Construction and description of an object/machine at the interface of physics and computer science

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Abstract

This article involves many things (hologram, computation, time, fields etc..) with the leading object being called Unifying Circuit.

Introduction :

We will study an object called **Unifying Circuit (UC)**.
There are **2** complementary views of UC :

1. The first view is to consider UC as the object producing **the hologram of everything**. That is to say in this view ⇒ UC is the only Non-hologram object.
   In addition, UC has a certain **complexity** and a particular way of working (also true for UC as Machine view).
2. The second view is to see UC as a **Machine** :
   A machine capables to answer **every algorithmic problems**.
   These 2 views can be very well combined.

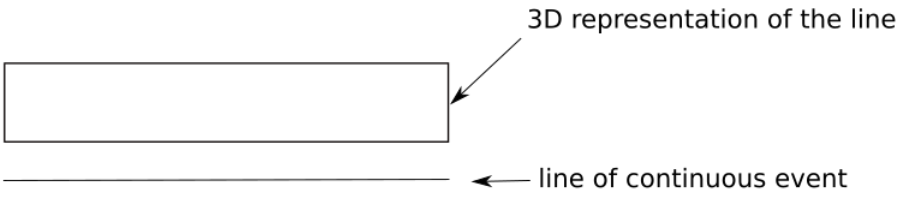
Main Idea :

So UC is a **ball** (Hologram view) and a **Machine**. When we propose a question, implying a process, **several parts** of the ball are involved.

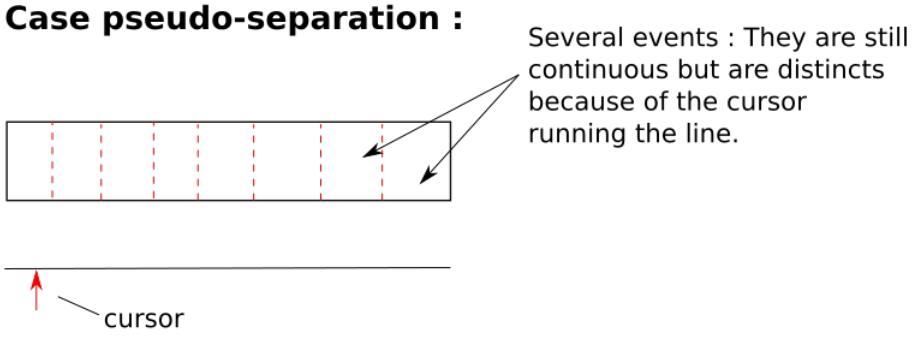
Indeed, we consider the question/algorithm as being able to be **cut**, like according to the types involved or more generally when a question involves several differents fields (in the sense of domains).

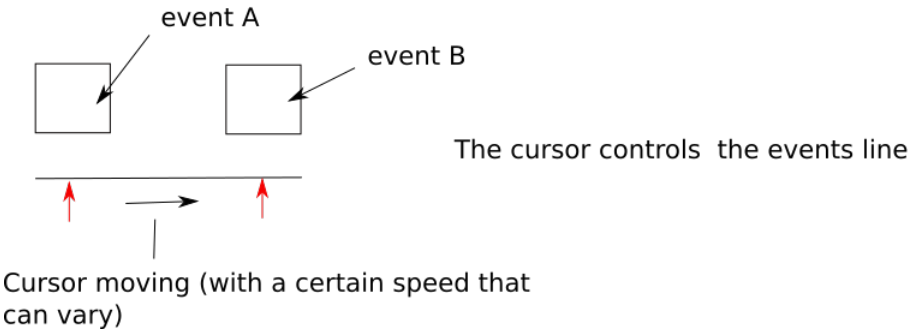
What is interesting is that the parts of UC are **pseudo-separated** (they are linked but not continuous). If the ball is not continuous, it has consequences on the holograms produced.
Instead of a 3D-Space hologram completely continuous :
The space induced by pseudo-separation is more **controlled**.
It is difficult to explain it. It is as if the 3D continuous space of before could now be **edited** : If you consider continuous events in Space-Time as **a line**, When pseudo-separation, you can add a **cursor** to this line that precisely control the continuity of the moments line.

Case 3D Space continuous :



Case pseudo-separation :





Remark : The speed of cursor moving can vary when the process distributed in UC is faster or slower ⇒ Events of the line follow faster or slower (not a constant).

A (serie of) Hologram(s) as an algorithm does not emerge from a run **on** the ball. This case will lead to a unique 3D space.

On the contrary, a given algorithm has **varying distance** from the ball ≡ An algorithm has a certain distance from a part of the ball, and an other distance from an other part of the ball, etc.. (Distance is **not constant** for an algorithm, but **varying** with ball parts). This way of working allows us to be able to handle an **infinite** number of algorithms (even at the same time).
We call such an algorithm a **Smoke**.

Example :
(part 1 of ball : 5 unit of distance, part 2 : 2 unit, part 3 : 8 unit etc..) = 1 Smoke = 1 algorithm = One 3D shape.

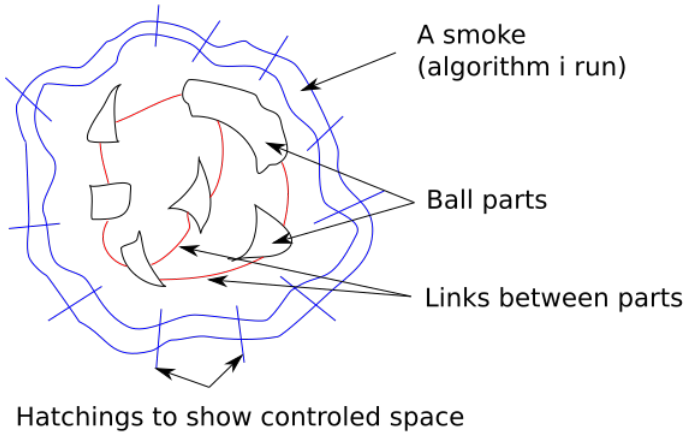
So an algorithm = Composition of ball parts
Diversity of algorithms = relative distances to the ball parts

In this study of UC, There are 2 states :
State 1 : "Normal" state, UC can be seen as **closed** (state we will analyse the most.

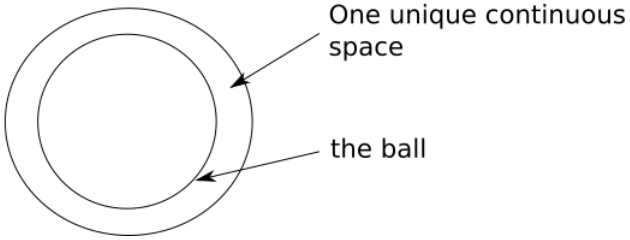
State 2 : Called the **opening** : All the parts of the ball are run all at once.
There are no Smoke as previously defined; but we can maybe consider a kind of Smoke inextricably with UC : No more distance of the Smoke.
The opening is the most **atypical** case because it is not just there is no more holograms, But rather that UC is going to be its **own** hologram.

Remark : The actual opening (described at the end of the article) ***diverges*** *from this view.*

Diagram of UC :



Instead of :



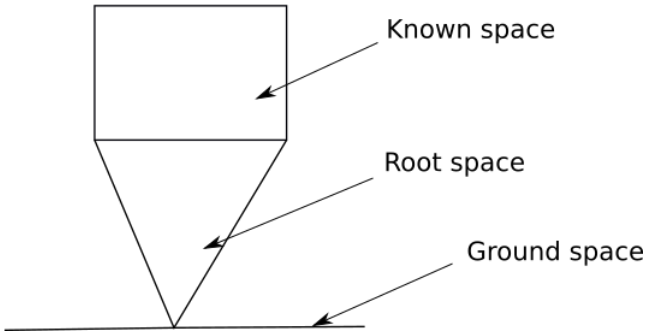
Way of working :

What is following is more about the machine view of UC (not ball) (By the way hence C as circuit in UC).

First of all, the "hardware" of UC is not meant to deal with Mathematical questions, but Smoke is.
I propose Smoke as being a **structure of 3 (linked) spaces** :

- The **Known** space,
- The **Root** space,
- and The **Ground** space

Inner structure of Smoke :

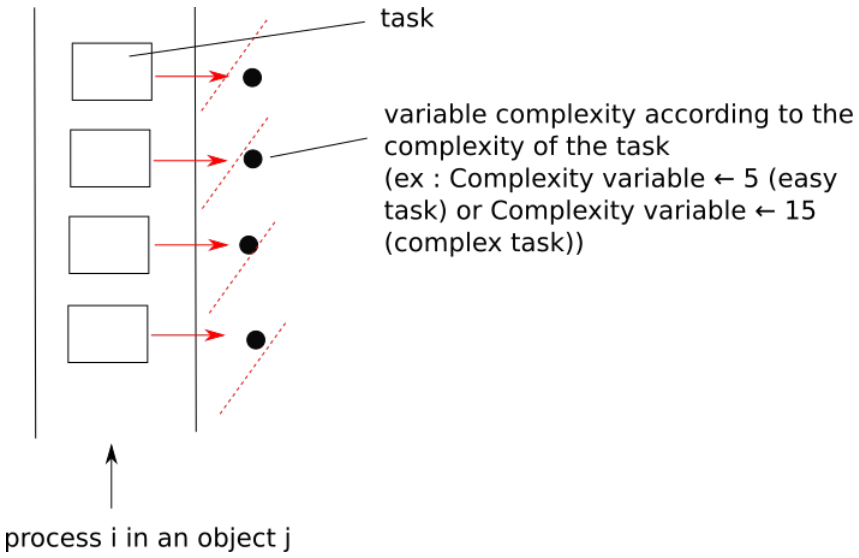


Ideally, this structure is aimed to support (and solve) every problems.
Naively : Known space could be for shapes,
Root space could be for changes (functions)
and Ground space could be for numbers.
I can't analyse it more, so I will stay naive.

Now I will speak of the positioning of the parts (Machine view) and how they can be linked (indirect link).
If we call parts of UC : Objects of UC,
If a **field** in UC gives us a measure depending on the objects,
So to an object in UC corresponds **a specific field intensity** (differents objects, differents fields).

Remark : A field is a way to delimit **continuously** the space occupied by a structure (object); In a way that **is not category** view neither abstract view (ex: object/type, graph of objects).

Hypothesis : Quantity of a field for an object given by (the echo* of) its **computational weight** ≡ Complexity of an object run determines its field ≡ We can match for all tasks of a process i in an object j a **variable complexity**.

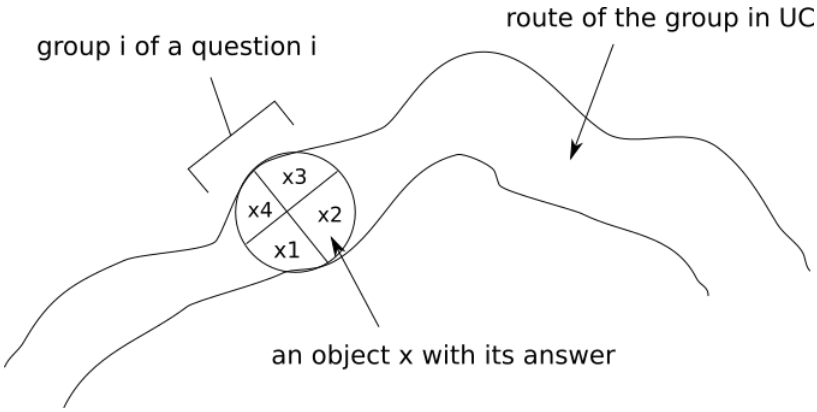


Then we get an **intensity** of the field given by the weight of the complex variables covering the object.
*__echo__ because variable complexity produced by/in the object But placed on/outside the object.

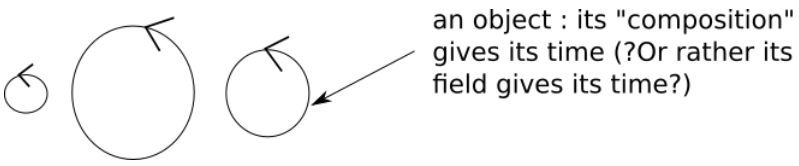
Remark : I am not sure if this view is abstract or if variable complexity can be seen like as a particle.

Other way to see the Smoke (algorithm) in UC :
If UC is a machine : the element of UC is a **group** (classical sense) :

- Came from a question,
- Made up of objects of UC involved with their answers to solve the problem.



Reminding : We have this **duality** of space frame :
Smoke has its space (Mathematical space) from objects of UC,
And objects in UC have their **own** structures.
So with field as described, we can give to these separated objects a **distinct time**:



Remark : This time is a **constituent time**, centered on objects (I will introduce a more classic time after).

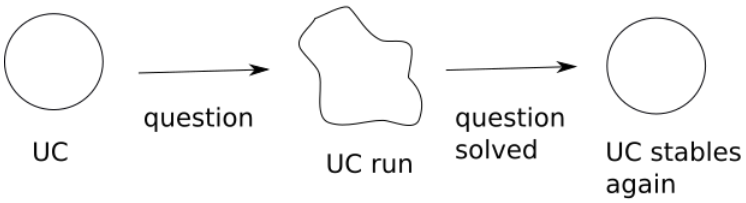
Part : Process type in UC

One process type is the normal one : it is the **local approach** :
We define a **problem** for UC and let UC answer to it.

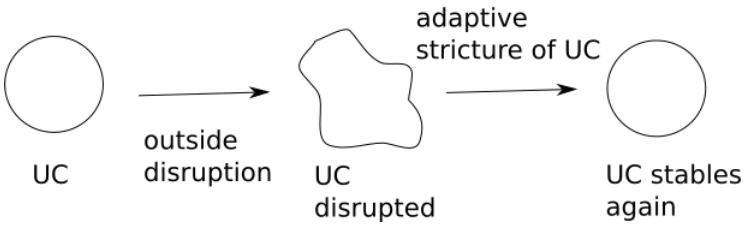
The other type is the **global approach** : We **disrupt** all UC by an outside action and we see if UC recover its stability ($\equiv$ Smooth test).
Hypothesis : Any disruption of UC is sent back to the edges.

In the local approach : It is the question that disrupts UC and it is its answer that gives back stability to UC.

In local approach :



in global approach :



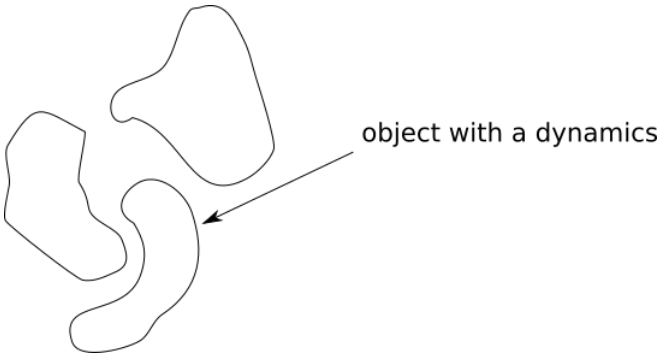
So we have 2 levels of computation :

- the **intra**-objects level
- the **inter**-objects level ≡ on UC structure

Postulate : The global approach is **necessary** for the local approach to work. (≡ global approach implies a **good structure** of UC, and a good structure of UC allows the local approach (such as a **good network** between the objects))
If x an element/**excitation** being able to be process by UC :
Hypothesis : one type of x, but the effect varies according to its creation (from outside or "injected").
In the same way that x is handled in an object in local, a global x will be handled by the structure of UC (external structure of objects).

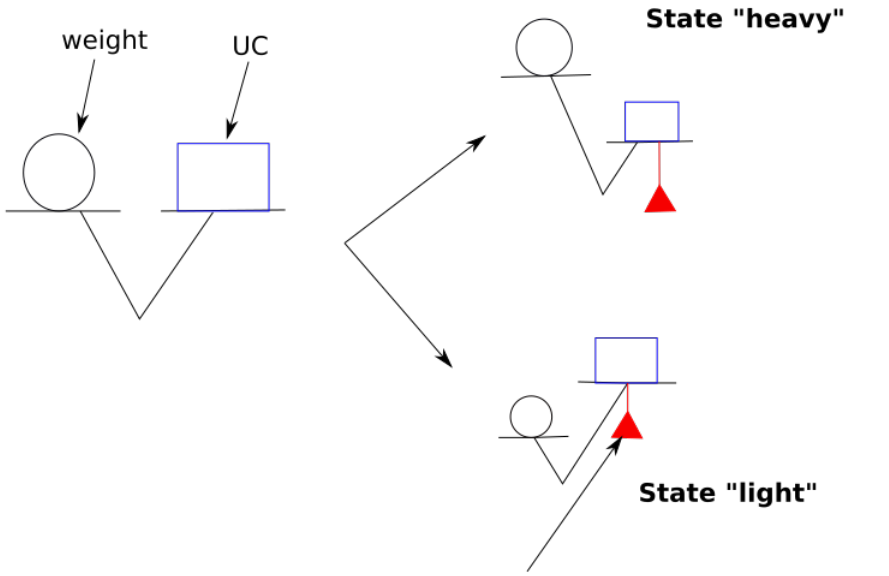
Remark : Since we said everything is hologram, but the ball, the global approach can seem a bit unlikely, particularly the fact of an outside action. So be it.

If global case ok, we can see global process inducing a **dynamics** of the objects (evolution in terms of **space**). The effect of disruption is a dynamics of objects **between each other** :



To go further with this outside action hypothesis, we can imagine UC with an **outside parameter** ⇒ its (undergoing) **weight**.

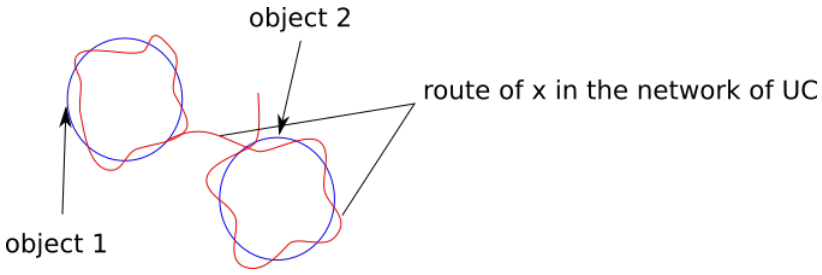
Current case



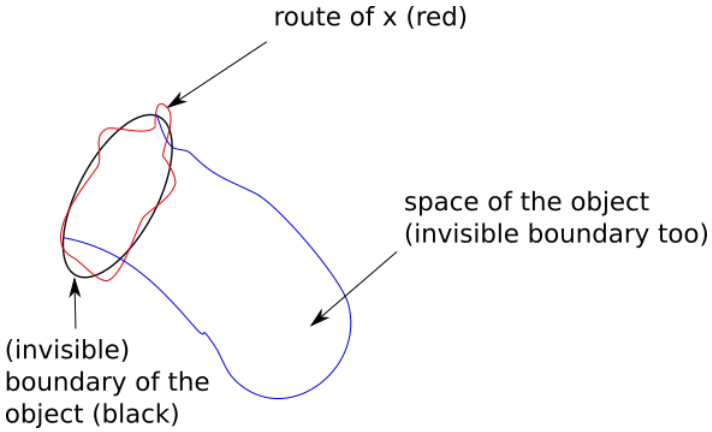
An (abstract) anchor that causes UC weight (anchor can varie)

With some consequences on UC way of working (?distance of Smokes?)

Way of action of x, for the case outer parameter :



Why this pattern? Because objects are **and** are not in the 3D space of UC ⇒ that is why it is more appropriate to talk of **structure** of UC.
In this case, x will **miss** coordinates (those of the extra-dimension).

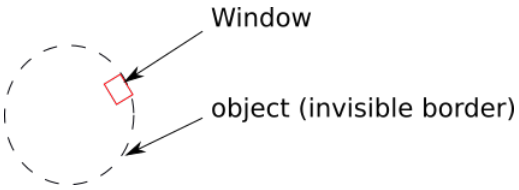


According to this, the object can be seen as a **hole**/empty space 3D in UC only if it is seen from the **outside**,
And seen as an **object** with a well defined space if it is seen from the **inside**.

⇒ That is why x does this route pattern :

It **oscillates** between space it knows (of UC, entering trajectory) and the dimensionality x miss (characteristic of the object, leaving trajectory)
≡ x has **only** one part of the dimensionality of the object.
The object is therefore in UC **and** inaccessible by any coordinates in UC other than already in the object.
Remark : We notice that we have a good border ≡ playing its role of border but also invisible.

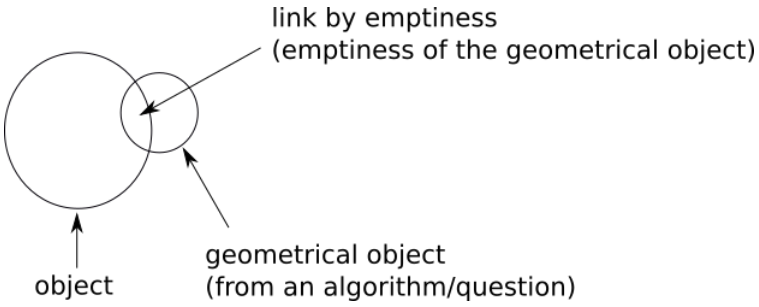
Part : The window of an object



We call **Window** of an object a, the only element that **connects** the object to the **outside** ≡ The element that allows the object to be **connected**;
Otherwise the object would be self-sufficient and therefore not functional.
Since we said the object has an **unknown dimensionality**, there is a need of the Window so as to the information in the object **circulates** in UC.
Remark : Window is mostly important when **in** an object. Probably no need of it with the case outside of object → inside.
We can see the Window as a micro element constituent of the object. Window is a pictorial word to show the object must have a connection from its inside to UC.
It is an element that has to be an **invariant** for absolutely every process that can make the object.
⇒ Thus giving it (the concept of) an **outer** connexion.

Mechanism of the process

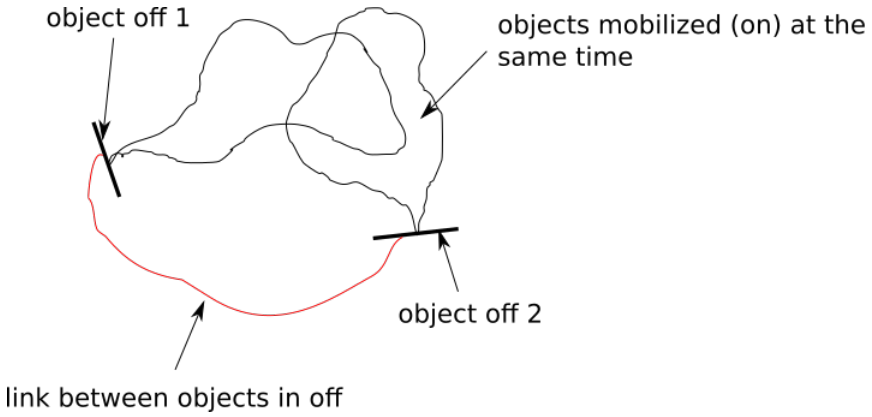
We call the mechanism "**Connection by Emptiness**" :
We connect the "emptiness" of a geometrical function/object to the UC object
And the shape of this geometrical object is only in an **indirect link**.



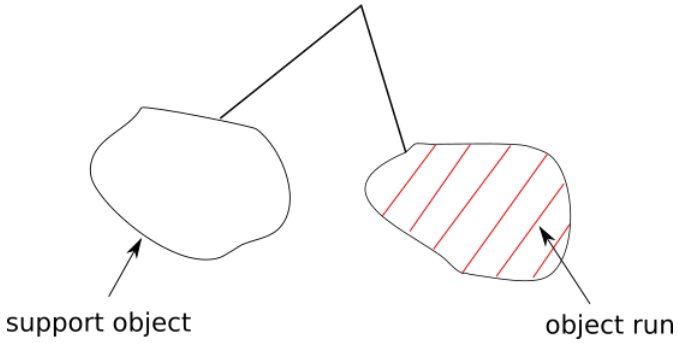
If we map the route of a Smoke ≡ the spreading of an algorithm amongst objects, it should be noted that we don't consider an object **off** on one side and this same object **on** (processing) on the other side. On the contrary, we consider the **tuple** (object i off, object i on) as one block, one element.

?Necessity to include object off to make links between objects?

We can show this with the following diagram (remark : In this diagram, objects can be run **at the same time**) :



Similarly, the process in this network of objects can be seen as :
Concept of "**support**" of an object for an other object to be run (≡ one object acts as a support for an other to be run).



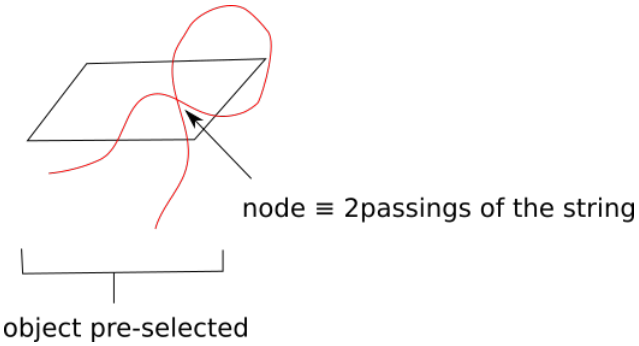
One more thing about way objects are run :
state 1 (+ parameters), object **closed**
→ **opening** of object where there will be change of state ≡ state 2 (+ parameters)
→ Then compression/**closing** ≡ object has changed of state

It is the **permeability total** of opened object that allow the change of state in a **continuous** way (continuous because : closed → open → closed, is continuous)
The opening (here not opening of UC, but opening as the way an object process) is total
⇒ all the constituents are "**selected**"/mobilized,
Thus doing a change of state of the object is almost **instantaneous** (time complexity very low).

It is like a computer program : constituents are **pre-selected** then they are (all) modified ≡ change of state ≡ process.

Note : I consider opening of UC similar in this mechanism but in this case
⇒ It is all **the objects** of UC that are pre-selected then opening process (even the whole UC structure pre-selected). So opening process in **2 steps**.

Idea about way an object is pre-selected : By a **Node** ≡ 2 passings



Remark : An object pre-selected for a process can not be requested for an other process.

Alternative way of seeing an algorithm run (I mention it to be complete).
In this view, the algorithm is **complex** ≡ involving several objects (hence this article). So how an object does its part of the job solving what it can?
To answer it, we consider the algorithm like a kind of **gas** where all its parts/all the fields (in the sense of domain) it implies are **mingled**.
Then when the opening of the object, fields come into light (very like we get an electromagnetic **spectrum**).
In this continuous spectrum, there will be **spectral line(s)** (like Absorption lines of Absorption spectrum) that indicates the field/tasks processed by our object.

To quickly explain our objects as atypical structure, namely its own dimensionality : We can see the surface of the object as a **continuous Mirror**.
Because a Mirror is **100**% **reflects**, here reflects in **inside** of the object. Of course, I don't think there is a true Mirror as surface, it is more an abstract thing to understand more finely.
In this view, opening could be seen/induced by a **Mirror reversed**
⇒ In the same way Mirror reflected inside, Reverse Mirror reflects **outside**, hence UC earns more place, more space of the environment.

Little note about opening : The idea is that opening modifies **globally** UC

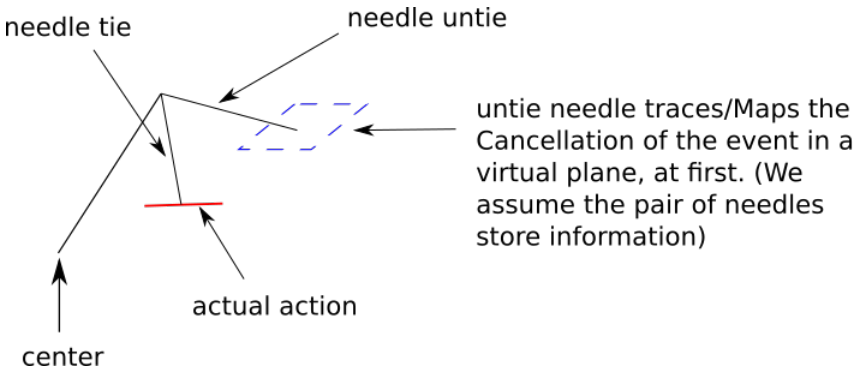
structures. In a way, opening is similar to the transition from **concave** to **convex** of UC (our Mirror ≡ concave, Reverse Mirror ≡ convex).

About time :

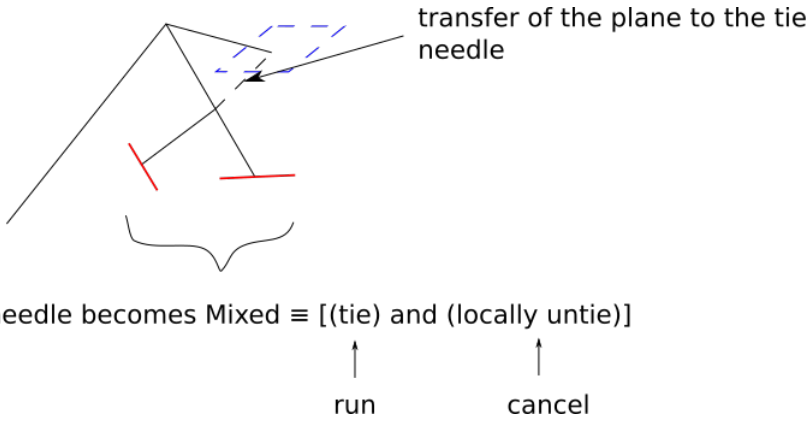
We defined previously an objects time.
Now we will describe a more classic and **fundamental time** associated with UC.

Imagine a **Zipper** : (The structures of) UC is crossed by **one side** of the Zipper, And the time process makes (is) the Zip.

To refine our UC, we have to refine this time :
As some UC events have to be **Zip**, others have to be **un-Zip**.
But if you have one needle ⇒ You can't because the time cursor can't be at 2 places at the same time.
So we consider **2 needles** : one for **tie**, one for **untie** With : What unties, untie **virtually** ⇒ The untie event (stopped event) is carried, at least at step 1.



Hypothesis 1 : Minimal crack of the continuous
⇒ The virtual plane of untie needle **becomes** the actual action during the shortest time (because plane/Map already done).
Hypothesis 2 : Function from untie needle to tie needle :



The action untie, when actual action, **determines** the **metrics** of the Zipper.
Explanation of this : During the **switch** of actual action (Mixed tie needle during the shortest time possible), the Zipper "**pops**"
≡ any slow switch would block the Zipper
BUT the minimal switch "corresponds" to the **Zipper unit** (Metrics).

That is to say a set containing the events during time is contained **in** the passage of time.

Link between objects: Concept of money

We introduce the concept of Money : **2 parameters** :

- an **amount** (for example 1€, 50€),
- and its **composition** (for example pieces of 5cent, 50cent, 2€)

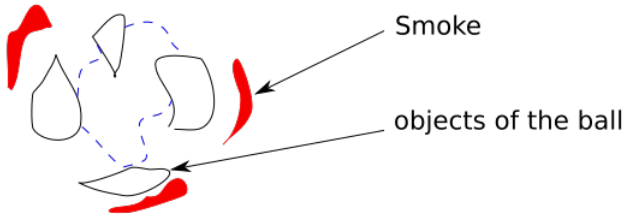
Idea : link between objects by **Money exchange**.
The more distance between objects, The more amount of money will decrease.
The more the exchange/link between objects is intense, The more pieces composing the amount will be high.

This flow of money is a **spectrum** of the links between the objects
≡ Abstract view of these links.
That is to say according to the spectrum of UC,
We could see for example fields from objects or a map of these money flows (giving us distance between objects and their intensity of communication).

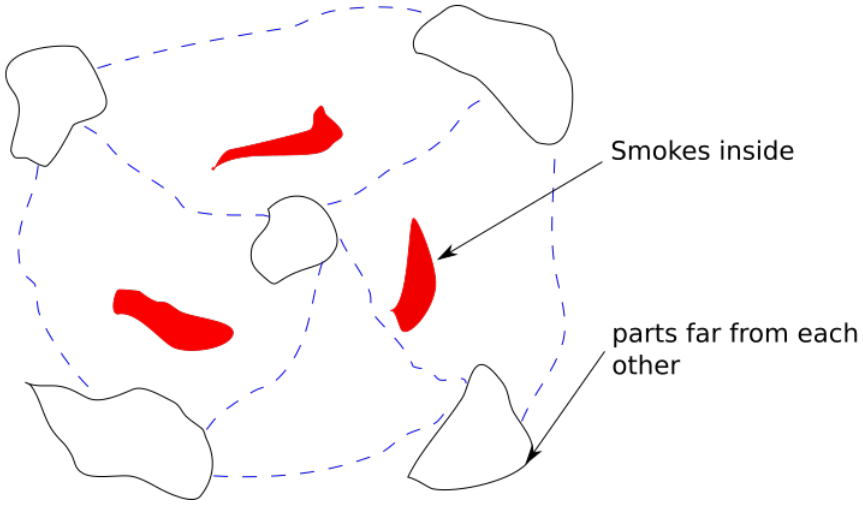
Conclusive idea :

When opening of the ball ⇒ ball (≡ the hologram generator) now **contains** the Smokes.
How/Mechanism : Parts (objects) of ball are now **very distant** :

Case closed



Ball opened

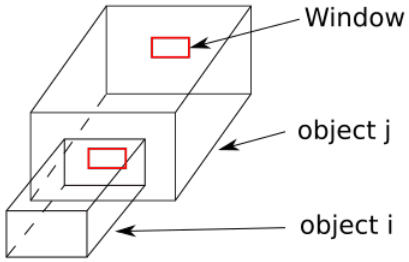


In this case, **entanglement** seems **necessary** (implied) to keep Smokes ⇒ What was processed in the closed case (very short distance between parts), Now has to work for very big distance (opened case).

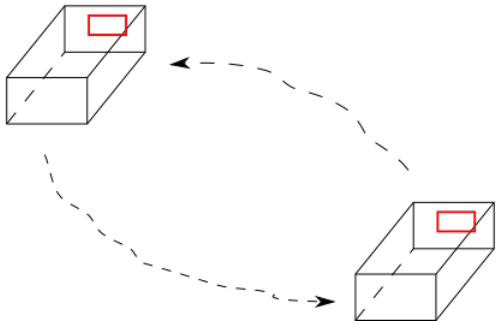
Idea of entanglement (just a proposal) :

How? By our Windows : Since window is the only thing linking object to outside of itself,
The information x can be seen passing to object to object by window, regardless the structure of UC
⇒ because we have to remind that the space of UC is not the space of objects in UC; The objects being the ones processing the information x.

From the point of view of objects



From the point of view of UC (global)



Remark : This article is about discovery, and a lot about inventions; I propose lots of things, and there is no doubts that some are wrongs.