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## Chapter 00 | Session 00

### Attuning data:

### Elements on survey, spaces, scales and context in Archeology

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#### Abstract

The use of digital techniques for the survey, analysis and organisation of data on an archaeological site asks new methodological questions about the validity of surveyed information, archiving and long-term exploitation and transdisciplinary transmission, and then the dissemination to a wider audience. As a corollary, there is a need to identify a data 0 element, which is currently related to geometrical data with a connection to form, thus to tangibility. However, this position can change. The analysis of data can be subjected to a conceptual leap. From categorisation to comparison, it is possible to introduce the concept of attuning, and to develop modes of understanding by multiple comparisons. These considerations lead to questions of transmission within the academic system, then to a wider audience, taking into account what, seemingly heritage-related, is in fact associated with creation.

#### Keywords

Narrative, 360° images, immersion, VR, scenology, ambiance, heritage, architecture, archaeology, parietal art.

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### 1. Introduction

*"We would need at least a full volume to classify the different systems, the incredible theories born of the too-powerful imagination of men of our age on these unfortunate stones. We will settle for a classification, which we will try to make as interesting as possible."* [Du Cleuziou-1885]

Henri Raison Du Cleuziou, author of the quote, expresses with concern, and this often comes back in his written production, one of the main issues for the researcher: classifying, organising, producing classifications and categories that will make sense, give methodology and order to his or her research, which will allow for the welcoming of new discoveries and dissemination to experts, then to a wider audience.

The evolution of survey methods in archaeology has consistently questioned the reliability of collected data, due to both instrumentation and to the operator's subjectivity. The notations of the engraved figures appear, for example, in Brittany, as early as the 1840s. They employ drawing and watercolour, and take into account both the figures and the relief effects. Authors' preconceived ideas, or the erroneous interpretation of the natural surfaces produce misinterpretations, made

clearer when the authors are compared. We had made a connection with painting, and borrowed from Zola the term of *temperament* [« *un morceau de nature vu par un tempérament* » Zola-1906] to address the researcher's subjectivity in the way he or she looks at the studied subjects.

Photography, moulding, and then digital survey have led us to believe that mechanical instrumentation would be a guarantee against the risk of errors or omissions, whether intentional or not, and that the researcher's temperament could no longer slip between the base and the machine. However, it should be mentioned that if that temperament cannot slip between the base and the machine, it can be expressed through the instruments' settings, and later through the interpretation of the results.

With the new millennium, our intellectual and technical horizons have been altered by digital technology. From a set of tools and methods, developed by and for engineers in industrial settings, machines, software programs and dissemination media have emerged in a wide, quick and heavy way, allowing for the creation, collection, archiving and dissemination of an abysmal quantity of information. Each second, 29.000 gigabytes (GB) of information are uploaded across the world. They

not only represent new data, no matter the interest in it, but also old data, digitalised and redistributed to the majority. Such is the case, for instance, of major digitalisation operations by private companies, like Google, or by the French government.

In this digital landscape, the individual production is challenged by this gigantic archiving, and thus by the choice of information to save. Collectively, it deals with documentary research management, questions of data security, storage infrastructures and choice of tools for data exploitation, and thus standards and formats. For the researcher, specific restrictions about rights of data exploitation are added. Data that is funded by public funds should be open and free, but this wishful thinking is affected by the very definition of data: is it raw or processed information? This definition gets more complex with the entanglement of private services, compensating for the researcher's lack of equipment or technical skills. These questions have an impact on the initiatives to promote research and the transmission of knowledge to a wider audience.

## 2. The challenges of multiple data

Facing the challenges of data increase, the temptation would be now to identify a *data 0* element, which would set up the continuation of the work and could be transmitted without the assumption of what could be extracted from them in the future.

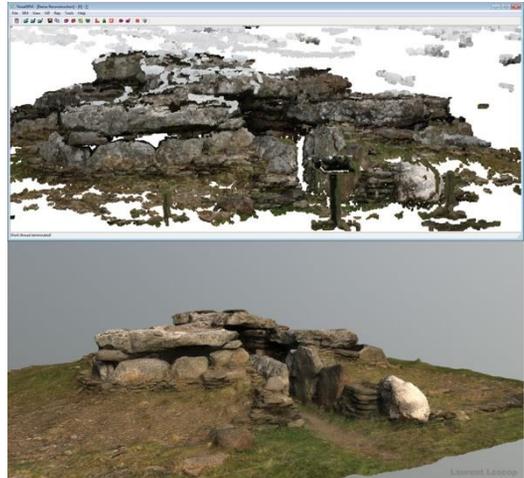
### 2.1. Data 0

The question then is to know whether it is possible to identify a form of data 0, whose structure would allow for the conservation of relevant information at a specific time and the information that could be useful in the future, even as the idea of future developments is unconceivable, a kind of "sustainable data". For instance, the conservation of a bone from last century allowed us to analyse the DNA a hundred years later, which was not necessarily thinkable then. Studies on data ontology are numerous, and some fields progress faster than others, for example medicine. Data ontology implies an information structure and a substantial number of descriptors.

If we limit the question to completed surveys in photogrammetry, a data 0 element could be defined by the information coming from the sensor for the laser, and the collection of photos for more recent models. Regarding photogrammetry, photographs and their EXIF data are the only necessary source, as well it is observed that a set of photos with a few months interval produces a 3D with a much better quality as the evolution of calculation algorithms improves. Again, a projection towards the future should let us imagine that the

information from the photos will provide additional information that we currently know nothing about.

Figure 1. La Joseliere, same photoset, 3D model with VisualSFM and then Photoscan 4 years later. *Ill.Lescop*



Beyond the research of volumes in photogrammetry, the exploitation of the resulting geometry makes the collection of information on masses and volumes easier, either by deduction from visible faces, which has been the case for the flagstone of bedside at Gavrinis [Lescop&al-2013], or by comparison between the excavated volume and the clusters discovered on site [caillhol&al.-2017]. By accompanying the states of the evolution of the excavation on the construction site, it is even possible to model the volumes that have been removed, to deduce the cubatures and to recreate the geological or archaeological stratifications [Lescop&al-2013-Cassen&al.-2014].

### 2.2. The semantic models

The next step is, of course, the organisation of this information in order to link it to a 3D semantic structure, which allows for the integration of 3D to descriptors. Research of this nature is conducted, for example, at the MAP in Marseille, with, as a research project, the direct annotation during the photogrammetry process. [Stefani&al. 2012]

Here, we are facing a methodological evolution for the constitution and organisation of data, which is rather close to what is getting officialised and standardised in the architecture world. Standards such as IFCs (Industry Foundation Classes) produce objects with three types of information: belonging to a *class*, having *relations* and being qualified by *properties*. The operation of these

IFCs in the dedicated software programs allows for the building of a digital model, whose components have a *geometrical* (size, form, position), *relational* (dependencies from one object to another), *semantic* (nomenclature, cost, properties) and *physical* (nature of material, resistance, etc.) description. This 3D digital model is called a BIM model, with BIM originally meaning Building Information Model. However, its impact being the complete reorganisation of the project management process, the following definition of the acronym is now accepted: Building Information Method.

Research conducted at the MAP in Marseille [Manuel&al.-2013] draws from the idea of annotating the model on the fly while the survey is happening, so that this information is integrated to the final geometry. The next step, once the information is organised and linked to a series of descriptors, is to question ourselves on the type of information that we are missing, and thus to go back on the nature of the concepts that we are working with. The aim of identifying data 0, the root and source of organisation for the archiving and knowledge can generate an essentialist conception of the studied object. The risk is not small within conventions of representations favouring orthonormal views and the typological organisations. Popper and his "*methodological nominalism*" come to mind, and we will try to define and translate the question of "how the thing works depending on the circumstances" [Popper-1979].

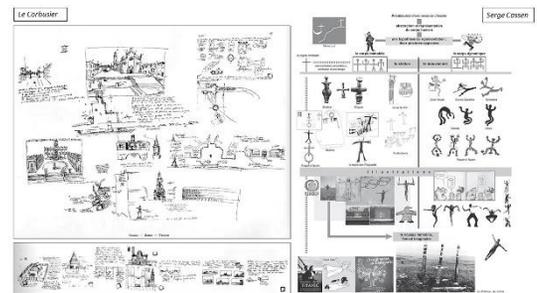
### 2.3. Attuning

Described and dismissed by Popper, essentialism can lead to theoretical dead ends by isolating the object from its context. We must thus be able to propose and develop modes of comprehension by multiple comparisons. We could therefore talk about data attuning, which is a familiar approach in architecture, and what made Le Corbusier's boards famous [Le Corbusier-1910/29].

In them, the architect juxtaposes images of similar nature or similar circumstances. He creates collections, associates objects, sites, details and comments, whose assembling is telling. The method is connected to semantic clouds and concept-boards used in creation to account for multiple elements working simultaneously. It offers an overview for a spatial sequencing of objects and concepts, whose intellectual efficiency is very different from a classification by particularism, even though the two approaches are not contradictory. In order to answer this question, linguistics offers the concept of typicality. It is an approached method of objects, where the reasoning by classification relies on mechanisms of approached pairing. *Typicality* thus creates sets, whose barycentre is the most representing of its category; it is the prototype. The system shapes a set with blurry limits, whose reading is synoptic.

According to Jean Petitot, typicality works with attractors, organising the concepts according to their attractiveness and their distance: "The phenomena of categorisation can be considered as the result of the partition of the configuration space M into catchment areas B(A) of attractors A – the categories –, which work as many prototypes." [Petitot-2008]. The distance to a prototype will determine a "*gradient of typicality*" as a decreasing function. The interest of this approach, following the progress regarding the semantic models, is the guarantee against a too-strong fragmentation of information and the difficulty to make it dialogue with others.

Figure 2. Le Corbusier / .S.Cassen, linkage of heterogeneous data



Attuning is a variation on the concept of typicality that would evaluate cognitive distances between the semantic models' descriptors. As we have seen, one characteristic feature of those models is the fact that the geometry, representing the tangible part of the study, is embedded in a structured set of information, called metadata, which constitutes an ontological database. The use of the "ontological" term refers to the philosophy where the being is studied as a being. However, the descriptors and the word-for-word comparison of the descriptors do not account for the whole. The famous example of Christian von Ehrenfels, Gestalt theoretician, comes to mind, when he demonstrated that an auditor is able to recognise a melody, even when the tone, the speed of delivery, and the instruments have been modified.

The set of semantic units has changed, but the links between them are identical. The holistic view, the synoptic view, also refers to a phenomenological approach that, unlike a cartesian strategy that consists of fragmenting a complex problem into sub-problems easier to solve. According to Wittgenstein, the synoptic representation is, in a Gestalt approach, a representation of the world that allows for the understanding and the perception of correlations.

We can consider the board (on the left of the figure 2), composed by Serge Cassen, on an archaeology of an image of man, as data attuning [Cassen-2012]. In order to decipher the engraved signs on the Neolithic headstones in Carnac, he organised boards associating the signs and figures found on site with figurations, including the distances of increment within space and time, mobilising thus what we recognise as gradients of typicality. The synoptic reading of this board helps to grasp the consistencies and continuities, and therefore questions less the meaning of a sign, and more what builds the expression, with persistent solutions, of the station or the movement chosen in this example.

#### 2.4. Context seizure

The example of engraved figures relocates the Gestalt principle of figure and substance. Thanks to the digital tools and techniques for survey, spread since the mid-2000s, the base for the engravings or the paintings has been recorded, studied and restored as an essential component for the understanding of the graphical project, the organisation of the composition and the logics used. Similarly, the possibility of capturing in three dimensions the sites as a whole opens the way to multi-scale considerations, which are not without challenges, in particular in terms of representation [Cassen&al.-2013]. The following step is therefore to replace the figurations in a contextual ensemble. One of the contextual forms is the spatiality that the images can elicit. Hans Belting [Belting-2012] shows that the images belong to public space and serve the group cohesion. It leads up for us to question the nature of the space containing those images. To this end, it is necessary to conceptualise a space conditioned by the image, which we could qualify as the image density. This density would represent the induced space, generated by the image. It is not the projection rectangle that is immediately perpendicular to the drawing surface, but the extraction of the static or dynamic positions as a whole, from which the image is operating. This volume, this image density can be either public or private, and is not necessarily an including volume, i.e. a volume in which one needs to be. It can also be an excluding volume, a reserved area, a holy of hollies.

The painter Pierre Soulage articulates perfectly this concept, when talking about his own pieces:

*“A painting (...) is the organisation of light. Of reflected light by blackness, of course, transformed by black, which has important consequences, because what we see is black, yes, but it is also light that comes from the painting towards us, who are looking. In that case, the space of the painting, is no longer on the painting, neither is it behind it, as in the perspective's case. The space of*

*the painting is in front of it, and I, who is watching, am within the space of the painting.” [Soulage-2009]*

If anthropology can venture towards these fields, the speculative risks are nonetheless important in terms of prehistory. However, some spatialities are objectifiable: the Grand Menhir, which was erected in Locmariaquer, was visible in a radius of more than 20 km, which can be demonstrated by a simple calculation. We can imagine that its impact, at least visually, has been important. The studies on intervisibilities are multiplying. Frédéric Surmely [Surmely&al.-1994] and his team, for example, developed a series of hypotheses on visual relations (*isovists*) between the erected stones of Cantal that could form either a network or a collection of landmarks following the definition given by Kevin Lynch [Lynch 1960].

#### 2.5. Spatial grammar

Readings on space cannot be considered only identifying what could block the progression of reflection. Some substantives used on particular sites, for example in Carnac in Brittany (France), which has been qualified as a temple, block the very strong *image/sense* pair by the hypotyposis entailed. We can deprive ourselves from all understanding, other than that of a rustic architecture of religious nature. By calling the parietal figurations works of art, and by considering them as paintings hung in a wild gallery, it is more difficult to get rid of contemporary cognitive reflexes to try to apprehend what, in any case, wields an aesthetical power that is almost impassable.

Figure 3. Carnac, temple or threshold, *photo. Lescop*



As a result, there is always a metaphorization of places, even more so when they elicit imagination. It is interesting to study how the topography of a cave from prehistory, much like Chauvet or Lascaux, has tried, very early on, to set limits and to generate a classification. An underground, closed space, the explored volume is represented like an isolated island. At the same time, it is a cavity, and its inventory holds an architectural

vocabulary of rooms, galleries, and sometimes even sacristies. However, those caves' configurations are precisely determined by their limits, which are hard to define. Darkness creates exhausts, open bays, multiplying the site's scales even more, deceiving our ability to perceive the infinite richness of volumes.

When the Chauvet cave is mentioned, we rarely talk about the site itself, but rather the images that punctuate it, powerful figurative elements that strike imagination with their evocative power. Regarding publications, these images represent a challenge in terms of restitution: they have to fit a frame, of the book or screen's vignette.

Figure 4. Lascaux J.-M. Geneste, *ministère de la culture*



However, this frame determines a limit that we can question. In fact, before the invention of perspective, the image was developed on the entire available surface and was stopped only by the structure of the base, which can also condition their structure, much like in cave paintings. With perspective, and with monofocal perspective in particular, the frame conditions the point of view, the direction of the eye. The logic of perspective, according to Alberti, is *the place of architecture*. According to Panofsky, perspective de-theologizes, which is countered by Francastel, who states that perspective organises the world, making it commensurable. At Chauvet, the body and the direction of the eye create the frame. By being situated in specific places, the images organise, group, and thematise themselves. The frame determines a format, which will in turn entail composition rules: rule of thirds, golden ratio, Fibonacci sequence, everything an apprentice painter or photographer must know and master. Going further, we even note that the choice of frame ends up conditioning the interpretation, as it has been done in the famous shaft scene [Charrière 1968] [Soubeyran 1995] that JL Le Quellec analyses perfectly in his book [Le Quellec-2017].

## 2.6 The supremacy of visual elements

Michel Pastoureau [Pastoureau-2013] underlines that years of black and white publishing of deteriorated images have instilled in researchers and onlookers the idea that the old world was devoid of colours. It has taken a long time to admit the ancient and medieval worlds' tonal profusion.

The previous comments highlight the supremacy of visual elements over the other senses, as it is the case for modern western cultures. However, it might not have been the case. In societies with permanent contact with a nature that has not been tamed, hearing is the main sense, the warning sense. Traces of it still remain: a violent sound will provoke a reaction in ourselves, even before the eye identified its origin or direction. The characterization of the soundscape implies a phenomenology of multidirectional perception within a discontinued ensemble. Sounds appear, create events that can come from every direction. As MacLuhan [MacLuhan-1967] points out, the visual space is uniform, continued and connected. The supremacy of visual elements in contemporary culture is not without effects on our reception of parietal images. Used to the reading, the logical and ordered succession of information, we seek narrative logics in the figures, lines assembling what is connected, rather than what is facing each other through space. It seems that coherence appears when the continuum emerges. Putting ourselves in a sound phenomenology instead of a visual one implies, perhaps, a sort of synaesthesia in the perception of Chauvet, Lascaux and other sites' figures... Grasping what is close and what is far away shapes a perceptual synchrony. To understand that phenomenon, it is possible to do a simple experiment: with open eyes, we can describe what we see as a succession of plans or objects that seem to insert themselves in a logical continuum. Time settles down. With closed eyes, sounds burst from everywhere, on a background that we cannot identify, and the sound events come and go, spark the attention or end up integrating a blurred humming.

The discontinued soundscape goes relatively well with a phenomenological experience in darkness, and with the exploration of different temporalities. This implies thus a renewed attention towards the understanding of a cave as an intense space. In other words, a question is raised: does the cave determine the use we take note of, or is it the opposite? Does the place's use transform its nature? Does the location generate the painted piece, or does the latter exist independently of its context? The nature of the Genius Loci, as introduced by Christian Norberg-Schultz [Norberg-Schulz-1980] suggests new lines of research, if not answers. Generally speaking, permanence in the sites' occupancy for ritualistic or habitat purposes is not solely explained by a transmission of customs. Other factors come into play,

which are difficult to qualify individually, but possible to sketch thanks to a phenomenological approach. As a result, climatic and sensory events may intervene and could single out a site. However, caution is key: a quick reading of the world can lead to believe that each site holds determinism inducing its use. A street is used to move along, a place to gather together, a living room to talk and a sacred place to pray. Those deterministic criteria can appear in the classifications, triggering then relations of uses or mental images connecting spaces of different nature. This deterministic will, which it is hard to fight as it is embedded in our relationship to the world, can prevent us from understanding what we could call the potential. Indeed, each space is characterized by its geometry, its climate (given by temperature, light access, humidity, smells and air circulation) and the people visiting it. This combination turns it into a potential space, if we want to use the Aristotelian distinction. In other words, a space is not, in essence, committed to a function. In order for a space to become a place, that is to say for it to produce uses and memories, it needs to be in action, to be induced, which is most of the time by a narrative, or narratives. This creates a convergence between an environment, symbolism and historicity.

### 3. The challenges of mediation

The question of narrative represents the pivot point between academic research and the challenges of mediation, or the openness of scientific research out of scholarly circles. Two recent developments channel these qualities and limits: the Pont d'Arc Cavern, which translates the Chauvet cave, and Lascaux IV, which provides a facsimile of the original cave.

#### 3.1. Images and spaces

Before the construction project, two very different films gave the audience a first look at the Chauvet cave. Werner Herzog's film, which came out in 2010, *Cave of Forgotten Dreams*, showed the limits enforced by the place's constraints. The passageways ordered by bridges protecting the grounds, the duration of filming reduced by the conservation of the environment, the light management, have allowed only partially for the description of volumes and paintings. This produced a hybrid object, even if nowadays it is only a fascinating milestone in what the cave can produce in terms of wonder. The realisation of the point cloud, and then of the textured 3D mesh opened a new narrative, which Jean-Michel Geneste and Pascal Magontier have used to imagine a visit, freed of the filming constraints on the real site. The second film, *The Final Passage*, which came out in 2015, offers, with a very slow, ground level travelling effect, to enter the site's depths. The hyper-realistic 3D allows the viewer to literally embody a visitor

going through a very precise marked course, 36'000 years ago. Is the next step not to free the eye, then the body, to allow for an immersive and independent virtual visit?

The 3D data could also be the subject of an immersive visit, presented as an entertaining device to put the audience in a sensory daze, but it could also be thought as a renewal of the questioning of our relationship to space and to its images. In the collective mind, the cave is worrying, irrational. It represents, according to Bachelard's phenomenology, the unconscious.

Lastly, the architectural form will be intended as the epitome of transmission by immersion.

#### 3.2. The Pont d'Arc Cavern and Lascaux IV

The Pont d'Arc Cavern is presented like a replica of the Chauvet cave; it is an interpretation of it. The project started in 2012, in Vallon-Pont-d'Arc in Ardèche, France. The architects Xavier Fabre and Vincent Speller, with the scenographers Jean-Hugues Manoury and Mélanie Claude and the supervision of a scientific committee led by Jean-Michel Genest, organised a condensed, compressed course in a replica of the real cave. It only remains to see the images in an accelerated succession. The focus on the image partly makes us forget that it belongs to a context, and that this context contains a part of the image's meaning, or at least conditions its meeting.

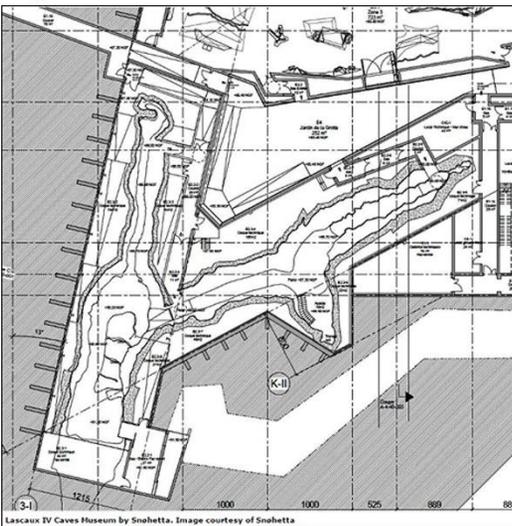
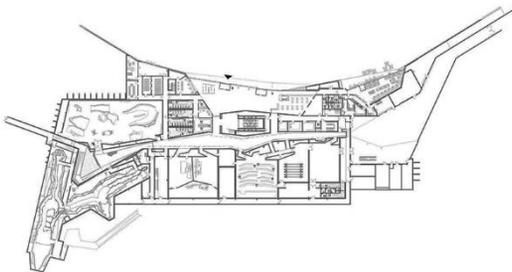
Figure 5. Chauvet Caverne du Pont d'Arc: comparison between the real cave and the museum, Anamorphosis 8 500 m<sup>2</sup> real cave, 3 000 m<sup>2</sup> museum



Lascaux IV, successor of the second version, the previous replica, and of Lascaux III, the nomad version, develops a scaled replica, faithful to the original cave's geometry. This project, realised by the Norwegian agency Snøhetta, is located very close to the original site in Montignac, in Dordogne. The reception building presents itself as the hill's lift. It is a tectonic architecture, which harbours an exact replica, scaled and without

alterations, of the original cave. Each detail of its surface is reproduced, under the scientific committee's supervision, also led by Jean-Michel Geneste [Geneste&al.-2017]. The experience is intended as immersive, and a particular care has been given to the restitution of light and thermal ambiances. This realisation is almost perfect, except for the height of the floors to study the figures, which are too low due to the regulations on disabilities and constraints of slopes; it does not make the anamorphosis of the original drawings understandable. Fortunately, an "interpretative" space reproduces perfectly the initial point of view.

Figure 6. Lascaux 4, Snøhetta Architects



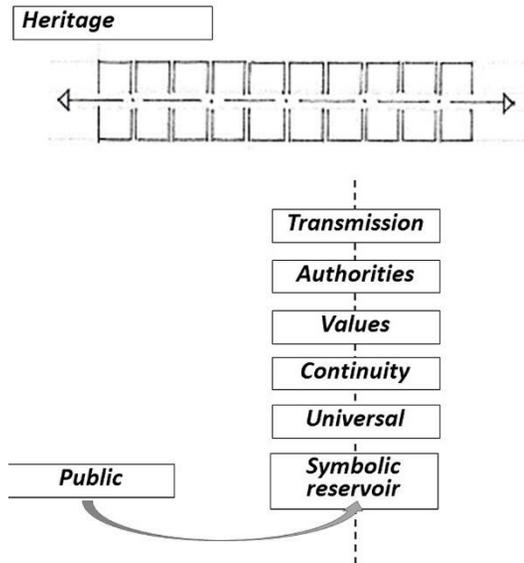
Thereupon, we understand that there are two types of transmissions. One is internal and the other is external, towards two receivers: on one side, the academic world, and on the other, the general public. In both cases, the transmission narratives operate in a context and in forms that can be distinct, without being contradictory. These narratives are divided into two types: the narrative related to heritage and the narrative related to creation.

### 3.3. Transmissions: heritage and creation

The narrative of heritage carries the transmission of a legacy and includes itself in a continuity. The concept of heritage, intended here as scientific and technical heritage, is built as a succession of interdependent periods of time, each trying to exhaust a theoretical or technical paradigm. The advent of digital age in archaeology triggered a new era, a new paradigm in the research and conservation of data. This transmission is patrimonial; it is the transmission of a content and a protocol, which includes the content's origin and the way the future contents will have to constitute and organise themselves.

Therefore, we tie this transmission to some values, the academic values or the scientific discipline, which will justify the distance of elements that do not allow for the conservation of the initial meaning. This transmission in particular that is included in the maintenance of codes and peer recognition.

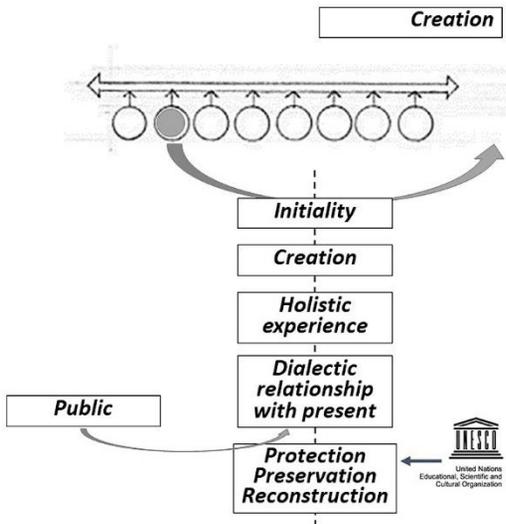
Figure 7. Narrative of heritage, *ill. Lescop*



We thus need authorities that will not only continue this narrative, but will also make it work as a teleology, i.e. with a purpose that is, of course, the preservation and transmission of knowledge. The academic institutions, the training and the validation of knowledge are involved in this narrative, with the will to reach a universal registry. This approach holds a form of transcendence, with the creation of symbols and rituals recognisable by the general public in order to constitute a social accession to

the scientific authority. This is where the questions of patrimonialization, creation of museums, preservation, digitization and protection intervene. The concept of memorial, which belongs to another type of narrative, the narrative of creation, will come later.

Figure 7. Narrative of creation, *ill. Lescop*



The narrative of creation does not operate under the principle of succession, as it is the case for the narrative of heritage. It is not a linear principle; it is a narrative that needs to be done, i.e. activated. Once it is activated, it can, and should, express the permanence of what is recognised as such. One of the most remarkable examples is the creation of traditional costumes during the 19<sup>th</sup> century, which, once introduced in the collective culture, were recognised as having always been part of history. More broadly, we find the collections, like the Grimm brothers' ones, which are part of the global project for the constitution of nations. In this instance, the authority activating the narrative recognises its origin and validates its authenticity; in France, it was Prosper Mérimée's role. This idea of creation is always unsettling: how can we talk about creation while the object has always been here, only ignored? We must here remind ourselves of the Renaissance period, which has created the Middle Ages out of desire of impossible return to ancient times. We can thus consider the emergence of Chauvet in the scientific and cultural landscape as a true creation.

It is therefore a narrative of creation that seeks to be faithful to the origin and that is translated by the research of a holistic experience, i.e. total. This creation

represents the whole and must be celebrated as such. It seeks the immediate accession of society as a whole, as well as of each individual. The creation should be understood as a cultural phenomenon. Nevertheless, one objection would be that these creations are included in the flow of the periods. How to distinguish them from the narrative of heritage? In fact, the narrative of creation builds a dialectic relation between what has been activated and the present. This dialectic relationship is often expressed in debates about conversation, highlighting concepts of protection, preservation, concealment, and sometimes reconstruction. This dialectic, via the pursuit of a holistic fullness, produces in fact a distance between the origin and the present, and inevitably entails a feeling of lack, and thus of nostalgia. These lacks and this nostalgia are diverse: the irremediable losses due to the ravages of time and history, the fantasy of a time said to be happier, more favourable or more prestigious, the memory of a use or a culture that modernity has erased. The principles for the UNESCO classification do not express themselves any other way, with identification of universality on the one hand, and exceptionality on the other.

#### 4. Conclusion - ingathering

First, the question referred to archaeological survey and the possibility of errors or misinterpretation in the recognition of forms and shapes. The idea of limiting those errors by the use of a digital machine is a pipe dream. Nevertheless, our digital produces a massive amount of data in which it is barely possible to discriminate what will be important for the future. The identification of a Data0 or a sustainable data that could contain information that we are not able yet to operate (like DNA in bones discovered centuries ago) is a real challenge in an archiving process.

More and more data also means more and more information to organise and analyse. On one side, the development of an ontological identification of data binds physical elements with a semantic description. With the concept of attuning data the idea is to engage a phenomenological approach in the organisation of data. It leads then to much more consider the context for a more spatial understanding of the subject as a whole.

Next step is to see if a phenomenological approach can be used in the transmission of a scientific content to a larger audience. Museums like Chauvet and Lascaux4 give both two different solutions with a so called immersive experience. In fact, it is based on two kinds of narration, the narration of a heritage that supposes legitimacy and a narration of creation that engages a dialectic relationship with present.

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