

Towards an ontology of the field of digital poetry

1 Introduction

This essay proposes to establish the theoretical model of an indexing of the field of digital poetry based on the Spinoza's ontology with accompanying notes by Deleuze¹. Its objective is to design a simple graphic tool, allowing a semi-automatic indexing of the documents and a graphic visualization of the results.

Spinoza's ontologic model seems to be more suitable than classic model to create a flexible model that take into account documents in their *hic and nunc* and not as absolute data. This philosophical approach can deal with different points of view on the same document and can integrate several ontologies, one per point of view, rather than to try to describe everything with the same ontology.

Spinoza proposes an ontological model valid for any type of individualised entities called individuals. The individual can thus be a living being, of course, but also an inanimate object like a document or a work. Spinoza opposes eternity and immortality by considering that an individual can change and die. He thus defines the individual using three constitutive dimensions: its physical and material extensive parts, its singular essence and the relationship which links them *hic et nunc*. An individual can change while adding to his extensive parts of some external elements, but always according to a particular relationship to its essence. The relations between individuals use contacts between extensive parts. These contacts are named "impacts". A impact provides, for an alive entity, a first emotional experiment, which Spinoza names an "inadequate knowledge". "Adequate knowledge" rests, in addition to the impacts, on relations between the relationships or the essences of the individuals. This knowledge corresponds to scientific knowledge or intuitive knowledge. The death of an individual results in the loss of the relationship between its extensive parts and its essence but the latter is eternal and constitutive of the universal "Great Whole" of the essences.

The transformation and the death of the individuals described by the Spinoza's model bring a flexibility which easily makes it possible to represent the modifications and various versions of works like reconfigurations of relationships. It becomes thus possible to distinguish in this ontology the various configurations from a work and to take into account its chronological evolution. In addition, the extensible parts can easily be identified with the observable components of the work a person (reader, author...) can handle during a contact with the work.

With regard to the document, the model provides *ipso facto* a separation between the plan of the expression (extensive parts) and that of the content, therefore the concepts which it contains (essence). The concepts developed in these documents provide a knowledge on the essence of the work but constitute this essence by no means. Indeed, in this model, the documents are produced in a specific relationship with the work. One can thus deduce that the essence of the work is inaccessible in the absolute but that these documents built a knowledge on the essence. This knowledge can be infinite and is necessarily organised in points of view

¹ Deleuze, Spinoza, *éternité et immortalité*, audio course, Gallimard

which correspond to the relationship that the creator of the document establishes with the work. This creator can hold an unspecified role: author, reader, analyst, performer, technician... Still let note that the model gives the possibility to retain all kinds of “knowledge”, since the simple feelings (this is good, I like...) until the suggestive standpoint while passing by the results argued and supported by a scientific description. The model thus makes possible to treat any type of approach of the work. The relationships which are established between the document and the work in order to obtain this knowledge rest on the communication between the creator of the document and the work. They thus express some points of view related to the work.

I have developed for several years a model of communication which makes it possible to classify the relationships that an individual maintains with a work on the basis of the relations that it installs with some extensible parts of the work. This classification then shows roles that the model names actors. The actors are characterised by a common objective (for example semiotic analyses, interpretation while reading...). One can thus gather the concepts developed by a given actor in a beam of conceptual relations which constitutes an ontology of actor established in a traditional way by a beam of relations between concepts. Such ontologies still largely remain to be built on the basis of current research undertaken on digital poetry in all our disciplines. Let us retain here that the proposed model of indexing is thus extensible ad infinitum by the multiplication of ontologies of actors (historical approach, technical approach, literary approach, semiotic approach, approach of the author, approach of the reader...)

The relation that a given person maintains with the work also changes. It results in a reconfiguration of the relationships that the person maintains with this work during the creation of the document. In other words, in the same document, one can locate the successive roles endorsed by the person, his various points of view, even if the objective of the person's approach is single. One will be able to thus locate sections in the documents, each section being relative to a point of view. So, one will have to indexing these sections. The definition of the sections thus makes it possible to regulate with the desired smoothness the indexing of the documents: since a very approximate indexing in which the document as a whole is regarded as only one section until a pointillist indexing in which one breaks up the document into very small sections. For example, one can index the document by locating the sections where the author of the document positions like reader, those where his establishes a literary analysis, others where his directs his speech in a semiotic direction, as many sections which use different ontologies of actors. If one indexes the complete document like a section, then the indexing will refer to the more pregnant ontology of actor.

Thus, the association of the Spinoza's ontological approach, of ontologies of actors established by specialists in various disciplines and of a model of communication (describing the extensive parts of the work and the contacts between the actors and these parts) theoretically makes it possible to carry out a flexible indexing, provided that a same formalism can describe all these models.

I will show that a mix graphic formalism using an ensemblist model and a entity/association model can describe the Spinoza's model. I will establish then the ontological model of the work by applying this formalism to the procedural model of communication. I will also deduce from this formalization the definition of several roles located like actors in the procedural model. The analysis of the relations between the author of the document and the work such as it reveals in the procedural model will finally make it possible to propose an ontology of the document, and to detail the description of its extensive

parts. The addition of some ontologies of actors of the field (or of some folksonomies) will then make it possible to propose a base of concepts for the indexing of these documents.

In addition to its theoretical coherence, this graphic model allows to design a tool for simple and powerful graphic indexing which can treat any type of document. Indeed, the ensemblist formalism of the ontological model is perfectly appropriate to the construction of a graphical vectorial interface. The visualisation of knowledge on a work or on a set of works can also be done graphically using graphs of Venn. Finally, the description of the relations in the form of entities/associations models provides a vectorial visualisation that can be used as graphical interface for a mouse determination of the points of view. The interface will graphically use some theoretical diagrams of the model.

We endeavoured to develop the formal model in order to release the methods of construction of the diagrams used by the interface. The example this essay contains is just intended to show how such a tool could be used to index a document and how it could allow a visualisation of information. The objective, in the long term, is not to carry out an automatic indexing but rather to build a base of autonomous data of indexing able to visualise different points of view.

2 Schematization of the model of Spinoza and Deleuze

2.1 schematization of the individual

Spinoza defines an individual according to three dimensions as “*an infinity of extensive parts that are external the ones with the others (1° dimension) and which belong to the individual under characteristic relationships (2° dimension) which constitute it, and express a singular essence (3° dimension) which constitutes it*”, this essence being a degree of power.

One can easily represent this design (Figure 1) by an Entity/Association model (E/A model), in which the essence and the extensive parts are entities whereas the relationships are associations. This diagram is also an ensemblist diagram made up of 3 subsets (extensive parts, relationship, essence) from the unit “individual” schematized by an ensemblist “potato”. I schematise this model by affecting them a different graphic symbol in order to point out this double mathematical representation in which the entities of model E/A are typified subsets:

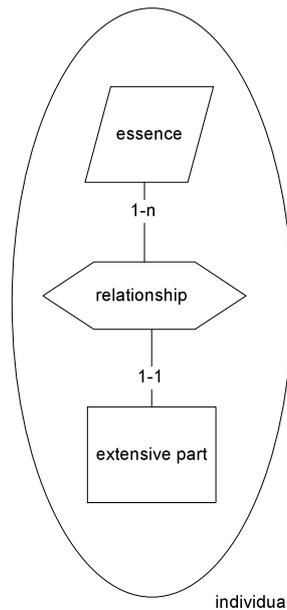


Figure 1: representation of an individual

2. 2 Schematization of the relations between entities

Spinoza points out three kinds of knowledge which an individual can have about another (given that the individual can just be a natural phenomenon). The first type of knowledge consists of affects, which Spinoza names “inadequate knowledge”. This knowledge results for him from the simple meeting (impact) between the extensive parts of the two individuals (Deleuze takes the example of splashing to illustrate this knowledge: the relation with water is there purely sensual and emotional). It is about a knowledge of the effects of the contact between entities. The second type of knowledge (ex: science) relates to the relationships. This knowledge leads to a know-how which allow to compose the characteristic relationships that an individual maintains with his extensive parts with the relationships that the other individual maintains with his own extensive parts. So, the contact is not reduced any more to one simple sudden impact between extensive parts, but consists of a composition of relationships (Deleuze takes the example of the swimming, activity in which the relationships which I maintain with my members compose with the relationships that the essence of vagueness maintains with its molecules). The third kind of knowledge (intuitive knowledge) relates to the essences. The 2° and 3° kinds form “adequate knowledge” together.

One can schematise in two ways the relations between individuals who end to these knowledge. The first one (Figure 2) is a purely ensemblist schematization which does not detail the relations between individuals. The second (Figure 3) is close to an entity/association model because it connects the components of an individual. It moves away from it because the composition relation links associations (the relationships) and not the entities and in what the entities “essence” complement each other and constitute the “Great Divine Whole” together.

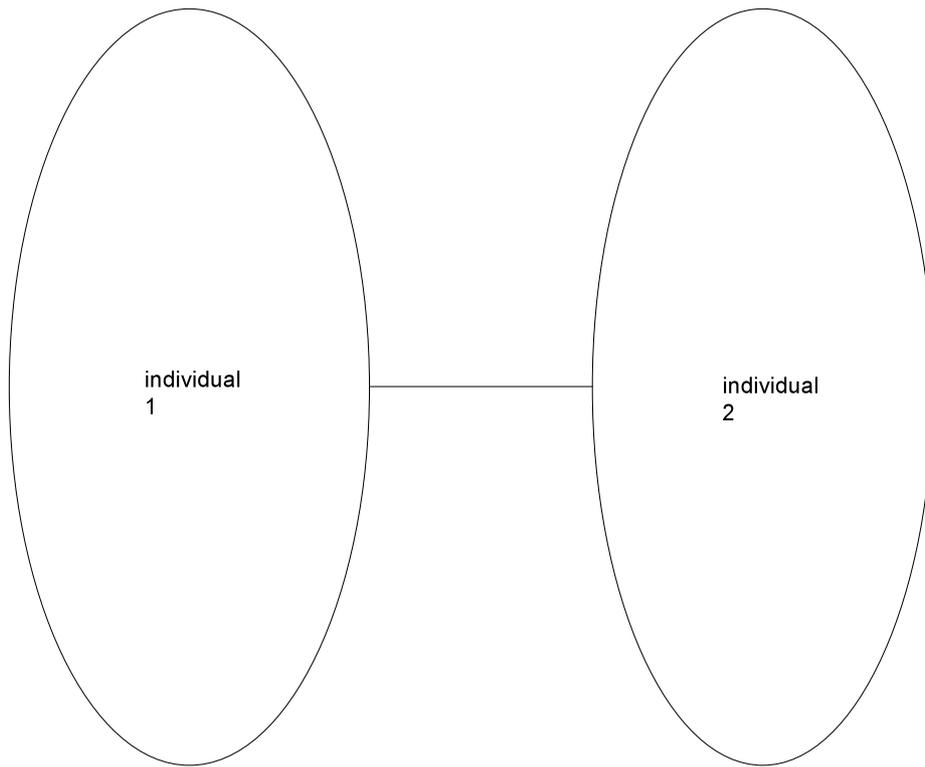


Figure 2: total ensemblist schematization of the relations between individuals

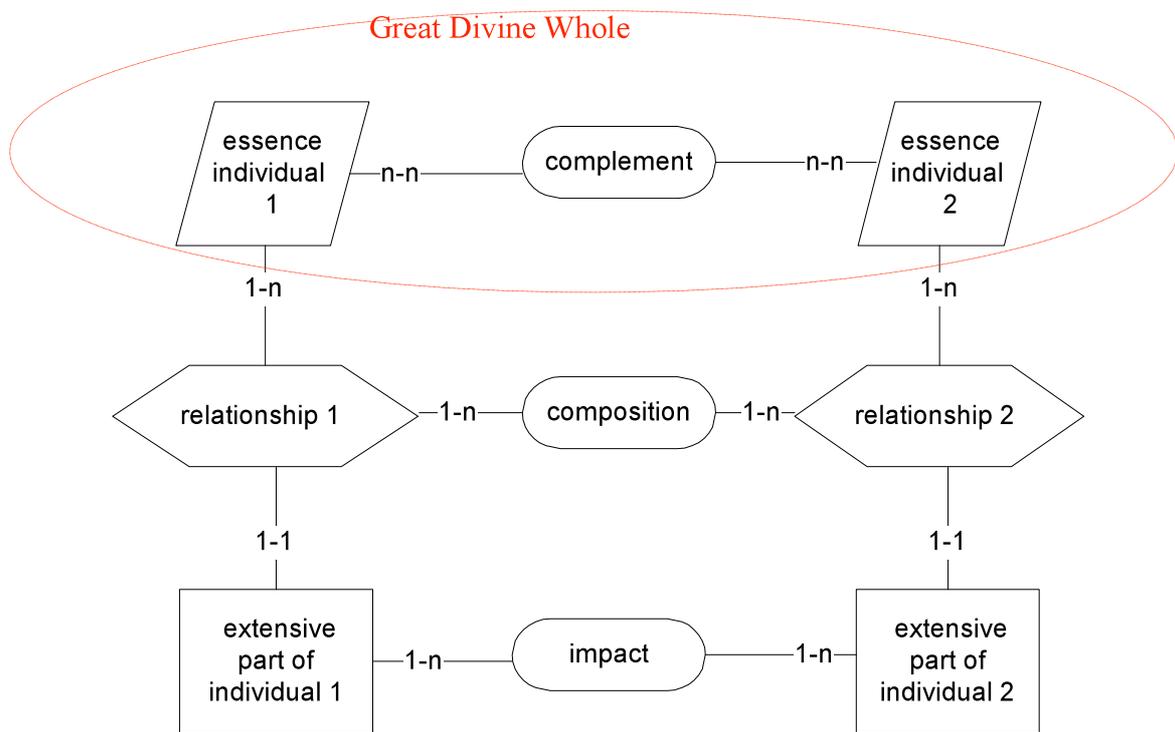


Figure 3: E/A schematization of the relations between individuals

2. 3 schematization of the diachronic evolution of an individual

2. 3. 1 extension of an individual

One establish a diachronic representation of the two major phenomena of ontology spinozist: extension of an individual and his life cycle by adding an axis of times.

Due to a contact with an object B, an individual A can extend his extensive parts by creating a characteristic relationship between this object and his essence (Figure 4).

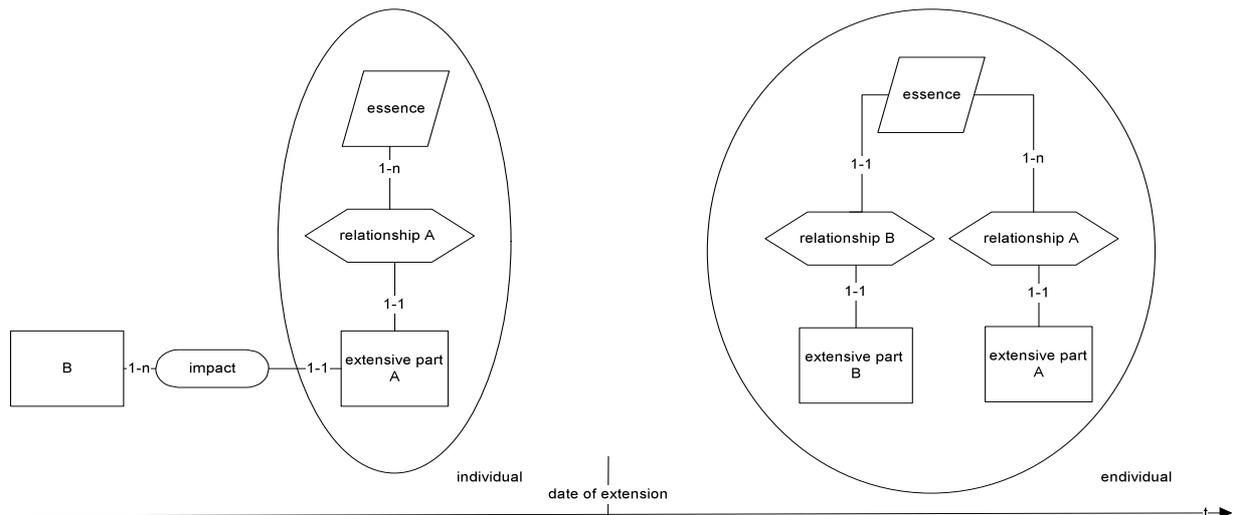


Figure 4: diachronic schematization of the extension of an individual

After the extension, the extensive part B and the extensive part A are then in indirect internal relation via the essence of the individual and the relationships which they maintain with this common essence. This relation results in a simple E/A diagram:

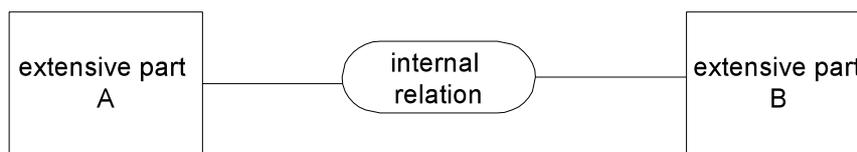


Figure 5: implicit relation between internal parts with an entity

Thus, it is not useful to schematise a diachronic operation by introducing an axis of times, one can only consider that, in the event of extension, any relation between the extensive parts of an individual and the object embedded by the extension also represents, by convention, the internal relation this extension built. That does not mean that the two relations (the impact before extension and the internal relation that exists after extension) have the same nature, but that simply means that diagrammatic description remains the same one (Figure 6) before and after the extension, therefore at any time. In order to avoid to lose information on the event “extension”, one must give attributes to the relationship: date, place and id of this extension. I names “diagrammatic equichronism” this convention of schematization which transforms an axis of times into a relation with attributes.

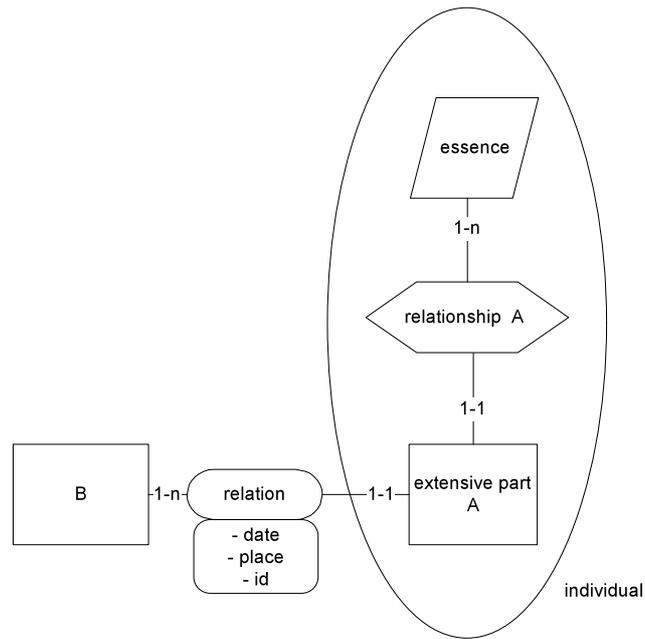


Figure 6: complete equichronic diagram of the relation between an individual and an object

In practice, we will be interested in the contact between an actor and a work. The object B will be then an extensive part of the work and the individual A is the actor. We will not be interested in the whole individual but only in the documents he produces as a result of this contact. It is thus not useful to show on the diagram the detail of the individual A and one will use the simplified schematization of the figure below:

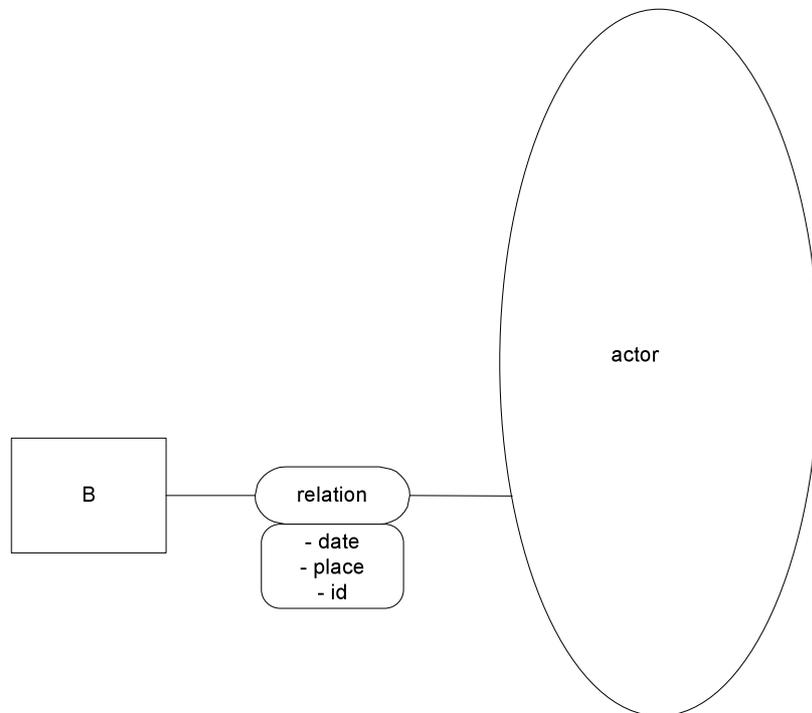


Figure 7: simplified equichronic diagram of the contact between an extensive part B of work and an actor

2.3.2 Life cycle of an individual

Spinoza indicates that the birth of an individual consists of the creation of characteristic relationship between objects which constitute them. It transforms them into extensive parts, at a certain date and in a certain place, whereas death is the destruction of these relationships, the objects constituting the old extensive parts becoming extensive parts of other individuals by creation of other relationships.

Such a cycle can be also represented in our schematization by introducing the axis of times. While naming A the physical object which undergoes the transformations, one obtains:

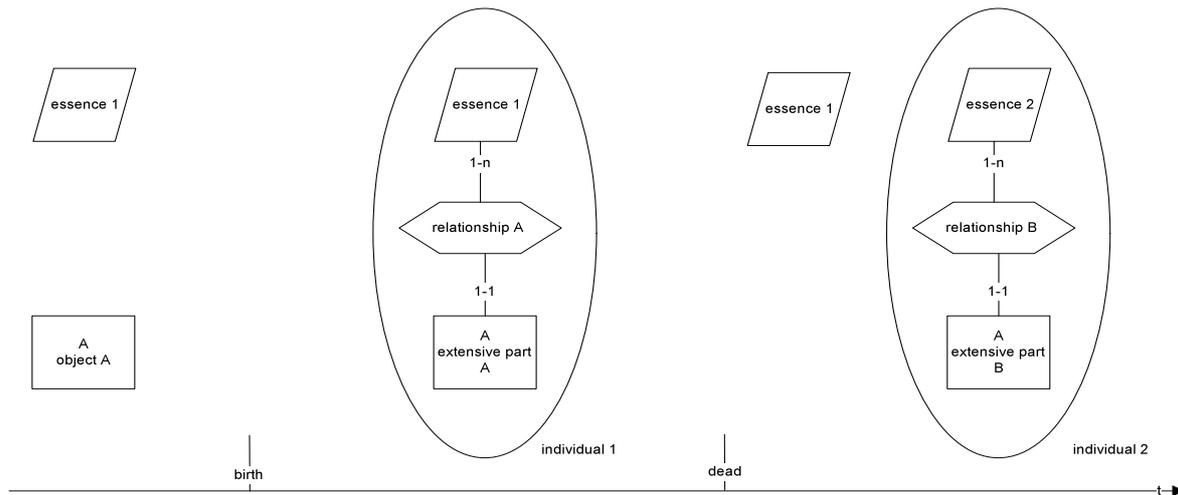


Figure 8: life and died of individual 1

One also can free oneself from the schematization of the axis of times and adopt a equichronic schematization by adding attributes of date (beginning and end) and of place (of birth) to the relationship which connects the essence to the extensive parts for the life of the individual. The relationship is thus located by 4 attributes: these three there and, of course, its name which constitutes an indice of his essence.

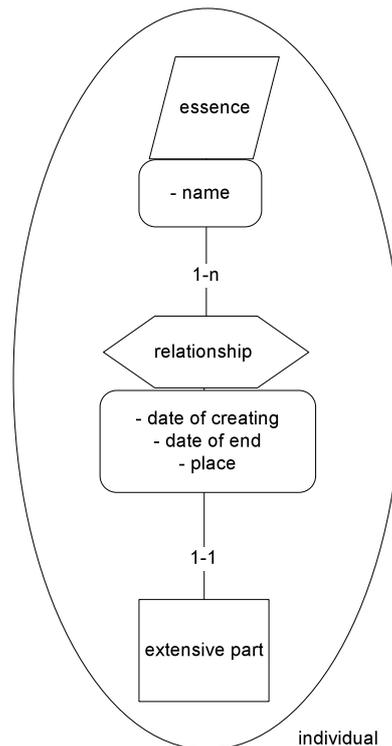


Figure 9: equichronic representation of an individual

Let us note that the extensive parts are parts, precisely, because they maintain a certain relationship with the essence. This relationship, to some extent, defines them according to a certain point of view which is that of the essence and it is not possible to define them without this point of view.

2. 3. 3 Theorem of the diagrammatic equichronism

One can recapitulate the transformations described above in the theorem of the diagrammatic equichronism with which one can schematise a diachronic evolution of the relations between external individuals and objects (or other individuals) without needing to break up the diagram into various stages by using the above conventions of schematization:

- convention of constitution of the individual: the addition to the relationship of attributes of dates (creation and suppression) as of places of life indicates that the diagram E/A which links the essence and extensive parts by association of the relationship in question is valid only during the interval of mentioned dates and at the considered places. Apart from these conditions, the relationships do not exist any more and the extensive parts take again their identity of isolated objects (possibly related to other essences by other relationships)
- convention of extension: associations between the extensive parts of an individual and external objects or extensive parts of other individuals, are represented on the diagram before the extension but by adding the attributes that characterise the extension. They also show the internal relations between these parts which appear after extension by the fact that they are then related to the same essence according to different relationships. It is thus not necessary to draw a new diagram to graphically describe the situation after

extension since one is interested only in the extensive parts and not in the relationships. In the equichronic formalism, relations are schematised before extension, because, in a contact, each individual creates an extension with the other, which would complicate the representation singularly.

3 the procedural model

The procedural model² provides a framework that is able to apply Spinoza's ontological model to digital poetry. It stipulates that the work is made up of extensive material parts. Some parts (program and data) are related to the space of the author and another (the transient observable) to that of the reader. These two spaces are disjointed and bound inside the work by a technological device of transformation (Figure 10). Each actor monopolises the work according to a particular point of view. Physical objects of the work are then integrated into the domain of the actor according to the interpretative relationships which the actor can develop. These relationships are an extension of the actor.

The interpretative relationships of the author transform the program and data into a *texte-auteur* defined as the set of the elements the author handles and which have meaning for him. The *texte-auteur* is thus the form that the process of extension takes for the author. It does not correspond to the binary files handled by the machine but to their representation easy to handle by the author, namely the source code and the pictures and sounds before possible compression. For example, a video of very degraded quality conceived for a weak band-width does not correspond to the *texte-auteur* of this video. This one consists of the original video as worked by the author. In the same way, the *texte-auteur* of a data "image" does not correspond to a file of format given but to the handled pictorial image. For example, the deformations of files JPEG do not form part of the *texte-auteur*.

The transient observable is the perceptible result (often multi-media) produced by the machine while running the program. It is not a sign but a media unit likely to be captured by an *ad hoc* sensor (micro, camera...). It is, in the language of Spinoza, an extensive part of the work. The reading will have for consequence to pose filters and deformations related to the percepto-cognitive mechanism of interpretation on this transient observable, which goes, consequently, being integrated into the space of the reader as "*texte-à-voir*". For example, often, the elements of the interface will not be regarded as relevant by the reader, even less the interface of the desktop. They then do not form part of *texte-à-voir* whereas they belong to the transient observable. The *texte-à-voir* see is thus the expression of the *relationship* which is establishing between the transient observable and the reader in the process of extension of the reader while reading.

Thus program, data and transient observable constitute the extensive parts of the individual "work" whereas the *texte-auteur* and *texte-à-voir* respectively constitute extensive parts of the author and of the reader. The functional model details the communication between the actors according to two descriptive modes: a structural description (Figure 10) which highlights all the elements and relations and a functional model (Figure 11) which defines work as an interface space between the domain of the author and that of the reader.

² One can find a more precise description of this model in Philippe Bootz, « The Problem of Form. *Transitoire Observable*, a Laboratory for Emergent Programmed Art", Peter Gendolla & Jürgen Schäfer (eds.) *The Aesthetics of Net Literature. Writing, Reading and Playing in Programmable Media*, Transcript-verlag, Bielefeld, 2007 : 89- 103.

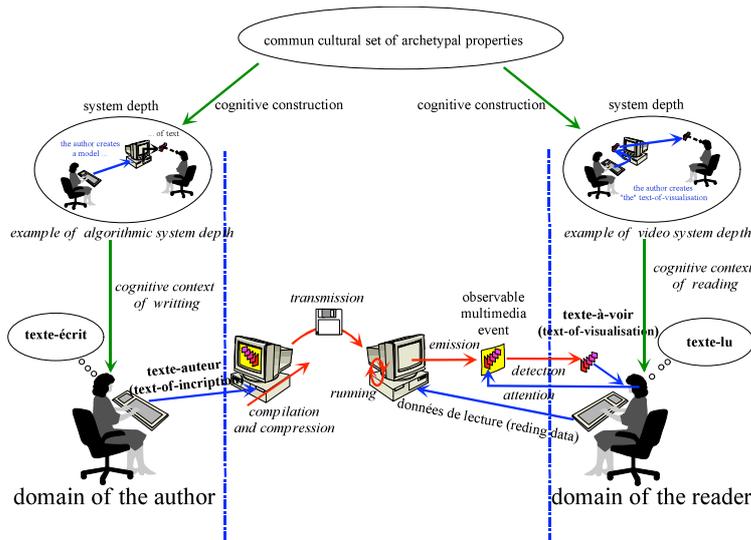


Figure 10: structural schema of the procedural model

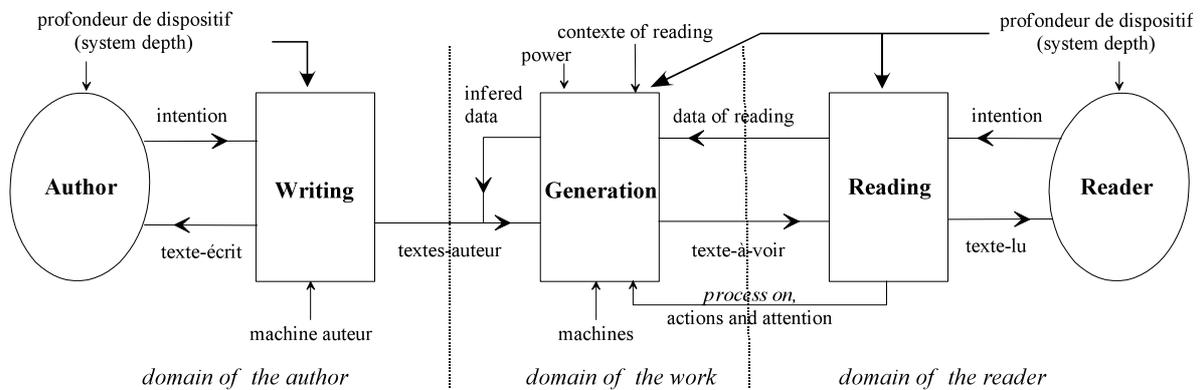


Figure 11: functional diagram of the procedural model

In this model, the reader and the author are not people but roles, points of view related to the work which rest on a possible or prohibited access to the various extensive parts of this one. In particular, the reader does not reach the *texte-auteur*, the author does not reach the transient observable and none reaches the program while running. Lately the model was growing up by adding other roles, in particular roles of meta-readers who are situated across the three quoted domains. A meta-reader reaches the various extensive parts of the work as to the relationships which are established between the reader and the work, therefore with the *texte-à-voir*.

Although it was not introduced accordingly, the role of meta-reader is naturally suitable to treat roles of analyst: an analyst (critical or enquiring) is a meta-reader which has a particular objective distinct from that of the other actors. The procedural model defines the

roles author and reader by procedures of construction of mental representations. An author builds a mental representation of the work called *texte-écrit*. A reader builds a representation of the work, called *texte-lu*, by a percepto-cognitive process of interpretation of the transient observable. Whatever could be the situation (collective, participative, or individual works, performance...) there is thus never ambiguity on the actors: a reader can never be an author and an author is never a reader. The model thus does not handle a concept of wreading. One could however rebuild it by noting that a person can pass in practice very quickly from a role to another. By extension, one can define a role of analyst as a meta-reader who pursues the goal to acquire a precise scientific knowledge on an element of the general field covered by the model of communication. This objective is carried out thanks to an observation of the relationship between the other actors and the work. In the process of extension of the actor whom his activity constitutes, the analyst thus creates an internal relationship (Figure 6) between this work and a set of other productions or events which depend on its objective (works of avant-garde for a historical analysis, digital or not literary works for a literary analysis...) and which constitutes the implicit or explicit corpus of its field of expertise, whereas the reader puts it in relation to the whole of his personal culture in order to build a personal mental representation that does not constitute a knowledge (what does not exclude the possibility of an erudite reading) whereas the author puts work in connection with other productions within a creative approach.

This model provides a framework allowing to build an ontology of the field which rests on the contact between individuals, the individuals being the work and each actor. One can thus use the ensemblist diagram of the contact (Figure 2) to schematise very simply the respective positions of the various actors in the process of communication by the work. One can also introduce other actors into the model. These actors are roles defined by the objectives which identify their points of view and the relations of contact they establish. Figure 12 offers the example of an ensemblist representation of a communication carried out by analysis of a performance. The performer puts work in a situation of spectacle with readers.

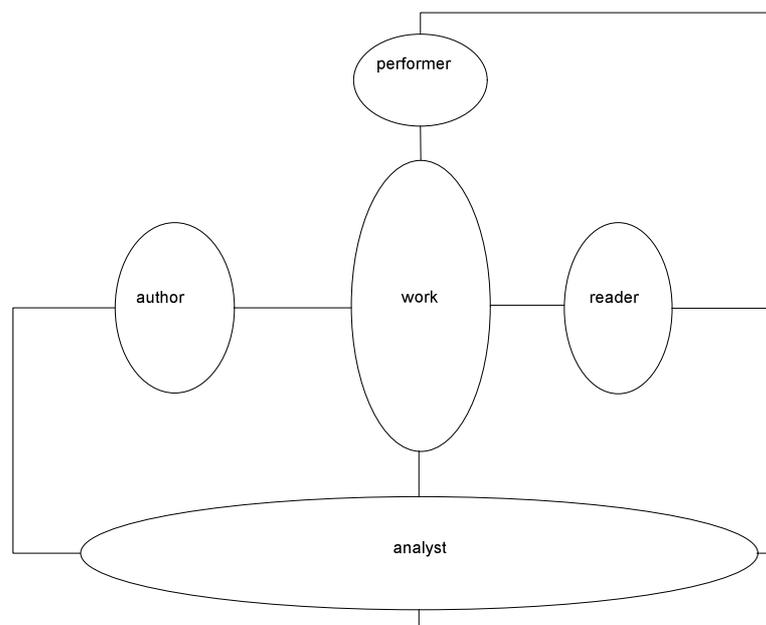


Figure 12: example of relations of contact between individuals of the field

Each actor provides a “point of view” on the work. One can imagine as many actors as necessary, in particular as many types of analysts (semiotician, historian, sociologist, technician, critical, literary analyst...).

Work itself knows a phenomenon of extension during the reading. It can adapt the extensive parts of the reader and transform the reading into a meaning activity internal to the work. At the time of this contact between the transient observable and the reader, the transient observable and the extensive part of the reader in contact lose their identity and constitute a new extensive part of the work to which the model did not give a name besides. This part can be analysed by a meta-reader who gives him some meaning by use of meta-reading³, or by the reader himself which gives him meaning by double reading⁴.

4 Ontology of work

The essence of work is the whole of its qualities, its degree of power. One cannot directly access to it. One can only point it using indices which are on the one hand the title of the work and on the other hand some knowledge which constitutes the object of indexing. The essence of work is embodied in the objects of work, its extensive parts.

Work can perform processes of extension by appearing in different versions that can be of different natures: study, initial version, updates, context switch... Each version implements specific properties of work, perhaps not all at the same time, in objects (files, transient observable, source program, situation of reading and devices in the case of performances...). These objects are associated with the work at dates and specific places for each version. Each version will thus be described by a number or an identifier, a date of creation and, if needed, a duration and places of diffusion or publishing. A given version is made by one or several authors that can differ from a version to another. Authors acts inside the relationship between the essence and the extensive parts of the work. So, one will mention them as attributes of this relationship.

Versions maintain between them some relations of dependence which define an ordered describable structure according to a model E/A. They are each characterised by specific attributes. Each object, independently of this hierarchy, is in a particular relation with the essence of work through the version (Figure 14). These relations are thus specific relationships included in the version and can remain from a version to another.

In the selected representation (Figure 13), the relationship between essence and extensive parts are synthesised in the definition of the version.

³ Meta-reading consists to observe reading made by another person while knowing something about the text-auteur.

⁴ Double reading consists to « read his own reading », to give at his own activity of reading a sense that is internal to the work. By double reading, the reader accesses to his own relationship with the work.

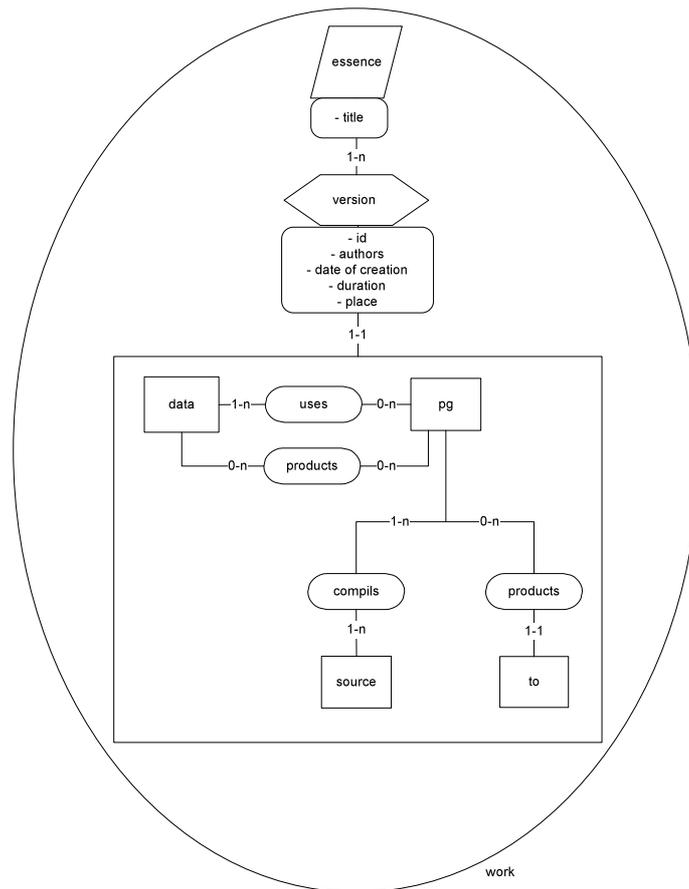


Figure 13: equichronic representation of a work: case of a purely digital work.

In this figure, the term “to” names the transient observable (measurable multi-media phenomenon produced while execution), the term “data” indicates any data file or basic field of data, the term “source” gathers the source files of the program the author can manage into his software (files .swa, .dir, .html...) and the term “pg” gathers the binary files (.exe, .dll., will.xtra, .com...).

Let us notice that running of the program actualises data and the source into the transient observable. It intervenes in the relationship between these parts and the essence of work.

A given version can be declined according to several instances (an on-line instance, a performance, an instance on CDR, a paper publishing...) which are as many variants of the version. An instance is the work setting in a given context. They can differ from one to another by their method of reception, their method of diffusion or by technologies and programs implemented (reprogramming, simulation). But they refer all to the same qualities of the work, i.e. they are in the same relationship (the version) with the essence of work, whereas the versions can develop different qualities, even if they have a common set of them (if not they would constitute other works). Certain instances can let perceive only specific qualities of the work. The various instances are thus complementary in their relationships to work. The instances are thus under relationships with work, the version is the relationship built by the whole of these under relationships. For example, the first version of Bootz’s work *passage* focuses on the unique-reading feature whereas the second version develops also adaptive generation and temporal semiotics. Some parts of a given version can be published for themselves, without the other parts. They are in this case instances of the version (for

example *The set of U* is an instance of the second version of *passage*). A given work can be shown in different contexts that defines different instances (for example my work *the plan poet* has an on-line instance and other instances in performances).

As an instance has its own life, one can give to it the same attributes as for the version. The value of an attribute in the instance can only be a subset of the values this attribute has in the version. In a given version, some extensive parts can be present in some instances and not in others.

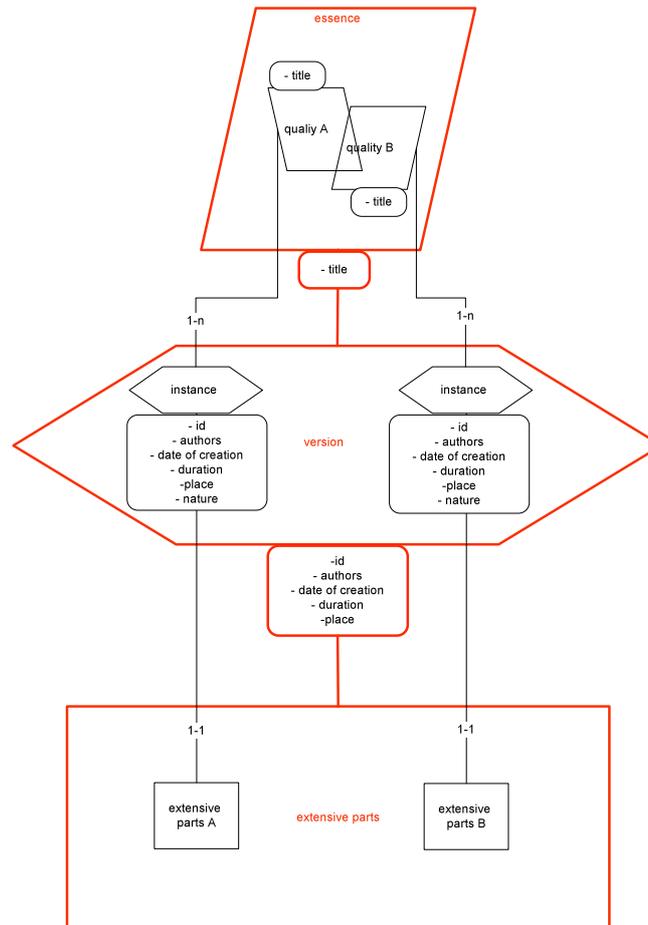


Figure 14: ontology of work

5 Ontology of document on work.

The main element of a document is the section. A section is an extensive part of an actor due to the contact this actor had with the work. A physical document will have to be broken up into sections, each one of them being ascribable only to one role (one actor), i.e. developing only one point of view. The granularity of the decomposition thus depends on the definition of the actor given by the indexer. For example, one can simply distinguish in an academic document the sections which express an activity of reading of those which express an activity of analysis. The situation of communication corresponding to this indexing is then that of Figure 17. One can also refine the decomposition by distinguishing various types of analysts (Figure 15).

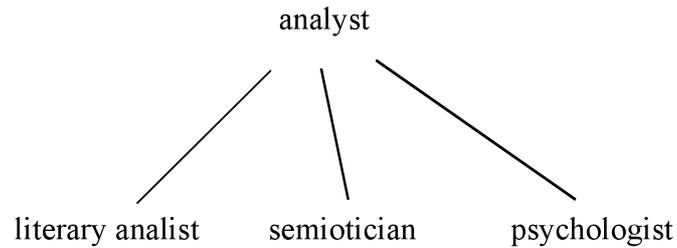


Figure 15: hierarchical example of decomposition of the actor analyst

The concepts developed in a section belong to the ontology of the actor. One can deduce that the finest degree of granularity in the indexing will be obtained by defining sections which relate to only one concept developed by one actor in the hierarchy of the actors.

The structuring of the relations between physical documents and sections is the same one for all the documents and all ontologies of actors. It is there an essential point of the extensibility of the model: one has only to know how to create one of them, the extension of the model consists of the duplication of this structure on all ontologies of actors. I propose the following structuring which is based only on physical structure of documents. Information of version of the ontology of actor is, as for work, given in the form of attributes of the relationship “develops”. This information allows to determine the ontology used for the indexing by use of an identifier (for example its name), information of date and place of constitution of this ontology.

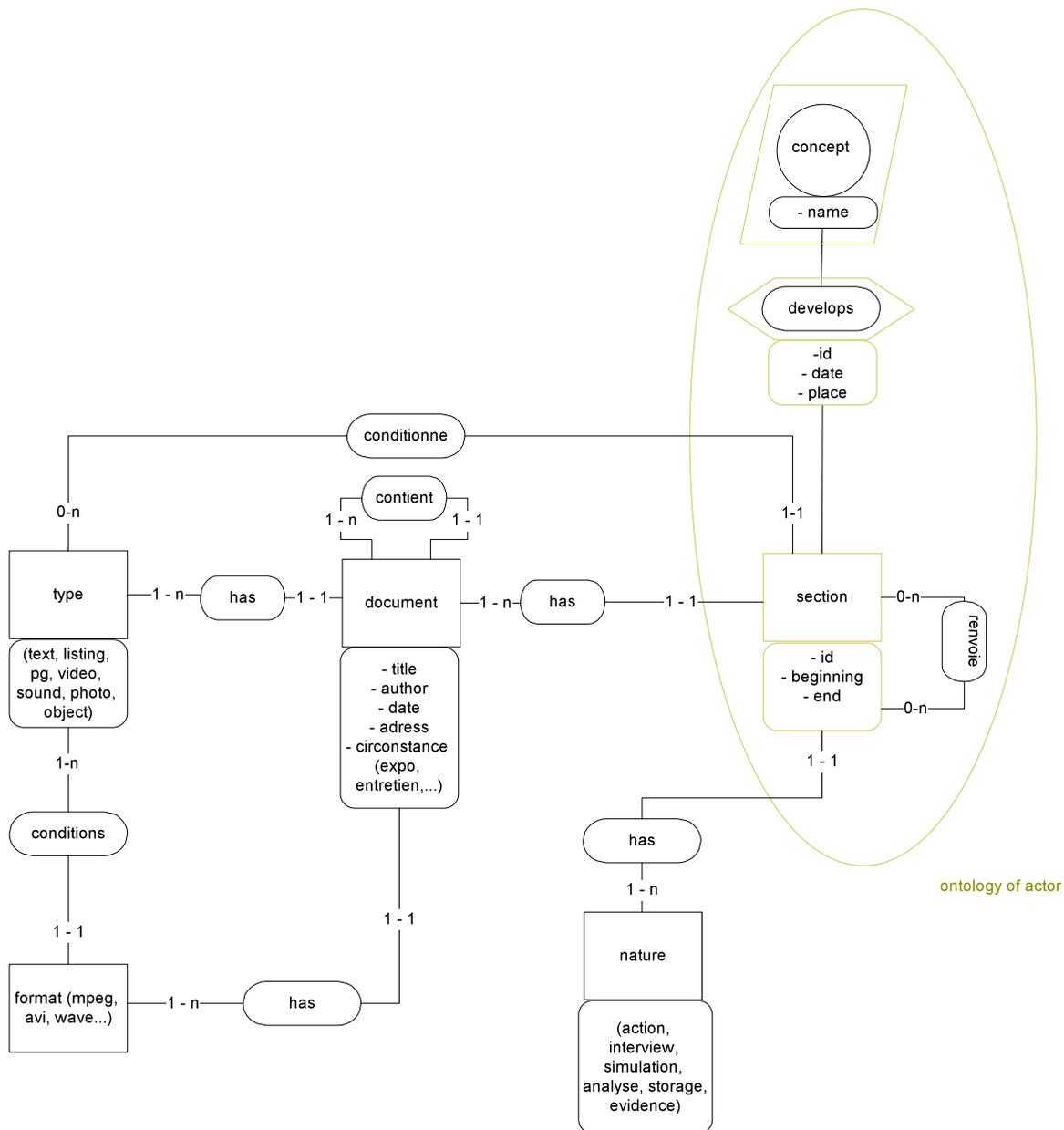


Figure 16: ontology of document

6 Contacts between work and the actors

The actors interest us only through the sections of documents which they produce. These sections constitute extensive parts of these actors realised following their contact with work. The contact between the actor and work is schematised in the ontological model by a network E/A and the procedural model describes this network by imposing restrictions. Thus, the reader cannot reach the source... As we saw, *texte-à-voir* and *texte-auteur* constitutes extensive parts of the actor during his extension by assimilation of the extensive parts of the work which are accessible to him. These elements are accessible to an analyst who observes the creative act or the activity of reading. These extensions, in the equichronic formalism, not being represented by entities but by associations (Figure 7), the equichronic representation of the situation of communication is a model E/A which presents associations between associations. Thus, the relations “creates” which connects the author to work in Figure 17

relate to texte-auteur and the relation “observes” which is established between the reader and the transient observable concerns texte-à-voir. So, The final representation (Figure 17) constitutes the framework of the ontological model of the field. For reasons of clearness, I carried out in clear brown the relations “analyses” which link the analyst to the other objects of the model. They are all of cardinality 0-n /0-n not shown on the diagram and, of course, it is the analyst who analyses. The diagram is built in the point of view of work, i.e. the extensive parts of the actors concerned with the contacts are not shown. The sections of the documents of actors are extensive parts of these actors who result from these contacts.

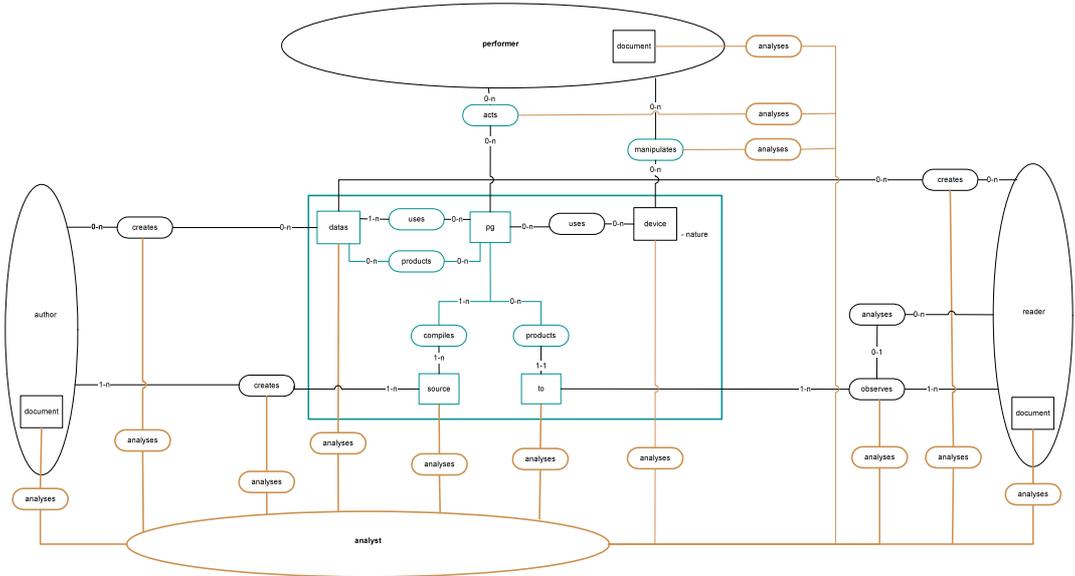


Figure 17: equichronic representation of the contact between the actors and the objects of the field

The sections of documents produced by an actor are the result of the contact between the actor and the extensive parts of the work, those of which they treat. The analysis of the concepts present in this sections provides a knowledge on work, This one can be an inadequate knowledge, an affect, or an adequate knowledge described by concepts (A, B, C in Figure 18) describing the unit (relationship+essence) such as it is perceived in the point of view of the actor. Let us recall that this unit remains foreign to the documents. The contact between an actor and work are then described by the following diagram which will enable us to document the relation between the section and work in the indexing. Let us note that a section of documents can deal with some particular part of a work as of the whole of the parts of all works when the section embraces the total field of digital poetry. It is what the cardinality of the association “treats” describes (Figure 18).

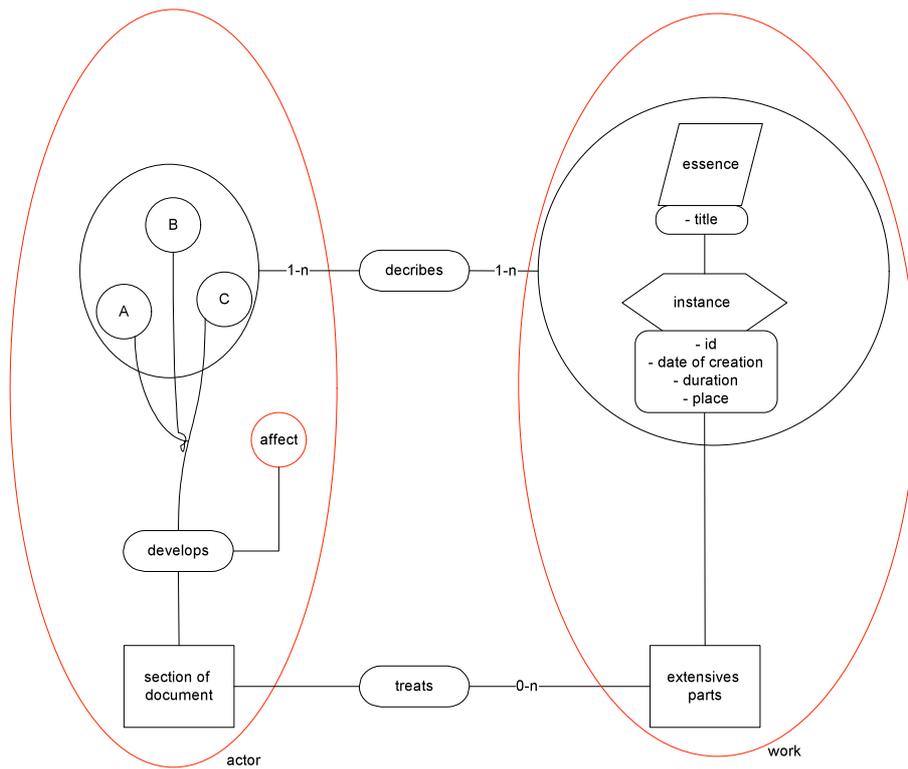


Figure 18: relation between the ontology of document and the ontology of work

7 Indexing and visualization of knowledge.

One can recapitulate on a unique E/A model the ontological relations Figure 16 and Figure 18 describe. We obtain thus the E/A model that describes the field (Figure 19). The type of actor can be: reader, author..., and its id can be the name of the ontology of actor. This is why the relationship “develops” is enough to characterise the ontology of actor. One can then remove ensemblist schematization and recover the attributes of the ontology of actor on a function “defines” which describes this ontology in the form of an association. One then obtains the following E/A model which will be used as a basis for construction of ontology of the field.

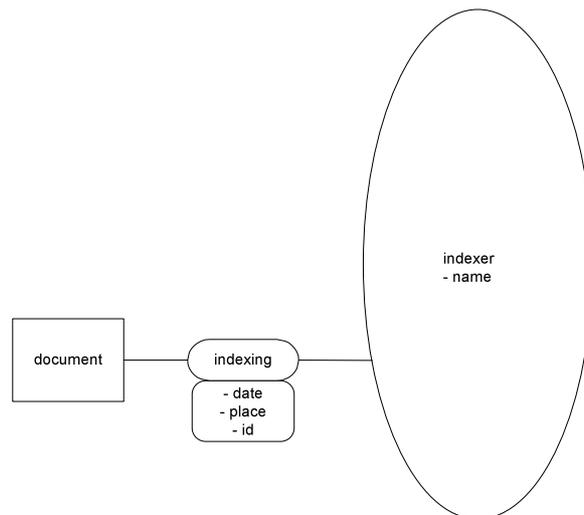


Figure 20: diagram of indexing

When the indexing is completed, one can visualise the knowledge carried by the documents in the form of diagrams of Venn (Figure 21 and Figure 22). Two visualisations are possible: an overhanging visualisation, that is suitable for better visualisation of the semantic proximity between point of view, and a side visualisation which makes it possible to better visualise the conceptual extent of each section.

Let us suppose given a whole of sections indexed as follows:

Indexing:

- Name indexer: Bootz
- Id: test
- Dates: 2008
- Place: At home

Document:

- type: deliver
- Format: printed
- Title: Textual matters on numerical support
- Author: Alexandra Saemmer
- Dates: 2007
- Place: Publications of the University of Saint-Etienne
- Circumstance: VOID

Œuvre1:

- work: passage
- id of instance: the series of U
- dates: 2003
- duration:
- place: *alire* 12
- authors: Bootz, Frémiot

Sections:

- Id: section 1:
 - Attributes of section:
 - start: “Pierre Levy” (p. 125)
 - end: “precepts of the oulipo” (p. 126)
 - nature: analyse
 - Attributes attached to work:
 - oeuvre1
 - physical part of work approached: to
 - Attributes attached to the ontology of actor:
 - actor: literary analyse
 - Id ontology of actor: test_lit
 - Dates: 2008
 - Place: At home
 - concepts: potential-virtual, oulipo
- Id: section 2:
 - Attributes of section:
 - start: “this poem is transitory observable” (p. 126)
 - end: “integral parts” (p. 126)
 - nature: analyse
 - Attributes attached to work:
 - oeuvre1
 - physical part of work approached: to
 - Attributes attached to the ontology of actor:
 - actor: semiotic analyse
 - Id ontology of actor: test_sem
 - Dates: 2008
 - Place: At home
 - concepts: observable transient - program
- Id: section 3:
 - Attributes of section:
 - start: “here what was perceived” (p. 126)
 - end: “that a dream” (p. 126)
 - nature: analyse
 - Attributes attached to work:
 - oeuvre1
 - physical part of work approached: to
 - Attributes attached to the ontology of actor:
 - actor: reader
 - Id ontology of actor: test_lect
 - Dates: 2008
 - Place: At home
 - concepts: observable transient - program, animation
- Id: section 4:
 - Attributes of section:
 - start: “like a palindrome” (p. 126)
 - end: “is erased by animation” (p. 126)

- nature: analyse
- Attributes attached to work:
 - oeuvre1
 - physical part of work approached: to
- Attributes attached to the ontology of actor:
 - actor: analyzes literary
 - Id ontology of actor: test_lit
 - Dates: 2008
 - Place: At home
 - concept: appear rhetoric of the palindrome
-
-
-
- Id: section 7
 - Attributes of section:
 - start: “the series of U is based” (p. 127)
 - end: “deduced from the observation which ensured this coherence” (p. 128)
 - nature: analyse
 - Attributes attached to work:
 - oeuvre1
 - physical part of work approached: source
 - Attributes attached to the ontology of actor:
 - ontology: author
 - Id ontology of actor: test_aut
 - Dates: 2008
 - Place: At home
 - concept: adaptive generation

The visualisation of the knowledge presented in this set could take the following forms which are obtained by rotation in space 3D and which the identities of concepts between roles of actors were amalgamated by a Venn diagram of the type “or”. Ontologies of actors are located by black ovals, the concepts developed in the documents by green rounds or oval and the sections by blue points.

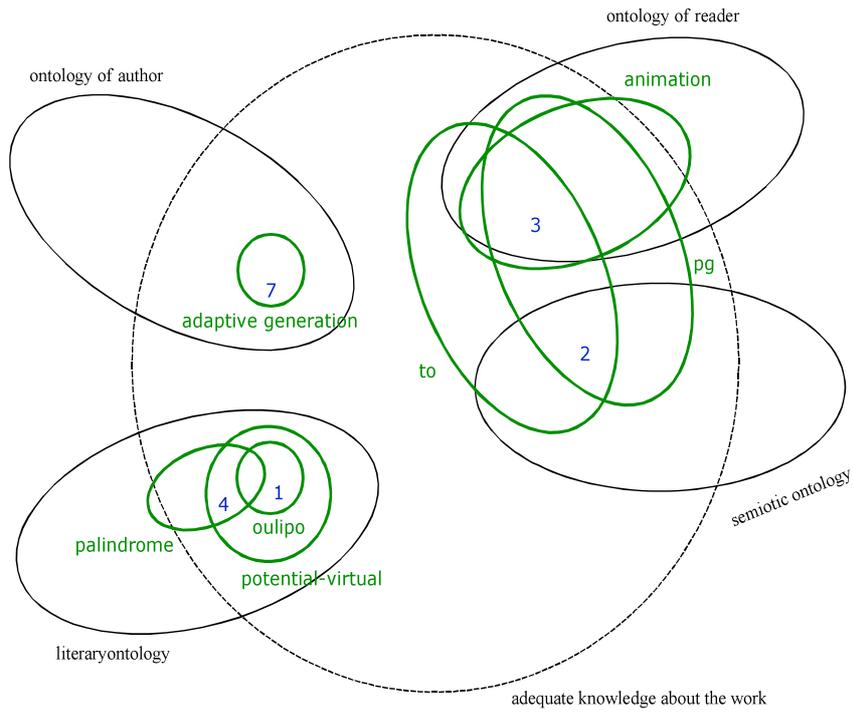


Figure 21: overhanging visualisation of knowledge

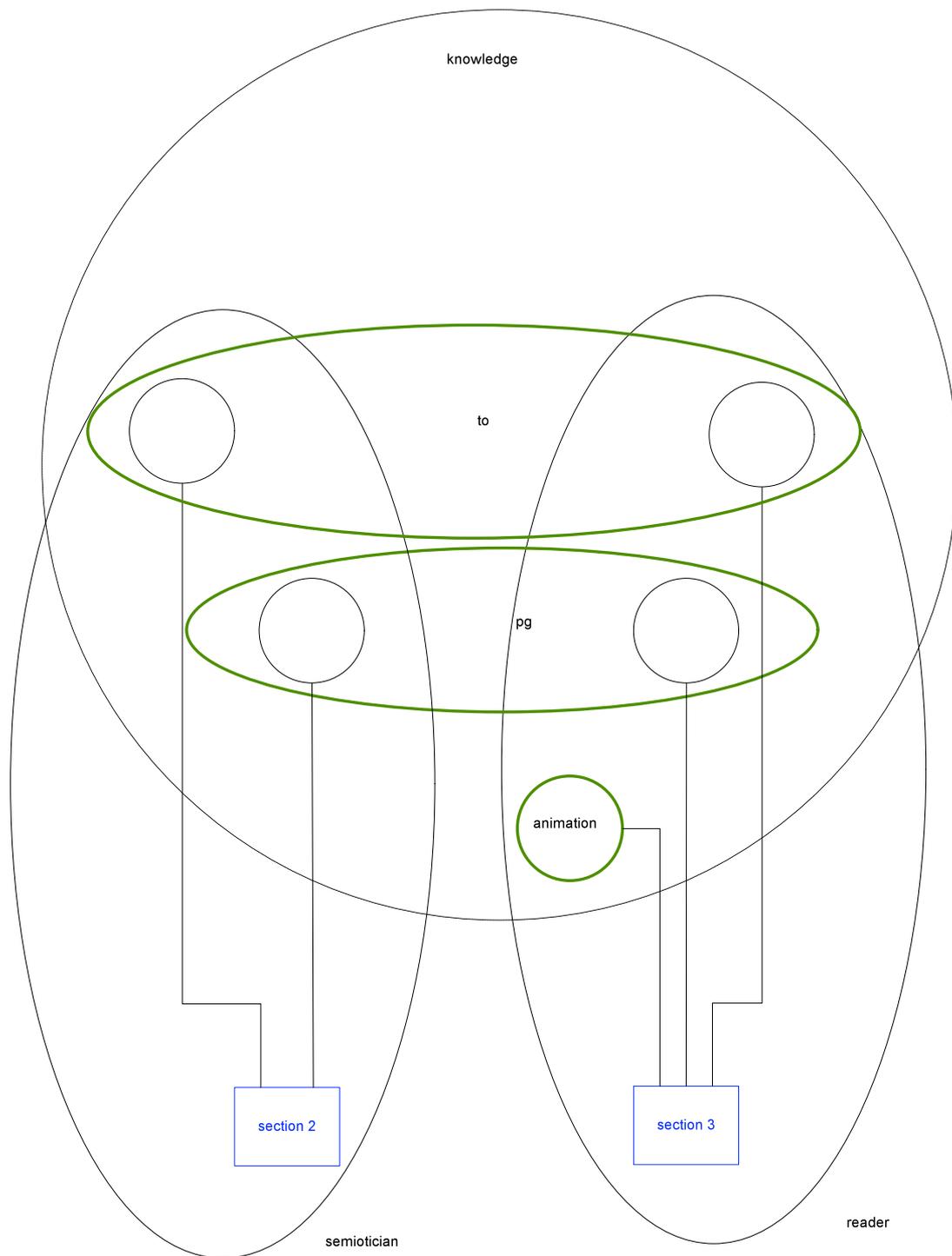


Figure 22: "side" sight of knowledge

8 conclusion

The tool for indexing will be produced in opensource Web technologies combining XUL and SVG. This largely open project of indexing need a broad multidisciplinary co-operation to be concluded because the definition of ontologies of actors must be a collective project. It could be carried out within the framework of an European project.