automatic generation of texts invented by Jean-Pierre Balpe. The descriptor is stored in a file that is rewritten at every reading. This allows the work to go on even as the computer is turned off (the internet was not available to the public in 1992, and it was out of the question to store the descriptor in the database of an online work). Every generator uses the data of this descriptor. This solution implies that the work is related to a machine instead of a reader.

The descriptor is nothing more than a description of the conceptual state of the work at the end of a reading and the interpretation of the reader's actions amounts to attributing concepts with an initially null value. Thus, the structure of the descriptor is equivalent to a set of formulae described as *concept=value*. The only concepts handled in the work are the following ones: the *position* of the running sequence in the hypertextual structure of the work, the *rereading* (the value of which equals the number of times the current sequence has been read), the grammatical *tense* (present, past, future...), the *gender*, *matter* and *direction*. A curious *manipulecteur*[5] is liable to find the details of both the descriptor and the field of values within any data file of the work.

03 THE HYPERTEXTUAL STRUCTURE OF PASSAGE

A/ ONE STRUCTURE IN THREE PHASES

Passage has a particular hypertextual structure built on a linear set of three successive phases. Each phase plays the role of a specific "reader trap" that compels the readers who are in a hurry to stop their reading by making them believe that they have understood how *passage* works. Above all, *passage* aims at deluding these readers who cannot see under the surface and who want to "know" rather than read. Reading *passage* takes quite a long time, this is why it cannot fit in an exhibition (as is the case for many digital poetry works). Therefore, one should take one's time (preferably at home) to read *passage*.

B/ THE DELUSION OF THE FIRST PHASE

The first phase consists of four successive sequences in which readers are not given the chance to perform anything. Yet, this phase is definitely an interactive one, for when readers decide to stop the program or carry on to the next sequence, they find themselves unable to get back to the previous sequences. In this phase, the only concept of the descriptor which value does not change is that of *sequence*. This phase is presented as a succession of verses. Each sequence resorts to elements that

5 The term *manipulecteur* is a neologism. It is a portmanteau word made of the words *manipulateur* (here a person who experiments on things rather than a manipulator) and *lecteur* (reader). *Translator's note*

were introduced in the previous sequences. However, as readers are now unable to get back to these sequences, memory plays a great role in the construction of meaning. The memory they have of the previous sequences is as important as the signs appearing on screen. This works just as in the real life, i.e. part of the creation of meaning comes from our memories and from the meaning we created in previous situations. Of course, readers who are in a hurry will not "feel" this dimension of the phase and they will get what they deserve, for *passage is but a succession of animated sequences*.

To improve the efficiency of memory, the total running time of the work is much longer than the time readers generally allow themselves to spend reading a digital work. By contrast, the length of each sequence is calculated on the time the average reader is willing to spend reading a digital work (this is also true for the other phases). This work was conceived in such a way as to allow readers to stop their reading and carry on whenever they want to. It takes approximately 2 to 3 minutes to read a sequence, while it never takes less than 30 minutes (even if we take the readers' actions into account) to read the three sequences in the 2009 version.

C/ THE GORDIAN KNOT OF *PASSAGE*: PHASE 2

The second phase of *passage* is an interactive one in the "traditional" sense of the word, i.e. readers can act on it by clicking on the elements. However, its structure radically differs from that of a hypertext browsing (a website animation for example) for two reasons. The first one is that what appears on screen is always in motion and the second one is that readers invariably come back to the central sequence (which they soon recognize), i.e. *la série des U*, the framework of the whole work. These two characteristics hide the hypertextual dimension of the phase from readers.

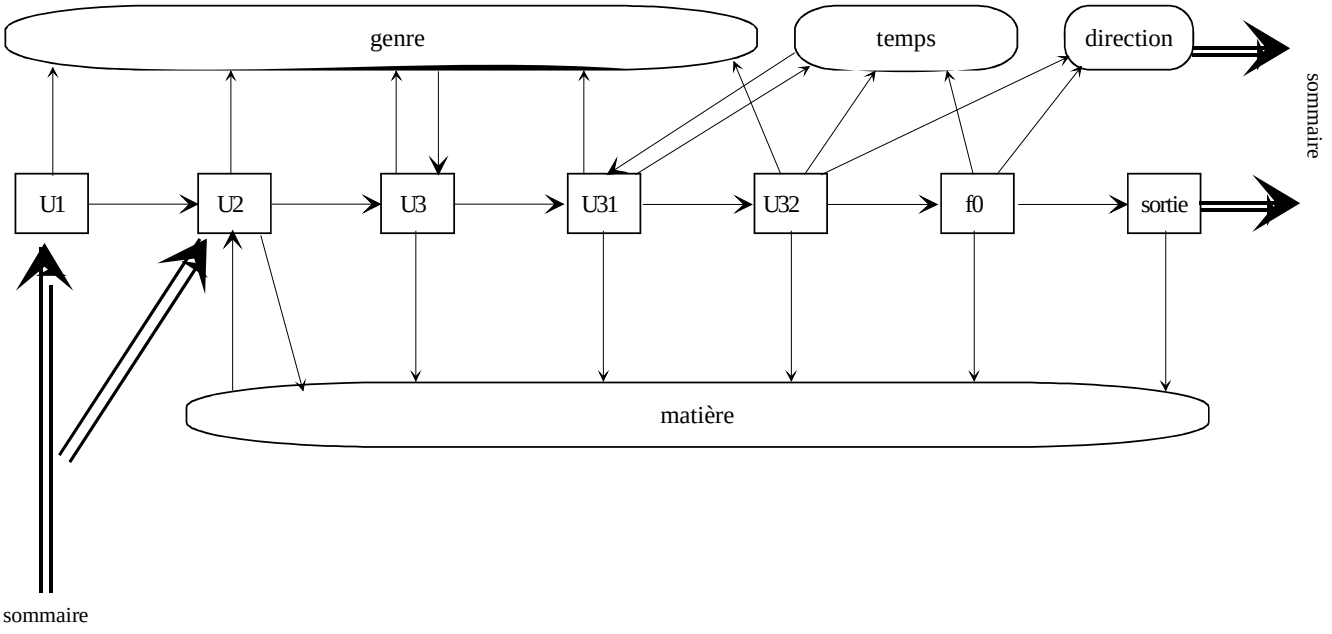

Figure 1 : hypertextual structure of PHASE 2 of *passage*.

The hypertextual structure of this phase is made of two distinct types of units that I call "syntagmatic units" [U1, U2, U3, U31, U32, f0, sortie (exit)] and "paradigmatic units" [genre, temps (tense), direction, matière (matter)], in reference to their functioning. In grammar, syntagms combine in a sequential way to form the syntactic structure of sentences (subject, object, verb...), whereas

paradigmatic units consist of vocabulary, i.e. a given syntagm can be made of different paradigmatic units (e.g. John eats rabbits; the wolf eats rabbits). There are some similarities between the syntactic structure and the relation between PHASE 2 units and the descriptor. Syntagmatic units show several of the concepts that form the descriptor, combined with one another to form a sequence. Every concept (equivalent to a syntagm) possesses but one value (one paradigm) at a given instant, contrary to paradigmatic units that are related to one concept, but show – at least at the end of the sequence – every possible value of this concept at once, in the same way as a list of vocabulary would do. Clicking on some active element of a syntagmatic unit then amounts to choosing a concept within the descriptor, which results in browsing the paradigmatic unit of this concept. Clicking on some element of the paradigmatic unit then amounts to "locking" the value of the concept. As a consequence, readers are taken back to the syntagmatic unit and as a second one and are prevented from getting back to the paradigmatic unit that they have just left. Paradigmatic units are the only units in *passage* that can be read only once and not necessarily entirely, as we shall see.

To give you an example, the beginning of the syntagmatic unit U3U1 (cf. Figure 1) shows the expression "elle passe"[6] by default, i.e. before the reader decides to do anything. This particular expression includes two concepts of the descriptor: *gender* (elle) and *tense* (passe). Clicking on "elle" indirectly leads (we shall see further down why the process is delayed) to the paradigmatic unit that helps us identify the *gender*. This unit includes – among others – the words "il" and "elle"[7] as well as the neutral gender expressed in a very long development. Clicking on "il" definitely alters the "masculine" value of the *gender* concept and stops the paradigmatic unit in order to come back to a syntagmatic unit in *la série des U*. As readers are returned to the syntagmatic units, the expression "il passe"[8] is displayed and "il" is no longer interactive. Besides, all of the anchors (a hypertextual term that refers to clickable elements activating a given link) that allow readers to go from any point in *la série des U* to the paradigmatic unit *gender* are deactivated. In hypermedia theory, we say that the links are conditioned.

All units – both syntagmatic and paradigmatic units – are sequences of a certain length. If no action is performed during PHASE 2, *la série des U* is fully displayed. *La série des U* is made of the succession of all the syntagmatic sequences. These sequences always follow each other in the same order, the following sequence being automatically called by an automatic link at the end of the previous sequence. On the contrary, both the return to paradigmatic sequences and their anchors are likely to take place in different syntagmatic sequences and on different "internal dates"[9] of the animations in *la série des U*.

No display provides readers with an explanation as regards this structure or about how interactivity is ensured. However, the interactivity of *passage* features unusual characteristics, so as to prevent readers from understanding their actions. When they click on a concept of the descriptor within a syntagmatic unit, the change in sequence is not immediate. It is a case of delayed-response interactivity. In fact, the cursor changes shape to inform readers that their action is being processed, but the program does not move on to the next phase before the syntagmatic sequence of the current phase has come to an end. These sequences are designed like short animations that possess a strong internal coherence (e.g. the complete development of the trajectory followed by a letter.) As a result, every animation seems to

6 "She is passing by " *Translator's Note*
7 "He" and "She" *Translator's Note*
8 "He is passing by " *Translator's Note*
9 The "internal date" of an animation corresponds to the time that has elapsed since the beginning of the animation.

unfold in an uninterrupted way, without any structure-related obstacle. On screen, this impression of continuity is so strong that readers are very likely to be unconscious of the phenomenon of navigation that occurs between sequences of different natures. Any action performed within a syntagmatic unit interrupts its course, sometimes leaving readers with an impression of incompletion that urges them to rerun it, which is impossible to do. Eventually, readers who rush their reading get the impression that they are "building" the text, or that the work is but an automaton on which they have total control. This constitutes a deception too, for the program's response to the action is twice delayed: if PHASE 2 uses the descriptor in a purely syntactic way so as to allow the syntagmatic units to adapt to the reading process, PHASE 3, on the contrary, uses this descriptor in a semantic way.

Readers cannot act as they please; instead they are bound to wait for "temporal" windows to open. In paradigmatic units, it sometimes takes the whole running time of a sequence to display the totality of the information that would allow readers to make a reasoned decision. Yet, readers have to take a decision regardless of the information they get, for if they wait until the end of the animation, they can no longer perform any action and the program then chooses a default value set by the author. This author's choice, like all choices, is irreversible: the absence of action is considered as an action.

Of course, these particularities remain totally unknown to readers.

La série des U – that comprises the syntagmatic units – can easily be identified in the phase structure (cf Figure 1). It corresponds to the linear chain formed by units U1, U2... f0, sortie. The name of this *série* thus comes from this quite old figure – imagined circa 1994 – and from the denomination of the syntagmatic units I used as I began programming the 1996 version of the digital review *alire*. When read for the first time, the phase starts with U1. In any other case, it starts with U2. The units "sortie" and "direction"[10] automatically lead to the table of contents. There are only two ways out of the table of contents. The first one is the phase, in case some concepts are not related to any value after the former readings. The second one is PHASE 3 in case the descriptor is complete.

In case readers do not find all paradigmatic units within a maximum of ten readings, every concept that remains free from any value is automatically attributed the default value set by the author, so that they do not get stuck.

La série des U constitutes an autonomous "local" form within the work, a form that readers are to perceive only if they remain passive. This form graphically develops over ten readings of *la série des U*nités syntagmatiques[11]. This *série* takes the form of a syntactic animation that develops on a horizontal axis in the middle of the screen. Animation associated with sound management form the singular structure on which the "local" form of *la série des U* is built. We will give further details about this structure below. Of course, readers are still able to access the "local" form of *la série des U* even when they do not act on the interactive elements. However, they can neither reach a paradigmatic unit nor choose a value of the descriptor. In this case, the author's choices prevail. It is up to readers to choose between form and action.

Thus, readers are torn between the two fundamental attitudes towards digital reading:

[10] Respectively "exit" and "direction". *Translator's Note*
[11] *The set of* syntagmatic *U*nits. *Translator's Note*

- Making a choice. This influences the subsequent steps of the reading process, but it also implies a loss of information for, depending on the circumstances of that choice, some structures are shortened and some others shall never appear.

- Being a viewer. This allows readers to get more information, but at the same time they fall into the author's clutches.

D/ PHASE 3: A WORK IN PROGRESS

The whole PHASE 3 is made of a single generator that produces an animation in response to the state described by the descriptor. All of the material that appears on screen comes from this generator. Instead of leading to the table of contents, the reading of PHASE 3 puts an end to the animation (except in the version destined to public exhibitions). This phase is indeed interactive - though not in the common sense of the word - for the phase "grows older" from one reading to another, i.e. readers lose some information each time they reread it.

From a reading to another, the generator that constitutes PHASE 3 produces different results, which do look alike because they derive from the now perennial pieces of information given by the descriptor, each time according to the same logic. As for the logic of the program, it depends on the values of the concepts, which are themselves ruled by complex entanglements. Consequently, readers notice but a small portion of the material that partakes in the generation process, whereas two readers who have reached different states in their reading will be confronted with very different phase-produced animations. This phase is the most difficult to program and no solution has been found to the global problem that is raised, i.e. to find a modality of programming that would enable the program to modify its own logic according to data. To put it plainly, the program of this phase must be designed and written as a narrative generator that could follow different scenarios. At the time we are writing this file, this possibility has not yet been explored and the current programming of the phase is kind of a rush job! There are only a few things missing – the programming of a two-minute animation for example – but they can take up to several months and it would be a shame to end this great adventure in a hurry. The crucial point in such an approach is less a matter of the finished product than it is of its making.

We also plan to end PHASE 3 with a verse that will display only one line per rereading and will spread over ten or twenty rereadings.

04 THE READER'S STANCE: BETWEEN INCOMMUNICABILITY AND FRUSTRATION

A/ A READER INDEED, BUT HOW ABOUT READERS?

Throughout *passage*, a reader can read according to three different modalities: memory, perception, and manipulation. This combination induces several categories of readers. For instance, two readers – one who reads *passage* for the first time and the other who has already performed the readings that have led him/her to the current one – will not see the same text, for this second reader perceives some clues in the current sequence through which meaning is largely determined by his/her previous readings. As this reader gets to PHASE 3, his/her reading is slightly modified for he/she certainly forgets the details of

the previous sequences. His/her multiple readings of PHASE 3 put him/her in a position close to that of a guest reader.

Because the running of *passage* differs from one computer to another, several readers cannot read it simultaneously on the same computer. If they want to share the work, they have to set a reading strategy. The sharing of this work is thus very different from the sharing of a book.

The reading context is also a constituent of *passage*. We have already mentioned that this work is meant to be read at home, quietly. Performing this reading in public not only alters the work, it almost "kills" the work. When the work is screened, readers are no more than simple spectators. In this case, they become aware of certain characteristics of the media – which we will develop further down – but the "single-reading" principle becomes ineffective. If a reader wanted to experiment on the work in an exhibition, he/she would be confronted with the interactive specificities of the single-reading, but the work would have to be reset so as to prevent the next reader from resuming this reading, which would make no sense in this project. The single-reading characteristic is then ruined. Were *passage* to be reset, the link between the work and the machine would break. That is why *passage* is – at least as far as I know - the only work to foreground the private dimension as an essential component of the work. As soon as this work is run in a public place, its material is destroyed. Were you to find the perfect *ad hoc* technical environment to run *passage* and wonderful conditions to screen this multimedia product, you would only watch a mere document about the work, certainly not the "body" of the work.

The single-reading dimension is an aesthetic representation in the form of a complex reading modality. Contrary to literary texts or graphical forms, it is not a media structure. It is not meant to doom readers to fail in their attempt at reading the work. That is why there is always a way for readers to get round the rules of the single-reading, as is the case for any other representation. This "way" ruins the single-reading principle while allowing readers to explore the generative concepts of the various sequences. It compels readers to detach themselves from the multimedia reading and from their assumption that a little bit of insight will do the trick. It requires them to experiment directly on the descriptor by finding which file is at work and by discovering the possible values within the other files. What is more, the 2009 version program includes elements of representation that may never appear on screen during a multimedia reading. In order to access these elements, the work is provided with its non-encrypted source files. Though it is possible to access the totality of the representations that *passage* is made of, this cannot be done by reading the unique modalities of the multimedia animations displayed on screen. It is necessary to use various modalities of introspection, some of which cannot be displayed simultaneously and have nothing in common with the reading of an aesthetic work (reading of the source file in a programming language, interpretation of the descriptor). In other words, if one wants to grasp all of the aspects of *passage*, one has to go through many processes. This is what fundamentally distinguishes *passage* from a "show." As well, the multiple dimensions of the aesthetic representation at the core of *passage* cannot be grasped at once. The displayed media are but one of these dimensions, the other ones - either linked to generation (adaptive generation), or media processing (a-media), or representations inherent to the program (plaits) – require other reading modalities.

B/ THE AESTHETICS OF FRUSTRATION

When we presented the first version of *passage* back in 1993, it was a purely textual version of *la série des U*, i.e. it did not include any image. However, it immediately gave rise to a debate as to how it questioned the reading process. Jean Clément was the first one to use the term "frustration" to define this particular issue. It is true that the classical reading modalities – especially those of written texts –

were particularly unsuitable for *passage* and that the reader could feel a certain frustration when confronted with the elusive nature of the work. Since the mid ‘80s, many digital poems have used this characteristic and from the mid ‘90s onwards, authors have been developing an aesthetics that is typical of programmed works, i.e. the aesthetics of frustration. *Passage* is a pioneering work in this field. That is why this work has influenced several French authors of digital poetry among those who have joined the Transitoire Observable collective since 2003 (cf. the website http://transitoireobs.free.fr).

The aesthetics of frustration is not an aggressive modality, but rather an aesthetic representation the particularity of which is to treat reader’s reactions and activity as signs of the work itself. It is the reading, not the reader that is a constituent of the work, an element of aesthetic representation. Unlike the reader’s reactions, the reading activity is a sign inherent to *passage*, that is why it is not yet entirely part of the aesthetics of frustration. We have seen that reading modalities are in fact implemented like so many iconic treatments of the vital processes of the creation of meaning, i.e. they bear a certain resemblance to each other. Thus, the reading activity is the iconic sign of life itself, at least in the way it processes information to create meaning.

Let us note that frustration is not peculiar to readers. It also concerns the artists who create these works and even the people who interpret them. Marcel and I have shaped a great quantity of material, experimented on sometimes complex logics and yet a given reader will perceive but a small part of our work and certain elements – related to the forms deriving from the numerous rereadings of a same sequence – may never be seen by anyone. In digital arts, both the author and the addressee are compelled to forget the conceptions on which the usual situations of artistic communication are founded.

THE MEDIA FORMS IN THE 2009 VERSION OF *PASSAGE*

BY PHILIPPE AND MARCEL

01 MANAGING TIME IN PASSAGE

A/ THE PRE-EMINENCE OF TIME OVER SPACE

Unlike the very first multimedia digital works, the current digital works are seldom designed as an association of textual, sound and visual media that would retain their own identity. Of course, this conception based on the independence of media is still present on websites. Its functioning is based on the "integration" of media, i.e. the modalities of media coexistence. As far as its aesthetic dimension is concerned, this integration often comes down to a display modeled on layout templates and which visual conception and relation to sound conform to the audio-visual tradition. These works are then designed with regards to depth, synchronization, shot and sequence. Let us note that although these structures partly remain as they are, the current processing of the programmed animations relies on other bases.

The very first difference between current digital works and former ones is that their visual dimension does no longer revolve around a spatial model of depth based on perspective, but on the notion of video layer. The various objects displayed on screen are situated on superimposed copies, so that the traditional bidimensional layout does no longer exist. The visual space of the screen is a laminated space in which each copy is quite "autonomous". This particularity makes digital animation closer to cartoon than video. Of course, it is still possible to come back to some conceptions based on perspective to define *passage* – notably 3D modeling – but this work definitely relies on 2D layering.

Contrary to the drawings of a cartoon, the "layers" in *passage* are not independent graphic objects, but observable states of computer objects. For a program, a "media" can neither exist as content, nor as object. In fact, a "media" represents a container and its properties are its content. These properties are ascribed processes, i.e. rules regulating their value over time and responding either to external events (interactivity) or internal ones (generativity), depending on the communication established between the various parts of the program. Visual configurations can either take the form of stable objects capable of motion, or else of an observable general behavior, such as the performance of an actor caught on video. On the opposite, they can split up into autonomous constituent elements endowed with a behavior of their own. What is more, properties of different media can be ascribed the same laws of variation. This leads to a great coherence between them and at the same time produces clusters that do not exist in a video, i.e. entities made of properties from different media (not made of different media). You can find a well-known example of such clusters in the visual animations linked to music files in "players" such as iTunes or WinAmp. In these animations, visual "rhythms" are subject to that same rule of variation – here sound volume – while the graphic form remains the same. In this particular case, the association of visual "rhythm" and sound volume produces a temporal cluster, while melody and graphic forms remain autonomous entities.

Temporality thus is a media characteristic that usually imposes its pre-eminence over spatiality. As we have already seen, temporality is an essential constituent of interactivity in *passage*. It also requires specific media processing. From this perspective, the theoretical concerns of the **MIM** have made me aware of this dimension. They have also helped me propose new kinds of relationships between programmed media, especially a-media processing.

B/ MANAGING MUSIC

The creation of the 2009 version demanded that we constantly go back and forth between creating and recording both the music and the program. The musical creation benefited from (or rather was restrained by) a previous version that was dubbed differently and in which many passages were devoid of music. For the composer, the advantage lay in the rather clear view he had of the overall dynamics, of the series of sequences and of the constraints he had to respect (as indicated in the introduction to this file.) The disadvantage lay in the length of the parts that were to be dubbed – they were too short to be ascribed any musical piece – as well as lying in the temporal frame that was too restrictive for the dubbed parts. We had to take these facts into account to compose the music (e.g. it takes 7.35s for a sign to cross the screen in a certain passage), but we also had to regard them as mere suggestions. We reprogrammed the work after the musical pieces were recorded, i.e. when sound files were made available. Then we had to carry out adjustments for a long time. During this period, the visual and textual generators displayed many different results, which became the subject of discussions. Let us give you an example that quite summarizes the content of these discussions:

“- *Marcel, do you really prefer your solution to mine?*

- Yes Philippe, I do...
- Then give me five minutes (often these five minutes were closer to an hour) to change this command... as well as all the related ones."

The flow of sound of *passage* is made of what was previously called "noises" - and that has been called "concrete sounds"[12] for more than half a century – along with sounds produced by "traditional" instruments. The concrete sounds present in literary discourse, especially the natural elements from the set of sounds of the paradigmatic unit "*matter*" (cf. fig. 1), are expressed with a little bit of distance. Marcel's preference for a musical "discourse" goes against the idea according which every expression should be taken at face value. In the paradigmatic sequence "matter", the earth element is thus expressed by hitting and rubbing pebbles, the water element by playing with rainsticks, the fire element by mixing cracking and blowing sounds and finally the air element by mixing sounds produced by a blowhole in a then accessible rocky inlet near Cassis.

In *la série des U*, the manifestations of the motifs come from "variants", not from "variations". As a consequence, Marcel used scales of intervals that did not resort to octaves but relied on homothetic transformation to go from a manifestation to another. As for frustration, the initial scale is never expressed.

Marcel explains: "*Was that childish? I don't think so. I believe that even if the listener misses the structure of a work, this structure remains effective nonetheless. While readers listen to the sound parts, the structure gives coherence to the work, as discreet as it may be. That is why I refuse any aesthetics of incoherence*."

The use of variants is not a recent phenomenon in the history of compositional techniques. On the contrary, what can be considered a new phenomenon – as well as a source of frustration - in *la série des U*, is the fact that neither the composer nor the reader-interpreter have control of how the different parts follow one another. Although the reader-interpreter can control the program - when given the possibility - by clicking on the mouse, the nature of this command remains unknown to him/her. Would he/she, endowed with an exceptional memory, command in the same way, place and time, in another occurrence of the sequence, he/she could not get the same results, for the program drawing the sound sequences runs independently from the mouse clicks. Frustrating, isn't it?

Time is an essential issue in *passage*, especially as regards the music played in PHASE 3. Remember that PHASE 3 is a generator providing some solutions parameterized by the descriptor. Depending on the values of the descriptor's concepts, these solutions may greatly vary from one another. *Tense* is the concept inducing the greatest number of differences between the solutions. Every grammatical tense is ascribed a different musical piece and a different poetic theme. *Tense* is the founding concept of the musical forms we have decided to keep. For the present tense, Marcel thus sought an expression of sound that would go against the idea that we cannot seize the present time ("lou tems fugi", as written on Provençal sundials). Hence a rich sound composed of five different yet interdependent timbres; an expression of active vehemence; a persistent low register that accounts for the control a person has over his/her own will.

[12] "Concrete sounds" are all the microphone-recorded sounds that are not produced by music instruments. *Translator's Note*

As for the future tense, it is conceived as an indeterminate and potentially rich tense. Considering our previous illusion about it, we could now question this conception. Anyway, this has no consequence on the explanation of the structure.

In the first place, it is the beat that brings the richness of more instruments into play. It is composed of a dodecaphonic series (and therefore indeterminate, i.e. without any point of reference) of 5 + 4 + 3 notes. The time signature is 5/4, not binary, nor ternary, nor 4 + 1. The melodic motif of 5 notes is played over 2 bars (10 beats in 4 + 6) then over 4 bars (20 beats in 1 + 3 + 3 + 4 + 6 + 3 rests). The motif of 4 notes is played over 4 bars (20 beats in 2 + 4 + 6 + 6 + 2 rests). The motif of 3 notes is played over 4 bars (20 beats in 3 + 7 + 5 fermata + 4 rests). After 2 – 1 – 2 – 1 – 2 bars of rest, a rhythmic motif appears over one bar in the low register of the piano. The last occurrence is fermata. The motif is composed of 5 regular beats within triplets. All of these tend to tell how indeterminate this "time" is.

02. SNATCHES, MULTICODE, INTERSEMIOTICS AND A-MEDIA

A/ Snatches of text in *passage*

Syntactic animation has given rise to a simple (and now quite old) multicode system. As we have already noticed, a single word or part of a word is likely to belong to two different linguistic systems as it is displayed on screen. The first one is a system he grammar of which obeys the rules applied to the written form (decoded by a spatial reading) and the second one whose grammar obeys the rules applied to the oral form (decoded by a temporal reading). These two linguistic systems obey the same textual system, i.e. the modalities of creation of meaning remain the same once the utterance has been performed via any of these grammars. In other words, this means that different texts can be created by switching from one linguistic system to another, regardless of when it is done. The resulting texts are called "snatches". They are chunks taken from the whole "discourse" and endowed with a meaning of their own. They may also gather in more complex snatches. Unlike bits of hypertext, these snatches are able to coexist on screen. Sometimes, they even happen to interweave. On this ground, they can neither be read successively, nor be linked by some kind of bond. In fact, they are only produced – and interrelated – through the implemented reading modalities (often unconscious ones). Above all, *passage* is composed of a set of syntactic animations, that is why it includes a great number of snatches.

A snatch corresponds to the final state of a cognitive process that aims at elaborating a meaningful textual unit while reading. In other words, at one stage in the reading process, the reader will have to put together some words which layout is to constitute an utterance within the linguistic system. The snatches resulting from a purely spatial reading can be captured and printed via screenshots. The snatches resulting from a temporal reading can only be caught if the reader writes them down in their display order. It is also possible to produce other snatches in which these two reading modalities intertwine. Besides, the addition of an "oral" text produces other snatches by establishing a relation between what is said and what is displayed at a given time as well as between what has already been produced and what is said at a given time... The number of snatches will then quickly increase. However, the creation of snatches is not proper to the reader. An author designs a syntactic animation as the general set-up of certain snatches (in *passage* these snatches rely as much on the spoken text than on the written one) and as the "local" (in time and/or space) creation of some parts of other snatches. Then, it is the plasticity of the textual system that allows the reader to spot a greater or lesser number of

snatches. Snatches are thus "valid" yet never rigid linguistic constructions (therefore they are stable). They constantly evolve and are not necessarily fully displayed on screen. For instance, the following snatch – composed of a verse that will never be written – appears in *la série des U*:

Le pas.
Elle passe.
Elle passe le fil.
Elle passe le fil de l'eau.
L'eau passe.
Passe.

Other snatches may be perceived in the same animation, such as the one shown in the appendix or this one that constitutes the founding poem of *la série des U*:

Le pas passe.
Elle passe.
Elle passe le fil de l'eau.
Le fil de l'eau passe comme
Le temps surprend et nous mange.

This last snatch (just like "le temps surprend et nous mange") does not appear unless the reader reads PHASE 2 ten times without performing any action. In this case only will the sentence end in that way. Any action performed by the reader in PHASE 2 will cause this proposition to remain hidden and the poem to follow its course towards the end of PHASE 3 (this phase is not finished in the current state of the 2009 version). The poem then takes the form of a very long generated sentence, which might begin with: *elle passa comme chargé d'espoir l'embrun ruisselle au loin...*

Snatches only include the effects of meaning that exclusively rely on the linguistic system and that consequently, are likely to be deduced from the reading of the "collection" of printed snatches. As a matter of fact, these various snatches are not variations on a source text, contrary to the poems produced by combinatory algorithms. They rather constitute really different poems, gathered in a "collection." The meaning created by this collection of snatches strongly depends on the snatches it is made of.

B/ MULTICODE SYSTEMS

When we create meaning while reading a multimedia animation, most often we use the usual semiotic systems to create meaning. This process works well when shared and stable systems such as linguistics are easy to mobilize. Actually, this is the case in *passage*: the linguistic system is predominant, because *passage* is a digital poem in which many snatches can be regarded as printable texts likely to be read separately (see the examples in the appendix). However, the temporal approach mentioned earlier demands that this system be completed by extralinguistic contributions. We generally tend to consider that every displayed text is an image. In my opinion, this point of view prevents any explanation about the phenomena that really occur, for the image itself is a place where semiotic systems rely on drawings (iconic signs) and colors (plastic signs) that paradoxically exclude the semiotic system. Replacing an obvious system by a more complex one thus amounts to throwing the baby out with the bathwater. It is better to consider that the animated text is the place where semiotic systems are formed. First of all, if we call "text" (as I call it) the on-screen multimedia object interpreted by readers, we have to admit that

this text is not only composed of words, but also of shapes, colors, motions, music. This text does indeed bring into play several semiotic systems such as a linguistic system (used to decode the short structures of a language, such as a sentence, thus setting up the literal sense of the text), a textual system (used to decode the long structures of a language and the rhetorical phenomena, it allows us to create a poetic meaning and to deal with connotations and relations between linguistic situations)... The set of these systems is called a multicode system. Syntactic animations essentially rely on the relation between temporal and linguistic semiotics. This relation gives rise to ambiguous states, resulting in a linguistic imbalance (expressions seem to be incomplete) that has not been solved yet. In this case, animation is both a motion (in temporal semiotics) and an expectation (in linguistic semiotics).

The 2009 version of *passage* is full of functions likely to be interpreted as occurrences of multicode. In order to clarify what has just been said, let us look at *la série des U* as displayed in the first reading of the poem. *La série des U* is the oldest programmed part of this version (of every version in fact). Let us start with the description of the observable facts that will be the object of the multicode interpretation. The observed stages constantly follow one another. There are 5 semiotic systems implemented in this interpretation:
- the written linguistic system that can be accessed via a spatial reading,
- the "oral" linguistic system that can be accessed via a temporal reading,
- the plastic system of the visual background (motion, morphing, changing colors),
- the graphic system made of the association of fonts and of a white rectangle appearing on screen during the first sequence,
- the temporal semiotics spotted in the behavior of the previous system (fonts and rectangle).

Let us to be clear, sound intervenes in another meaningful process that takes place at the same time as the one analyzed here. We shall introduce this process on section 03 COMBINATORICS OF FOCUS IN *LA SÉRIE DES U*. The analyze below refers to the video file pas2f2 U -l1-04_800.mov

The background of *la série des U* is blue and undergoes endless changes. In the description, we will refer a lot to the term "pixel-fade." This is a visual process consisting in random substituting - pixel by pixel, hence the name - the state before the transition by the final state of this transition. It is visible only in areas that differ from a state to another. Let me take advantage of this description to mention the approximate position of syntagmatic sequences, although this information does not play any role in the interpretation, for these sequences are imperceptible. They continuously follow each other like narrative units (that is why the segmentation in units does not overlap the segmentation in stages used here).

STAGE 1: in the sequence called U1, a white rectangle develops vertically on the right of and halfway up the screen, while the blue background is horizontally stretched. Then, the brightness of this rectangle gradually decreases until it goes black. The word "le" fades in in the middle of this rectangle to slowly fill the whole rectangle. The final state of this process stays on screen for about 2 s, before the word suddenly disappears, to finally reappear in a pixel-fade, letter by letter, while the rectangle fades away in this transition. Eventually, the word "le" remains alone on screen for another 2 s.

STAGE 2: in the sequence called U2, letters duplicate, so that one "l" and one "e" "fly" to the left of the screen at a constant speed, following a simple curve, one upwards and the other one downwards. Then, the word "le" that remains on the left of the screen fades away but this process is not perceptible unless the moving letters are well on their way. The word "le" completely disappears before the two moving letters end their course.

STAGE 3: as the paths of the two letters cut across each other, the letters stop moving and spell the word "le" once again. Then, the word "pas" gradually appears in their wake - and on the same line - to form the expression "le pas." Immediately after this (in the beginning of U3), the two letters "se" appear in a progressive pixel-fade to form the word "passe". Eventually, the expression "le passe" remains alone on screen for about 2 s, while the background continues to change.

STAGE 4: the letter "l" reappears in the same place as it was before in the word "le" - on the right of the screen - and is immediately set into motion (the same one as we mentioned above). Its path leads precisely before the first letter on the left. As it reaches the middle of its course, the static letter "e" gradually appears, so that the word "le" is turned into "elle" at the end of the appearance/moving joint process. At the end of this process, the expression "elle passe" is displayed on screen.

STAGE 5 (U3 sequence)**:** the text suddenly disappears (except for the letter "l" that has undergone its final motion) to roughly reappear in a pixel-fade. It then stays still for about 2 s before one of its pixels moves to the right in a pixel-fade, while the word "le" reappears on the right of the screen (exactly at the same place as it was in STAGE 1) during this transition.

STAGE 6 (U31 sequence)**:** the expression "elle passe" – i.e. the final state of the pixel-fade – stays still for about 3 s before the word "fil" gradually appears at the far right of the line to form the expression "elle passe le fil." This bit of text stays as it is for about 2 s, while the background continuously changes.

STAGE 7 (U32 sequence)**:** the expression "le fil," situated at the far right of the screen, moves horizontally towards the left at a constant speed, thus unveiling the expression "le fil de l'eau." At the same time, some background elements move from left to right. As the expression "le fil de l'eau" gradually covers the word "elle," this word fades away. Once it has disappeared, the expression "l'eau passe" remains alone on the left of the screen before the word "eau" disappears in a pixel-fade. The word "passe" is not altered at all during this process. It is to stay still until the end of *la série des U*.

It is possible to textually interpret this series by employing temporal semiotics:

STAGE 1 develops a *Stationnaire*[13] TSU that is close to the sound version of a *En flottement*[14]. Here, what constitutes the TSU is the play on appearances and disappearances of both the rectangle and the written form of the word "le." This word intervenes in the typographic system via temporal semiotics, not via the linguistic system (the pixel-fade that is used makes no sense in the semiotic system). The name of a TSU suffices to describe its function: a *Stationnaire* is a wait. Nevertheless, this induces a textual meaning: it freezes the "masculine" meaning in a specific place on the right of the screen in the spatial reading, while giving rise to the expectation of a linguistic construction, as the article "le" is not self-sufficient in the linguistic system. This *Stationnaire* thus represents both a temporal stability that favors the stabilization of meaning and a linguistic imbalance that is the starting point of a process of sentence creation in temporal reading.

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[13] A "Stationary" Temporal Semiotic Unit. All quotes concerning TSUs and their translation are taken from "Bootz, Ph. & Hautbois, X., (2007). 'Times Measures in Documents : The model of "Motifs Temporels Paramétrés"', Roswitha Skare, Niels Windfeld Lund, Andreas Vårheim (éds.) A Document (Re)turn, Frankfurt am Main : Peter Lang : 197 – 222". *Translator's Note*.

[14] "Floating"

The motion of the letters in PHASE 2 results in a *Trajectoire inexorable*[15] that consists in the "monotonous" variation of a parameter, i.e. the position on the path. This TSU is characterized by a great degree of "local" predictability, i.e. one guesses what is to happen the next moment. This degree is here obtained by using a simple mathematical trajectory and by the constant speed of the motion. It is the linguistic expectation that creates an additional "alien" teleological characteristic of the *Trajectoire inexorable*, not temporal semiotics: one anticipates the reformation of the configuration "le" because of the predictable pace of the trajectories. The reformation of the word constitutes a privileged moment as regards the fulfillment of the linguistic expectation, because linguistics is then mobilized once more as a predominant semiotic system. The gradual disappearance of the static word "le" on the right of the screen is interpreted as the TSU *Sur l'erre*[16] that is characteristic of ending processes (the process is evanescent). Thus, the simultaneousness of these two TSUs can be textually interpreted as the temporal shifting of the masculine gender from the right to the left of the screen. However, the initial linguistic expectation remains unsolved, i.e. this process remains the initial state of a temporal linguistic process of creation of a linguistic expression.

This linguistic expectation is fulfilled in STAGE 3 through the creation of the expression "le pas" both in the spatial and temporal reading modes. For all that, this nominal syntagm does not represent an autonomous linguistic proposition. At the end of the stage, a difference occurs between the two linguistic systems, i.e. the one in which grammar relies on spatiality and the one in which grammar relies on temporality. It is up to the reader to clear any ambiguity by (unconsciously) choosing one of these two solutions, or to stay in keeping with the linguistic expectations spotted during the previous stages and accept this ambiguity as an unsolved textual process. Indeed, if the reader carries on the spatial reading – the reading that is most likely performed in this case – the appearance of the letters "s" and "e" generates the expression "le passe," which is no longer coherent. In fact, it even takes up again the initial expectation of the process of linguistic completion that may go on until the end of the series, depending on the chosen reading modalities. On the contrary, the word "passe" appears after the expression "le pas" in a temporal reading, which results in the complete display of the proposition "le pas passe." This is reinforced by the fact that the occurrences of both "pas" and "se" can be perceived as *Trajectoires inexorables*. The splitting of the occurrence "passe" into two trajectories produces a "breathing" that brings out the expression "le pas". This interpretation is compatible with the notion of syntagmatic unit. Indeed, from STAGE 1 to the end of STAGE 3, the letters "l" and "e" – regardless of their state and position - constitute anchors that grant access to the paradigmatic unit *gender*. As soon as it appears, the word "pas" leads to the paradigmatic unit *matter*. On the opposite, as soon as "se" fades in, this same "pas" - along with "se" - leads to the paradigmatic unit *tense*. The resulting syntagm of concepts brought into temporality is *gender*, *matter*, *tense*.

In STAGE 4, the fact that the letter "l" reappears in its previous place can lead readers to modify the way they temporally interpreted the initial disappearance of the word "le" that was on the right of the screen in PHASE 2 (this interpretation was a *Sur l'erre*). It can also lead them to consider that this reappearing "l" is a resurgence of the "le" that was on the right of the screen. In this case, the *Sur l'erre* in STAGE 2 incidentally appears in the *Stationnaire* spotted in the beginning. This reinterpretation of the temporal semiotics of "le" as a *Stationnaire*, will stay as such until the expression "le fil" is set into motion in the beginning of STAGE 7. Though highly probable, this change in interpretation is not inevitable. It results in the reactivation of the masculine presence in the letter "l" that appears alone in STAGE 4. What is important here is not as much the simple fact that the letter moves, as the trajectory

[15] "Inexorable trajectory"
[16] "On the ways"

that it follows – a *Trajectoire inexorable* – which is understood as a variant of STAGE 2, even if the other elements: both the mobile and the static "e" are absent, or rather they are present but in a different way. As a matter of fact, the "le" is present yet on the left of the screen, which conforms with the result of the shifting of the "masculine" as displayed in the final state of STAGE 2. In addition, the missing "e" gradually reappears on the left of the screen in STAGE 4, following a *Trajectoire inexorable* that revolves around opacity. Thus, the mobile "l" and the fading-in static "e" can be interpreted as the masculine character of the word "le," for temporal semiotics reactivates this word. The animation, made of the shifting "l" and the appearing "e," is a *Trajectoire inexorable* just like in PHASE 2. It is then given the same meaning as regards the shifting. This textual result cannot be achieved when the elements stay still. The "masculine" moves towards and gradually merges with the "feminine" resulting from both the linguistic and the temporal readings, these two modalities producing the expression "elle passe." This "linguistic morphing" - a meaning effect that consists in continuously passing from one coherent linguistic proposition to another, as if the oppositions between linguistic terms (here the masculine and feminine) could be done away with – is a recurring phenomenon in syntactic animations, whose interpretation lies in the eye of the reader. The reader may either consider that the masculine turns into the feminine, or else that they merge, thus creating an ephemeral "androgynous term" that is necessarily multicode, for it exists as long as the *Trajectoire inexorable*. This word can then be seen as the grammatical equivalent of a neutral form (a morphing is at the same time semantic and grammatical and the neutral form is the most appropriate grammatical gender in this case). In fact, this interpretation constitutes the reader's intentionality (even if the reader was unaware of this mechanism at the time *la série des U* was created, because temporal semiotics was unknown to him/her). It allows the reader to introduce the "neutral" form as a possible value of the *gender* concept. Similarly, the values of the colors handled in the graphic objects (the yellow color of the text, the blue colors of the mobile background and the red color of the shapes) anticipate the descriptive use of color that is to be made in relation with the *matter* concept, both in the paradigmatic unit and in STAGE 3. Besides, let us note that as "le" turns into "elle," it produces another *morphing* (this time a syntactic one), that of the merging of an article with a pronoun. The article being associated with a noun and the pronoun with a person, this *morphing* supports the idea of the neutral form.

STAGE 5 happens to be purely, *Stationnaire*, a "breathing." Because the masculine "le" reappears, STAGE 5 can be interpreted as the stabilization of the feminine "elle" combined with the stabilization of the neutral form. It is only by mouse-clicking on the "le" that has just reappeared on the right of the screen that this interpretation is to be modified. As a matter of fact, the activation of this hypertextual anchor does not lead to the paradigmatic *gender* unit as was the case previously, but to the paradigmatic unit *matter*. In other words, the shifting of a pixel – via a pixel-fade - towards the right of "elle passe" represents the initial step towards a new textual stage in the series. We shall see that it can be interpreted as the introduction of a new theme that is not really in keeping with the general dynamics of *la série des U*. All that precedes can then be understood as a text "hidden" within the temporal structure. One of the possible wordings of this text would be: "il, le pas, passe, le pas de quelque chose passe." Note that the shifting of the pixel to the right takes place a little after half the total length of the series has passed.

STAGE 6 confirms that the status of "le" has changed, for the first word related to matter appears, i.e. "fil"[17]. A complete snatch is then formed in a temporal reading: "elle passe le fil." This snatch fulfills the expectation that has been present since the beginning while at the same time raising a new question: what is this thread? Temporal semiotics has practically no impact here. Of course, there still are

[17] A "thread". *Translator's Note*

temporal processes (some inexorable trajectories) but they are only related to the content, so that this snatch is about as effective as in a spatial reading.

STAGE 7 answers the previous question, but here again, the answer is prone to many interpretations. The shifting of the expression unveils a new snatch in a temporal reading, which consists of the most visible of the expected answers. By resorting to its TSU *Trajectoire inexorable*, the expression "elle passe le fil de l'eau" ensures the continuity by allowing the reader to overcome the syntactic disruption. Once again, it is a *linguistic morphing*, for the expression "le fil de l'eau" is the direct object of the sentence in the beginning of the process before becoming the subject as the sentence is read out loud. On the contrary, in a spatial reading – i.e. a reading of what is "written" – the final snatch is not "le fil de l'eau passe" but "l'eau passe." There is more to a *linguistic morphing* than just an object turning into a subject, there is also the semantic merging of the masculine with the feminine. This is performed in many ways: through the superimposition of "elle" over "le fil de l'eau" (that can be interpreted as an equivalent of the neutral gender) at the end of the temporal reading, which eventually results in the disappearance of the feminine "elle," replaced by the masculine "le fil." The feminine merges into the masculine in this reading, but it is the opposite that happens in a spatial reading, i.e. "le fil de" (masculine) disappears, replaced by "l'eau" (feminine). Finally, the semantic merging is not only a question of *gender*, but also of *matter*. On the one hand the word "elle" becomes identified with the element "eau" as well as with the mobile element "le fil de l'eau", this identification being announced by the trajectories of the letters "l" and "e" throughout the previous stages, but also with the graphic components of the background. This identification of the feminine "elle" with water takes up a constant theme of the first phase of *passage*, i.e. "elle" is at the same time a woman and water. There is another implicit theme in this shifting, but it is a quite "off-beat" and evasive theme, just like in PHASE 1.

This is the "death" theme. In order to grasp it, one has to understand the expression "passer le fil" as a pun on "passer au fil" which implicitly hints at "passer au fil de l'épée[18]." Here, the whole sentence – along with the disappearing "elle" - may be "passée au fil de l'eau[19]" and linguistically "put to the sword". Eventually, the life/death theme imposes itself to the reader, because of the persistent word "passe[20]," which is in fact the only word not to pass for technical reasons. There is a moment when the whole poem has to end. Thus, what actually does not pass is the very action of passing. In this paradox lies the ultimate sense of the work, i.e. what does not pass in *passage* is the very action of passing, this action that defines life as a process. This form of the word that "does not pass" is taken up again in several sequences of *passage*, sometimes in association with a stretching.

C/ INTERSEMIOTICS IN *PASSAGE*

As we have just seen, the use of temporal semiotics plays an essential role in the multicode systems of the animations. It is the semiotic "background" that ensures coherence in the creation of meaning by producing either a visual or sound continuity offsetting the occasional disruptions of other semiotic systems. However, it can also mask the disruption occasioned by resorting to different semiotic systems, as one searches for an interpretation. For instance, when we look at a newspaper, we use three different semiotic systems: linguistics, the textual system, iconic visual semiotics (that enable us to

[18] The French word "fil" ("thread") is used in the expression "suivre le fil" ("to follow the thread") as well as in the expression "passer au fil de l'épée" ("to put someone to the sword"). *Translator's Note*

[19] Approximately "gone with the current." *Translator's Note*

[20] In French, there are several idiomatic expressions that use the verb "passer" to say that someone has passed away ("passer l'arme à gauche", "trépasser"...). *Translator's Note*

interpret a photograph). These pieces of information are complementary and yet they can be taken separately, i.e. the text and the photograph can be interpreted separately. As soon as temporal semiotics comes into play, this process is altered. In this case, the temporal continuity can result in a particular flow between the different semiotic systems that happens to make them very hard to differentiate. We use the term intersemiotics to define this specific phenomenon, in reference to the Brazilian theoretician Philadelpho Menezes who was the first to deal with this process.

One can see an example of the functioning of intersemiotics in the many times pixel clouds turn into text (cf. PHASE 3 pas2f3 extract H264.mov). As they move, pixels are first perceived as graphic elements subject to several TSUs, before they are recognized as letter parts once these clouds have gathered into words. Adding temporal semiotics to this process thus gives substance to a linguistic unit that does not exist in the written form, i.e. the letter part. Here, this letter part stresses the expressiveness of the text in connection with the melodic line.

This intersemiotic process is able to enrich the textual semiotics. For instance, in SEQUENCE 4, PHASE 1, the words of the poem dissociate from one another, forming clouds of pixels, so that the meaning of the text remains displayed well after this latter disappears. This cloud is the active memory of the poem, it participates in its expression. Although the words have disappeared, the temporal continuity of the poem assesses the joint presence of the current graphic system and of the "potential" linguistic system, i.e. this system is present only if the reader accepts to consider a view of this cloud as part of the text's memory. The graphic trajectory and music thus gather to form an expressive "cluster". A cluster is a sign made of some proprieties of different media. It covers several media.

D/ THE A-MEDIA FORM

As illustrated by the examples given above, it is motion (a process) that produces both couplings and new entities that delete the conventional semiotic systems. An intensive use of temporal processes can lead to a new form of hypermedia structure, i.e. the a-media from, thus called because it relies on the pre-eminence of processes instead of the pre-eminence of media. An a-media form is necessarily a programmed one. It corresponds to the association of several media properties. This association is performed by applying the same rule of transformation to these properties, so as to form a single process. The resulting process is called an "a-media cluster". I invented the a-media concept as we were working on the future and conditional tenses in PHASE 2. In each of these sequences, music is representative of one and only one of the TSUs:

- The music composed for the "future" section of the paradigmatic unit is made of a series of 6 occurrences of the TSU *Suspension-interrogation*[21]. The first one is made of some elementary musical sequence playing on the melodic field and that is repeated over again with only some slight changes, while its intensity stays quite constant. As for the second one, it is made of a single note (the last note of the previous phase), which intensity decreases over time. These 6 TSUs can easily be heard.

- The TSU of the music composed for the "conditional" section of the paradigmatic unit *tense* is a *En suspension*[22] and is morphologically made of a series of quasi-periodic frequency motifs, in

[21] "Suspension/Question"
[22] "Suspended"

which the period changes during the course of the TSU. However, there is no significant change in their sound intensity over the time of the TSU. This TSU here serves as the basis for an easy-to-spot melodic line, which melodic characteristic does not fit into temporal semiotics. There is thus a superimposition of two musical semiotic systems. This superimposition is taken up by visuals.

We know enough about sound TSU to describe them with a mathematical model (the Motifs Temporels Paramétrés [parameterized temporal motifs] or MTP). These MTPs are rules of temporal variation of the parameters. They provide a design tool that is easy to program, even if they do not describe the totality of the TSU properties. They can easily be applied to mute media properties. As far as visuals are concerned, we have done as follows. We have designed a series of background images for each moment and we have programmed these rules in order to change the brightness in the same way as the sound intensity is modified in the sound TSU. We have also used them to design a graphic morphing of the images, thus allowing a change in the chrominance of the visuals. However, we do not know enough about visual TSUs to affirm that the perception of the visual behavior thus produced faithfully reproduces the temporal characteristics of the sound TSU. In order to do so, the chrominance parameter would have to behave like the sound frequency in this perceptive context. Nevertheless, this association of sound and visuals indeed reproduces the TSU, i.e. visuals seem to fit music. To be more precise, a careful observation shows a great coherence, but no stacking of sound over visuals. We cannot identify a visual parameter that would exactly reproduce the temporal evolution of the frequency. This set is an a-media temporal cluster. Note that, contrary to sound players, it results in a great coherence between visuals and sound, without having to capture a sound parameter to "enslave" a real-time visual parameter. The general temporal structure of sound alone is captured in a MTP and qualitatively reproduced in a visual process, so that as a whole their evolutions remain autonomous. The many runnings that can be performed in the *texto digital* version (but not in the single-reading version) give different results that are hardly discernible, although the visual generator produces different solutions from one reading to the other (see the two generation examples of the background alone in the sequence "future"). There are many times in *passage* when we show that, as far as perception is concerned, it is not synchronization but coherence that matters. The use of "temporal synonyms", i.e. different processes of evolution that fall within the same TSU (even if sometimes in a rough way), produces this coherence even when other aspects of these processes are different from one another.

In addition to this temporal a-media cluster, we find another a-media cluster that is not related to temporal semiotics, although it also takes place in time. It is an expressive cluster. It is the result of the association of the melodic line and a trajectory, i.e. the changes in trajectory are partly synchronized with the changes in the melodic line (see the video example taken from the "conditional" sequence).

A-media processes have no existence of their own. In fact, there is always a media-based semiotics, especially a linguistic one in the case of *passage*. This conventional semiotic level cannot be reduced to any other. This completes the overall structure.

Thus, these sequences are built like a superimposition of three distinct levels. Two of them, called a-media, implement an association of media:

- The temporal a-media cluster. It is made of the sound TSU and the morphing of the background visuals.

- The expressive a-media cluster. It is made of the melodic line and the trajectories of the letters. The motion of the letters is part of this cluster, not because it creates a TSU (which in both examples is a *Trajectoire inexorable*), but because this motion defines the trajectory by covering it, thus turning this trajectory into a melodic process (temporality imposes itself on spatiality). The role of this position in that cluster is equivalent to that of the frequency (more or less on the right, more or less above).

- The linguistic level that is made of the text in its purely linguistic dimension.

PROGRAMMED FORMS IN *PASSAGE*

BY PHILIPPE

01 THE LEVELS OF PROGRAMMED WRITING

It is impossible to create anything on a computer without programming. Programming must not be mistaken for coding. Programming consists in setting up a logical structure for the instructions that will be run on a computer. There are several modalities of programming, especially graphic ones. Assembling small boxes on screen as is the case with the *pure data* software or arranging objects on visual layers or sound tracks as is the case with *Flash* fall within programming, not coding. Coding is a specific modality of programming, which consists in writing textual instructions in a programming language. These different modalities give rise to different levels of programmed writing.

The first level (the grammatical one) is where the result of the running is modeled. The program describes the multimedia event that will be brought to the screen during the running process. All of the programming modalities include this level, the *raison d'être* of the program as a tool designed to facilitate the process of creation.

The second level is a cultural one. Every programming modality (and in fact, every programming language) has its own philosophy, i.e. it defines its own objects with which the programmer will have to do. To put it more simply, we can say that every language imposes or proposes some representations, or more precisely a certain conception of the context of communication and of the nature of the work. For instance, a software based on the notions of timeline and rhythm imposes a certain "video" conception of the work on the programmer. This conception does not correspond to the computer reality at all, for a program does not display images according to some rhythm, rather it flings images about according to processes that can be asynchronous.

When they are general enough, the languages that present a certain coding possibility allow to show a third level of language, i.e. that of "author representation". To make things clear, I will call "procedural representations" the representations that take place only in the program and "process-related representations" the representations that are displayed on screen, thus called because they are generated by the physical process that is the running of a program. It is through procedural representations that the author truly reveals his creative skills in programming, instead of just displaying some technical ones. These skills are indeed present from the very first level, through the choice of neat and effective

algorithms, as well as at the second level through the appropriate and optimized use of the possibilities offered by the chosen language. However, it is at the third level of programmed writing that the author establishes an artistic (not a simple aesthetic) form, that he/she gives his/her conception of the world, or at least of the work and communication context, through the act of writing, of programming. This level of artistic representation (which in my opinion is the most important one in programming) can go against the solutions that a "good" programmer would choose, simply because an author's conception of the world is likely to go against the one that is proposed by technology. In other words, the characteristics of artistic representation can go against the aesthetic-oriented conception of the code shown at the first two levels of writing. This case is especially obvious in the 1996 version of *passage*, a fundamentally linear work using a software designed to create hypertext.

The 2009 version of *passage* implements an endless work on artistic representation within the program. Many programming models were imagined and checked while creating *passage*. This is why it took so long. In fact, it would have taken even longer if *passage* were only an interactive animation. At the third level of programming, the structures in place are "programmed forms", i.e. procedural representations. It is only by using a programming language that allows to organize the structures of instructions into different configurations, that the author will be given the chance to work on the level of representation that is related to the setting up of the program.

In *passage*, everything is representation, everything partakes in the work. There is not a single element that is "alien" to the work, neither the reading (as we have already seen), nor the processes of the running, nor the program code. Let us now see the most significant elements of these programmed forms.

02 ADAPTIVE GENERATION

Adaptive generation came into being as I worked on programming in 1993 and has tremendously evolved since then. I even designed specific programmed modules related to adaptive generation in the 2009 version of *passage*.

Adaptive generation consists in including some measures related to the host-machine in the program. The program processes these measures as it is run, so as to anticipate output problems that would alter the speed and flow of the animations. If after these controls, it appears that the observed temporal processes are not (or will not) conform to the initial intentionality, then the program changes its own logical structure to perform an acceptable alternative. Such a strategy even allows one to program a result that shall only be observed on technologically more advanced computers! Thus, the very first sequence of *passage* includes some superimpositions of video layers that I have not yet seen on screen.

One has to acknowledge the fact that adaptive generation is a programmed form, an element of representation of the author's condition, not a strategy aiming at getting round the machine's weaknesses. Indeed, any programmer will soon realize that the consequences of technological evolution on the running of digital works are unpredictable: new equipment, new operating systems, the invention of emulators and virtual machines, the changes in the ways visuals and sound are handled by deep layers and drivers, etc. cannot be foreseen, thus preventing the author from producing an effective adaptation. After thirty years of programming, I am now totally convinced that this is the reality of computing. The relation between the multimedia event and its program is very different from that – to take a musical metaphor – between a score and the way it is played by the orchestra. The orchestra's performance is an answer to a creative design of the work, striving to be faithful either to

the composer or else to the audience. This is not the case in computing. Computer processing does not care the least about any of them. But then, if the aim of adaptive generation is not to achieve a technological prowess that would impose a visual intentionality on computer processing, what is it?

Well, to put it simply, it aims at setting up a compromise between an aesthetic intentionality (that which the author expresses by changing the visual aesthetics) and the intentionality of the machine that is purely technological (expressed in the actual result of the processing). This struggle is invisible to both the author and the reader and yet it does exist. It is indeed an important element in the artistic representation of the work. It is the representation of a fundamental fact, i.e. the raw material of programmed writing is failure, as soon as the author conceives of his/her writing as having permanence. The structure of adaptive generation within the program is the trace of this representation (this compromise) that is made available outside a screen reading. To the reader of the process, the result that is displayed on screen is this trace that gives itself as a spectacle and that can be the real-time failure of adaptive generation. In short, it is when adaptive generation fails, becomes ineffective, that it most successfully fulfills its representative function. There is thus within the work a conflictual relationship between two representations. The first one is adaptive generation, always present and legible in the program. The second one consists of the media and a-media forms implemented in the result that is to be observed on screen. These forms are modeled (at least partly) in the program but they so much depend on observable processes that they are almost impossible to "read." Therefore, we can say that one of these representations, i.e. adaptive generation, is present in the program and "potential" on screen, whereas the other one, media and a-media forms, are present on screen but "potential" in the program. Running the program gives rise to a conflict, i.e. one representation imposes itself on the other while this other one fails. As every representation is both a failure and a partial success, we can say that as a whole and according to certain point of view, there is also a failure of the authors' projects, because they find themselves unable to show readers the totality of the representations they have designed. This failure itself is an element of representation (everything is part of the work!), it shows a figure, a particular conception that is proper to the author. In other words, the author is no longer the real designer of an artistic project; rather he/she tries to manage the technological break of his/her project. This is what Alexandra Saemmer calls a "disenchanted vision of the world", which for the author represents an aesthetics that counterbalances the aesthetics of frustration that takes place on the reader’s side. From another point of view, this failure of representation shows the overall success of the comprehensive writing project. This failure is only "apparent" to the reader and yet he/she is physically unable to see it. It is simply impossible to access the totality of the representations that make up the work.

03 COMBINATORICS OF FOCUS IN LA SÉRIE DES U

We have already told that *la série des U* is of quite a long form – and that this is due to sound generation – that spreads over 10 readings. This form is based on the association of an animation and sound combinatory generator.

This sound combinatory generator has a complex structure that only exists in the single-reading version published in 2009, but not in the so-called "published" version present in *electronic literature collection* under the title *the set of U*. This generator was designed as follows: each musical sequence is played by only one instrument. The instruments played are the piano, the vibraphone and the piccolo flute. The sequences played are themselves divided into three sets of 7 sequences each, these 7 sequences being an alternation of played and mute sequences: 4 played sequences and 3 mute sequences. Each of these 4 played sequences possesses a structure which motifs' length is close to a multiple of 2 s and which

elementary structures' (such as the vibrato) length is about 200 ms. The sets played correspond to more and more complex sounds: much resonance or sustain in SET 1, a more melodic evolution that is full of contrasts in SET 3. These sets appear in a given order from one reading to another and several sets can coexist within this evolution. The program considers that we increment the reading by quitting *la série des U*, either because we branch off to a paradigmatic unit, or because we let the syntagmatic set run until the end without intervening in any way. Eventually, the music that is made available by the running process exceeds the length of the animation. The sequences that are actually played within a set are random. The musical sequence of *la série des U* is calculated (at the beginning of the animation as well as each time the syntagmatic sequence is entered) for the total length of the animation. However, it is not played as such, it is modified in real-time (i.e. as it is played) by the constraints of the perceptive algorithms presented hereafter.

We have now quite thoroughly analyzed the observable result of the visual animation in *la série des U*. What we have not mentioned yet is that the duration of this set greatly depends on the machine on which it is run. I have observed variations in length going up to 50%. These variations are not related to adaptive generation, but to the fact that some machines are unable to process the animation at the required speed, which results in a slowing down of the visual animation. However, as these differences are not perceptible during the reading, one would need a chronometer to detect them. Besides, music differs from one machine to another, whereas on a given machine visuals remain the same. Nevertheless, music seems to be designed to always fit visuals, i.e. it gives a feeling to and is synchronized with visuals. A careful observation shows that the musically emphasized moments change from a reading to another. The general form of *la série des U* is then called "focus-combinatory generator". The musically accompanied sequences vary and form a combinatory set over the whole 10 readings. Now this variation also generates focus, thus changing both the meaning and the dramatic aspect of the poem, which is perceived differently from one reader to another. Here is how Marcel defines the surprising character of this result: "*As we look simultaneously at the image and the literary text, we are struck by the fact that our sensitivity changes from an occurrence to the other. This is where we come close to the expected creation: a* "multimedia" "object" *of its own*".

The analysis we have made of *la série des U* must then be perfected by balancing the different stages, as they do not have the same semantic impact. However, this balancing depends on what is perceived during the running process, so that we need to resort to a video capture to grasp its details. Take the following capture for instance: the initial *En flottement* in the first stage is accentuated by the rests' length, while the mere presence of sound links the background modulation to this TSU *En flottement*. Generally - as sound always is a *En flottement* in *passage* - it accentuates the meaning of the *Stationnaire* "le." The *Trajectoire inexorable* in STAGE 2 is not emphasized by sound at all and therefore practically goes unnoticed. In fact, its process is more likely to be interpreted as the visual transposition of an absent sound element, i.e. it is rather "dubbed from the inside" than like a textual phenomenon. The linguistic process that consists in shifting the masculine is minimized compared to when the action is continuous. This process of minimization of the temporal reading as compared to the spatial reading is illustrated by the following musical event, which upbeats coincide with the stabilization of the word "le" – final state of the shifting towards the right of the screen – then a rest "accompanies" the pixel-fade on "pas", while sound is played as soon as this word is completely displayed and then accompanies the whole display of "se," which favors the temporal reading interpretation, according to which "pas" constitutes a first word and "passe" a second one. The development of the musical phrases in this sequence, dubbing the whole running time of STAGE 3, favors the temporal reading interpretation: "le pas passe." The musical phrase is taken up again with the motion of the "l" and the display of "elle passe," which tends to strengthen the bond between those two

and at the same time the interpretation according which the masculine linguistically morphs into the feminine. I will not carry on this analysis, as the reader may now be able to do it.

When using perception-based algorithms, we can make this coherence between sound and visual generators happen, although they do not follow the same logic. After several tries, Marcel and I have realized that the coherence between sound and visuals only depends on three constraints:

- The synchronization of upbeats, i.e. coherence increases (up to the point it gives an impression of redundancy) when musical upbeats coincide with visual "upbeats", notably the initial and/or final state of animation and the wait between two animations.

- The correlation between the length of sound and that of visual processes, i.e. a visual process (generally a *Trajectoire inexorable*) must not be interrupted by any unexpected running of a sound process.

- The proximity, or even identity, of temporal semiotics in the sound and visual processes. When two processes are temporal synonyms, an a-media cluster is automatically generated.

These constraints are not to be systematically respected, but each time you step away from them, you partake in rhetorics, be it willingly or not. To give you an example of each constraint, the temporal synonyms were used in the paradigmatic sequence *tense*. In *la série des U*, the sound *En flottement* is related to the *Stationnaire* of the "le" that is on the right of the screen (second constraint).

The first constraint, by far the most important one, is to be respected by applying a simple rule: the running of a sound sequence has to be synchronized with a visual "upbeat," except for the choices Marcel and I make in full knowledge of the facts. This synchronization is the result of a play on the length of the rests and that of the static visuals. Thus, the program either delays the sound generator or the visual generator, in order to synchronize the two of them on an upbeat. It is as if the two generators allowed one another to start the next sequence.

However, this process does not manage upbeats while a sound or visual sequence is running, but the second constraint does. We have said that sound events are of an approximate length of 2 s, whereas minimum events are approximately of a 200 ms length. These measures were used to "build" the temporality of the visual sequences, e.g. the length of each syntagmatic sequence. As the real length of visuals depends on the machine, they cannot perfectly match. However, the interval between the two is the same on every computer and obeys the same rule of variation during the totality of *la série des U*. This is how coherence is ensured.

04 PROCEDURAL REPRESENTATIONS

A/ REPRESENTATION BY DATA, REPRESENTATION BY INSTRUCTIONS

The data processed by the program is not always displayed. Besides, images or other kinds of media can be described by code lines within the program, while having no implicit existence in the multimedia product. In the first case, we talk of a representation by data and in the second case, of a representation by instructions. These two modes of representation can only be seen by examining the

program itself, along with the listing and data files. They are procedural representations. Sometimes the procedural representations by data or by instructions that are present in the program are different from the process-related representations produced by the program. We have already encountered this scenario (without naming it) in the adaptive generation case. In adaptive generation, procedural representation relies on a potential failure of the process-related representation and makes sense only in relation to this failure.

Representation by data is used in SEQUENCE 3, PHASE 4 and representation by instructions is used in the same sequence as well as in SEQUENCE 4, PHASE 1.

B/ AN INVISIBLE SLAB: AN EXAMPLE OF A PROCEDURAL REPRESENTATION BY DATA

The visual animation in PHASE 3 relies on the "evolution" of a texture (Figure 2). This texture is a process-related representation. The sound accompanying the sequence is an *Obsessionnel*[23] followed by a *Trajectoire inexorable* towards the end of the musical sequence. This TSU sequence gives meaning to the graphic evolution of the texture, which consists of an expansion associated with a sparkling and a gradual increase of the grainy aspect of the texture, along with an increase in the internal geometrical organization, in the form of mobile rectangular structures. When the phase is mute, the teleological orientation of the texture is definitely less perceptible. What is more, the sound produces a psychological effect that has the reader think the visual process is sped up. Thus, the association of texture and sound generate a temporal a-media cluster, notably perceptible in the second half of the sequence, for at this moment, temporal semiotics remains the predominant semiotic system.

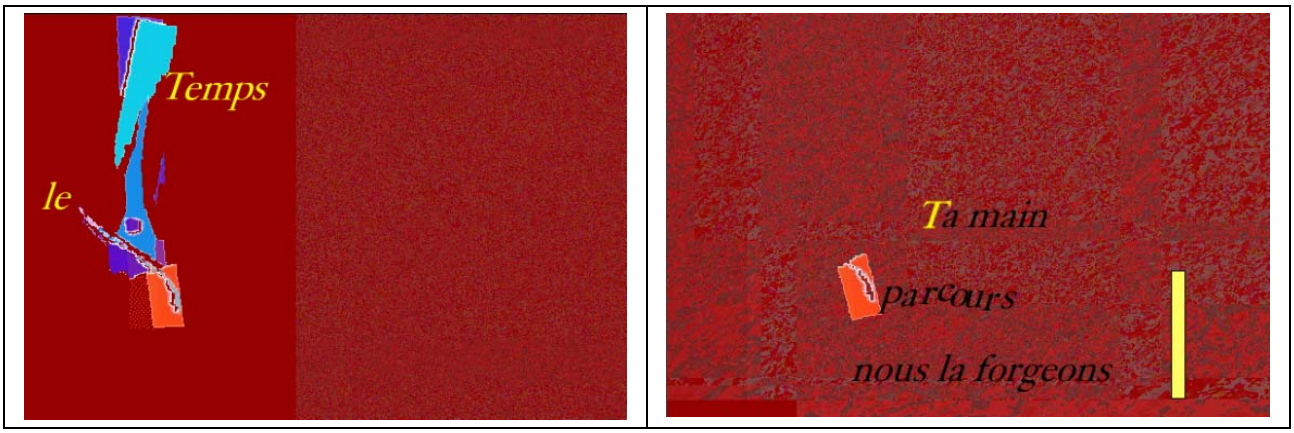

Figure 2 : screenshots of the texture, at the beginning and end of the sequence.

If the program were just to produce this texture (level 1 of programmed writing), it would be logical to use some rules taken from mathematics and yet, when we look at the program, we find no trace of this texture. Instead, we notice a superimposition of 18 video layers, all of which use the same image that is but invisible on screen, i.e. a photograph of Europe’s biggest ammonite slab, situated in Provence (Figure 3).

[23] "Obsessive"

Figure 3: ammonite slab

These layers undergo a double effect: a Brownian movement (random movement of the image in any direction) and a combinatorics of layers' visibility. The slab is a procedural representation by data that has no equivalent on screen and the programmed logic of the texture is a procedural representation by instructions, the signification of which (Brownian movement, combinatorics of visibility) is different from that of the associated process-related representation (texture). The sparkling effect is caused by the Brownian movement. This movement is set on a length of 250 ms, in order to constitute a temporal synonym for the musical *Obsessionnel*, i.e. the sparkling "pulses", according to the frequency of the *Obsessionnel*. The gradual organization of the texture is the result of how the Brownian movement is managed. The maximum movement allowed by the program increases with the position of the layer, so that layers go out of sync over time. This is why the grainy aspect of the texture increases. The way visibility is managed is responsible for the changes in geometrical shapes, i.e. by making some layers invisible, a sudden threshold is created in the Brownian movement of a set of visible layers in relation to the set underneath. As the visibility of these layers is the object of a quite random "choice", they change over time, causing the geometrical structures to move.

The difference between the process-related signification of the program (a texture) and its procedural meaning (the complex algorithm-related shifting of a photograph) gives rise to a third representation that does not partake in any of the other ones, but in the comparison between the two. This representation cannot be perceived but by someone who alternately endorses the role of the reader and of the meta-reader, i.e. in this case the analyst of the program, or at least the role of the reader of this file (well, hello my meta-reader friend). Of course this representation is purely imaginary. In this situation, why do you think we have chosen a fossil (maybe the best occurrence of a "still life"), usually hidden within a stone gangue, as the raw material for a moving texture (not a shifting texture, but rather

a pulsing one), i.e. to express a process that is full of life? Once more, there is a tension between life and death: what is passing before our eyes, what has already passed away, what will never pass?

C/ BRAID PROGRAMMING: A PROCEDURAL REPRESENTATION BY INSTRUCTIONS

As mentioned earlier, the will to explicitly integrate procedural representation in the program gave rise to several uses of programmed writing in *passage*. These are not implemented in the oldest parts of *passage*. The first attempt consisted in developing a programming logic called "modèle FRA" (I cannot remember why this name) that can be found in the personal libraries we use to a more or less large extent throughout the sequences. This model consists in "locally" handling the program. All the program parts then follow the same logic, so that they can communicate with one another and "understand" each other, thus handling the evolution of the program in turn. In this model, the objects produced are very close to computer agents, i.e. these autonomous programs that are able to communicate with each other and to influence one another. This model in itself brings a representation of the author's condition, i.e. the situation of an author who no longer controls the running process, who cannot manage his/her creation but locally. Thus, this model falls within the same logic as adaptive generation.

However, it has evolved to produce a semi-comprehensive level of control. It turns out that each sequence has been designed as a set of programmed processes running simultaneously and interfaced with one another. The FRA model cannot reproduce this logic. Programmed writing has then partly evolved to reach a model, called "braid model", in which procedures are gathered into three distinct kinds of computer objects:

- Effectors that only run calculations and give their result. These objects are devoid of the third level of programmed writing.

- Transducers that "translate" data (even complex ones) into media properties that can be displayed. These transducers ensure the coupling of procedures with processes.

- A braid "head" that handles these two types of objects and comprises the whole logic of the braid. It is this object that falls within level 3 of programmed writing, that of procedural representation.

A braid is thus a part of an autonomous program associated with a unit of procedural meaning by instructions. Braids do exist, whatever the programming mode. The braid model simply provides a programming logic that allows their identification in the program. Braids can be spotted in the program but a whole set of exchanged messages and diverse couplings has them intertwine (they can have some effectors and data in common and they can also simultaneously intervene in the media).

The braid model shows the design logic. When there is no difference between procedural and process-related representations, a plait produces a unit of process-related representation, according to the previous modalities (an a-media cluster, a snatch, a more complex multicode functioning...).

On the contrary, when there are procedural representations that do not exist in process-related representations, the braids are likely to show this difference and to make the representations by instructions (that would otherwise go unnoticed) more explicit. The handling of the aforementioned

texture thus is the object of a plait. By isolating a single braid from the context of the program, it is even possible to display process-related representations, i.e. representations that, because of couplings, are never displayed when the program is completely run. Thus, there are some process-related representations that are objectively programmed and that will never be visible. Although they are part of the work, they only exist as procedural representations. In *passage*, these representations are animated poems. In order to show this characteristic, which as I far as I know has no equivalent in non-programmed arts, I have isolated a braid from SEQUENCE 4, PHASE 1, by producing a "sketch" version of the work's program. In order to allow this braid to be run in the same way as when the program is run from beginning to end, I measured beforehand the date and nature of the various messages it received when the program was integrally run, then I reproduced these messages with a timer in the "sketch" version and on the desired "date", in which it intervenes alone. One of the poems that helped me design the sequence was displayed, although it never is when the program is run.

A series of screenshots taken at the same moments in the complete running of the program and in a single snatch reveals this functioning (FIGURE 4, pp. 48-49). On screenshots taken from the running of the whole program, we can see a series of additional elements generated by the other loops, notably the existence of an initial poem that is absent from the studied loop. We also see that the loop produces a text that is different from that produced by running of the whole program.

Snatches that can be performed in a spatial reading of visuals for the whole program

Ma main parcourant la sueur de l'écran,
là-haut dessine sa branche : ta main parcourant la sueur de l'écran mes trames.
Et doucement s'anime
Mes fils, ce vent de terre,
Ta main, qui porte, laboure et emporte.
...

[My hand traveling the sweat of the screen,
Up there draws its branch: your hand traveling the sweat of the screen that is/are my weft/framework/screen.
And gently/carefully/slowly comes to life/begins to move
My threads/wefts/, this wind of/from earth,
Your hand, which carries, plows and takes/carries along][24]

Snatches that can be performed in a spatial reading of visuals for the plait only

Ma main
Là-haut dessine sa branche ta main.
Ta main, et doucement s'anime
Ta main, ce vent de terre
Ta main, qui porte, laboure et emporte.

[My hand
Up there draws its branch that is your hand.
Your hand, and gently/carefully/slowly comes to life/begins to move
Your hand, this wind of/from earth,
Your hand, which carries, plows and takes/carries along][25]

[24] translation by Philippe Bootz. The French poem is polysemic. I tried to do a éword by word" translation and I have separated with "/" the different meanings a French word can have in this poem

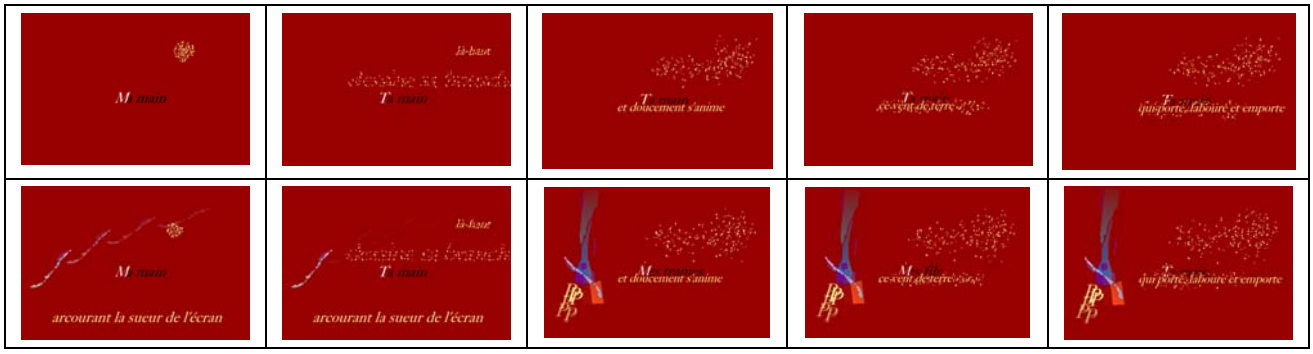

Figure 4: Sequence of screenshots of the multimedia elements produced by a single plait (top) and the complete program on the same dates (bottom).

CONCLUSION

This file may seem complex. You may wonder why we go into such details and show what some may consider as the recipe for the inside of the work, or even for the author's intimacy.

Well, we do this for representation's sake. Let us not forget that it is always a matter of representation. We could do with only one reader's stance, either the *lectacteur*'s[26] who acts upon the "show" he seizes, or the listener's, or the spectator's. It is legitimate and I think (well, hope) that this stance is enjoyable. However, if one wants to grasp a little bit more of the work, i.e. the essence of artistic representation, then such a file is necessary. By analyzing elements of the work that are imperceptible to the reader, allows one to interpret other levels of representation. The reading of this file can make up for the direct observation of some other person's reading as well as for the study of the program listing, although it is also possible to perform these operations. Thus, the reader is placed in an equally useful, yet different, situation of reading reception, i.e. that of the meta-reader. Of course, authors themselves are subject to psychological constraints. They are given to see only what they are able to see in their creation, not what they put in it, or what others think they have. However, one must not be mistaken; meta-reading does not aim at finding the truth, or at revealing a hidden truth. This would amount to granting the analysis the informative reading that we disparage in *passage*; this would amount to substituting the process-related representation of the running program – the very context of reading - for "information", i.e. a knowledge taking the place of the work. This is not so. This file aims at sharing the essence of our adventure as well as producing – once again – representation. Of course, reading this file gives information, yet too few to substitute for a screen reading. It points out invisible levels without necessarily explaining them thoroughly, thus showing the limits of reading.

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[25] translation by Philippe Bootz.

[26] A portmanteau word made of the word « lecteur » (reader) and « acteur » (actor, performer). *Translator's Note*

APPENDIX: A FEW POEMS FROM *PASSAGE*, NOT THE *PASSAGE* POEM

WARNING

A programmed digital poem can produce several kinds of documents: a video capture of what is displayed, instantaneous screenshots of the displayed images, video captures... and printable "linguistic" captures. A linguistic capture consists in capturing syntactically and semantically coherent linguistic sets found in the digital poem and to organize them in the form of printable poems. It is this kind of document that we provide here.

It is impossible to reproduce the "linguistic content" of an animated poem on paper. Not to mention the intervention of the program that can produce combinatory effects of variation through various processes, i.e. certain algorithms (written in the program) as well as other processes related to the perception of media. The texts here "produced" – in fact they are snatches produced in relation to various reading modalities – do not "reproduce" the *passage* texts. The digital poem is their referent rather than their copy. I sometimes favor what was said, sometimes what was written and sometimes the textual relation between what happened on screen and what was said. In this case, a part of the verse inscribes itself in the sound media of the digital poem and another part in its visual media. This process thus "freezes" some elements in the form of a printed text, elements that in fact are not written anywhere. Some sequences are not represented and for each represented sequence, I have kept but a snatch among the numerous ones that can be produced. One can notice that some of the snatches revealed in previous analyzes are absent from this file and that other ones replace them. Finally, the texts produced by a combinatory generator were not reproduced here.

It feels odd to read this printed poem - a snapshot of the digital poem of sorts - that contains the poem while being quite alien to it. It is as different from the linguistic reality as a photograph is from the reality of a landscape. Nevertheless, it is a full artistic production derived from the digital poem, just like a photograph becomes a work of art through a landscape.

Phase 1 séquence 1

Le temps
Notre premier ami
Notre tout premier ami
Le temps qui nous démarre
Puis
Le temps
Le temps encore que notre impatience bouscule
Et le temps
Le temps, enfin
Qui nous bascule
Notre dernier ennemi

[Time
Is our first friend

Our very first friend
Time that starts us
Then
Time
Nor time our impatience jostles
And time
Time, at last
Which topples us
Our last ennemy][27]

Le temps ne s'écrit pas
C'est lui qui décrit
Dans

Le sourire qui se plisse et la carie qui ombrage. Puis le sourire, encore, plus tard, Qui emprunte toutes les rides de tout le visage, et des mains, et des côtes, et du rire qui racle et s'arrache de la gorge.	Les moindres détails

[Time cannot be writen
It describes/de-write
In

Smile that puckers up/becomes creased and caries that shade Then smile, nor, later, Which follows all the wrinkles on all the face, and on the hands, and on the ribs and on the smile that scrapes and is forced/tired out of throat	The slightest details

Les Détails
construisent mouvance,
construisent notre mouvance.

[details
build ever-changing nature
build our ever-changing nature][28]

Phase 1 séquence 2

Empreinte
Señor, ten piedad de nosotros
Le ciel comme en terre
Señor, ten piedad de nosotros
L'eau
Le ciel comme en terre
Señor, ten piedad de nosotros
Elle emprunte les traits

[27] translation by Philippe Bootz.
[28] translation by Philippe Bootz.

Señor, ten piedad de nosotros
Que je lui ai tracés.

Du ciel comme en terre
L'Eau empreinte les traits
Qu'il a tracés.
Les traits des vieillards
empreintes
Les traits d'Au revoir
trace
Les traits des enfants.

Du ciel comme en terre
L'eau le temps
Trace

Phase 1 séquence 3

Le temps
Le temps ne s'écrit pas.
C'est lui qui nous décrit
Dans les moindres détails.
Mais
Lorsque installé, il se laisse caresser,
Nous le forgeons
Lien

Qu'on enfouit de quelque sourire
Qu'on enfouit et qui ressort par le dedans de la tête.
Qui ressort par le dedans.
Qui ressort et qu'on construit dans le pas, le caillou et la main
Parcours
Nous le forgeons
Ta main
Parcours
Nous la forgeons

Phase 1 séquence 4

Sueur
T/M
Arcourant la sueur de l'écran
T/M a main
Arcourant la sueur de l'écran
Là-haut
Dessine sa branche.

Passage/parcours
Ta main
Nous le forgeons lien, parcours

Ta main, mes trames
Et doucement s'anime
Mes fils,
Ce vent de terre
ta main.
Qui porte, laboure et emporte

Qui saura jamais
Le chant
Ta main courbatue
laissé par notre sillon
Ta main blaissée

Ta main
Parcourant les cailloux

Phase 2 séquence paradigmatique « genre »

Cet autre, cet indéfinissable qui se perd, fluide essence et sans genre, se perd comme la brume, neutre de toute voile et qui, un jour ou l'autre, neutre, tout efface. Autre

Cette autre, cette absence impensée, ni lui, ni elle, que nul n'aborde, ni du Nil, ni du Styx, à jamais étrangère à notre condition et qui, un jour ou l'autre, neutre, de tout s'efface. Autre

Phase 2 séquence paradigmatique « matière »

Sous le fil de l'eau, les pas
Sont les racines de nos actes.
Ils s'ancrent sur les cailloux,
Roulent sous nos boues.
D'argile en nos champs,
Usure dans et hors les villes,
Labeur aussi,
Les voici.
Ils sont labours invisibles
Presque
Au dessus de nos pieds qu'ils
Enthracent.

Les pas sous nos boues
Savent aussi le clair
Et le limpide.
Leur fraîcheur

S’épanche et se répand.
La terre s’en abreuve.
Ainsi les rires,
ainsi ceux des enfants.
Ils se fondent en la sève
Et nourrissent
Pour qui sait voir,
Le temps qui coule
En nos pas.

Et dans la sève remontent
Pas à petits
Pas à par
Fois à pas
Foisonnants et volubiles
Jusque loin au dessus
De nos pieds
Nos pas
Pour peu que l’ami
Les
Happe ou qu’ils poussent
Leur
Pollen tout comme
Le
Vent distribue
Haut
Haute
Cette herbe que nous
Foulons.

Mais les pas trop hauts
Près des volcans
Sillonnent la colère
Et la passion irréfléchies
Ils n’usent pas,
Ne rencontrent pas,
Ne s’ancrent ni ne poussent.
De feu, ils passent.
Et leur écho, lent à se froidir,
Attise longtemps
Ses acrostiches
Dans la mémoire momifiée des hommes

GLOSSARY

ADAPTIVE GENERATION. A program that tries to adapt its own logic of functioning to the technical performances of the computer.

A-MEDIA FORM. Necessarily programmed, it is made of various processes, each of which is applied to several media proprieties. It is presented in the form of a set of simultaneous a-media clusters. The a-media forms present in *passage* are either made of a temporal cluster based on the application of a same TSU on sound and visual characteristics (sound and visuals thus being temporal synonyms), or else on the association of a temporal cluster and an expressive cluster based on the association of a melody and a trajectory. An a-media form is always associated with common media forms (mainly linguistic ones in *passage*) in order to create meaning.

BRAID. An autonomous program part associated with a meaning unit. The plait produces snatches and is likely to integrate procedural representations either by data or by instructions. In the program, the plait plays the same role as the verse in a poem. It is a representation by instructions, for the plaits are not visible on screen. Plaits may be run simultaneously or in a sequential way. They can be coupled according to their value (a same piece of data is used by several plaits), to the effector (the same part of an auxiliary program is used by several plaits), to the message (they communicate with one another) or to the media (they act on the same media).

CLUSTER. A sign made of the association of several media proprieties.

DESCRIPTOR. An abstract representation of the state of a generative program. The descriptor allows the production of coherent generated texts that do not rely on the application of oulipian-like constraints. The descriptor only describes the data that is necessary to the evolution of generation. It does not describe the totality of the information that is proposed throughout the reading. In *passage*, the descriptor is made of a series of rules in which concept = value.

INFORMATIVE READING (of a newspaper for instance). A reading modality that tries to grasp the totality of the information that is contained in a text.

MULTICODE SYSTEM. A system that implements several semiotic systems (linguistic, textual, temporal...).

PARADIGMATIC UNIT. In the works based on a descriptor of the "concept = value" kind, paradigmatic units are sequences allowing the reader to access several values of the same concept. They allow one to choose the appropriate concept value, just like a vocabulary list allows one to choose the appropriate term (the right paradigm) to fill in a blank in a sentence.

PROCEDURAL REPRESENTATION. A procedural representation corresponds to the set of representations present in the program and more generally, the material created by the author(s). Sometimes, there is nothing on screen that corresponds to these representations. There are two distinct kinds of procedural representations: the procedural representations by data, made of data (images, sounds, texts...) that may or may not be transformed into the multimedia event produced by the running process; and the procedural representations by instructions that correspond to the data described and produced by part of the program, but that cannot be displayed as such in the running process because of media couplings (cf. plait) between program parts.

PROCESS-RELATED REPRESENTATION. A representation that consists of multimedia representations produced during the running process. They are the only representations the reader can access.

REPRESENTATION. A representation is the materialization of a sign or of a set of signs that the author wants to express. As the result of an inscription, representation is not limited to this sign. It also has some characteristics that are related to the scriptor itself as well as others that are related to the medium, so that the sign that the author wants to convey through representation can be reproduced differently by the receptor.

SNATCH. A part of the entire discourse endowed with an autonomous meaning. The snatch is produced in the course of a reading, in which moments of spatial and temporal readings can follow one another. This is why, unlike a hypertextual fragment, it does not correspond to an inscription but rather to the segmentation of an inscription induced by the reading process. Snatches may or may not gather into more complex snatches according to various modalities (succession, simultaneity, intertwining), so that several snatches may coexist on screen at any time. A snatch being a spatio-temporal object, it cannot be entirely displayed. It is recognized only once its production is achieved through the reading process.

SPATIAL READING. A reading modality that uses a grammar coming from the written form and that is based on the spatial display of words.

SYNTACTIC ANIMATION. Introduces temporality into the written form. It is thus called because its kinetic character does not derive from the motion of letters, even when this motion changes the syntax. In order to be read entirely, the syntactic animation requires the implementation of several reading modalities, among which spatial and temporal readings (cf. these terms).

SYNTAGMATIC UNIT. In the works based on a descriptor of the "concept = value" kind, syntagmatic units are sequences allowing the reader to access several concepts. Therefore, syntagmatic units show a succession of concepts, regardless of their actual spatio-temporal organization. In the hypertextual structure, they play the same role as that played by a sentence in a linguistic utterance.

TEMPORAL READING. A reading modality that uses a grammar coming from the oral character and that is based on the temporal order of words.

TEXT. A tissue made of signs. In *passage*, it is a multimedia object made of words, forms, colors, motions, music... interpreted by the reader.

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