Response to the Discussion Paper on Change

Nicola Labanca
Joint Research Centre, European Commission
e-mail: nicola.labanca@ec.europa.eu

Response prepared for DEMAND Centre Conference, Lancaster, 13-15 April 2016

During my struggling to organise a response to the discussion paper on change, I've realized that the line of thinking I wanted to present takes its departure from the central role that *metaphors, myths* and *rituals* play nowadays in how practices are intermingled with energy. As I did not find a lot on this aspect in the existing literature, I've thought it might be first necessary to provide a brief introduction to my reasoning in order to justify the perspective I will adopt to address the questions raised in the discussion paper. My response is therefore articulated into three main parts. The first part sketches the main hypotheses and ideas that allow framing my proposed approach as well as the questions raised by this framing. The second part provides a more general justification for the adopted perspective. The third part finally addresses the questions raised in the discussion paper on change.

Considering that this exposition approach would have probably led to produce a text exceeding the maximum length suggested by the conference organizers, I've decided to write the three parts in such a way that they can be read quite independently hoping that they can in this way generate fruitful discussions. I also would like to mention that most of the ideas and concepts expressed here result from personal elaborations of studies and analyses mainly described in the available publications of Ivan Illich, Gregory Bateson, James Hillman and René Girard. I hope to not have misunderstood the legacy of these scholars and apologise for this lengthy exposition and for the redundancies that the chosen articulation implies.

1) Energy metaphors and rituals

Together with a handful of other conceptual artefacts produced by science, energy represents nowadays a very particular type of abstraction. Strange as it may seem, the main peculiarity of this abstraction and some of its present and most relevant social impacts can be highlighted by studying a roundtrip that the energy concept has started during the XIXth century. This roundtrip has brought energy from the vernacular to the laboratories of physicists and engineers and has taken this concept back to everyday life under the guise of a *metaphor* that is *constantly* being taken *literally*. Put it bluntly, the result of this roundtrip is an aberration that consists in assuming that when we e.g. say "Mr Smith is a Lion" we constantly and completely overlap and identify the person of Mr Smith with a Lion, as if we would constantly be under the influence of a kind of tribal ritual where Mr Smith plays the Lion or as we would constantly feel as we felt when we were children and acted the part of a Lion in the game of the Savanna wild animals with other children transforming themselves into as many wild animals[1]. In these ritual transformations the Lion becomes so magnified

[1] It may be interesting to observe that the disability consisting in not being able to distinguish among different contexts is associated with schizophrenia (see Bateson et al., 1956). It has then to be pointed out that the example and the considerations presented here result from a specific way of intending metaphors, myths and rituals. Put it shortly, metaphors are seen as small myths telling a story

to completely blur and overcome Mr Smith's identity in the interactions we have with him, as if we would forget about the context where Mr Smith is not a Lion, or as if we would lose the capability to distinguish the context where Mr Smith lives his everyday life from the context and the intercourses where the statement "Mr Smith is a Lion" actually holds. In this situation, the Lion (and not Mr Smith) is the authority defining and controlling how we have to interact with it.

Because of the peculiar relationship existing between things of everyday life and concepts developed within laboratories and because of its roundtrip between these two worlds, it can be assumed that *energy* is transmogrifying ourselves and our environment as the Lion of the example has overlaid and reduced Mr Smith's unique identity and the potentially infinite types of different intercourses and interaction contexts that it is potentially possible to establish with him. One of the main enacting "ritual ceremonies" whereby this is happening worldwide has very likely been setup during the XIXth century when a specific ritual has started developing around the metaphor "Labor is Energy". This is most probably the central metaphor whereby the energy concept has irradiated over western societies and has transformed and reorganized *labor* and most of human activities according to conservation and degradation principles. Through this central metaphor most of the social settings, skills and artefacts that people had previously developed to provide for their necessities through labor started (and still are) being transmogrified to generate *work*[2] according to laws and principles defined in laboratories for the energy concept. The tracks of this transformation are for example reflected in the highly intensified commodification of labor and in the wide diffusion of labor theories of value that could take place with the progressive assimilation of labor with the abstract notion of energy as defined and employed by physicists and engineers starting from the mid of the XIXth century.

As illustrated by Ivan Illich and Uwe Poerksen[3] this transformation could not however have been possible without a roundtrip undertaken by the word "energy" itself. This round trip started in the vernacular where energy was mainly used to refer to "the vigor of an utterance, the force of an expression, the quality of a personal presence"[4], at least until the sixteenth century. It continued then through the laboratories of physicists and engineers where energy was associated during consecutive phases with a magnitude remaining intact during collisions of rolling balls and springs oscillations, with a primordial entity obeying conservation and degradation principles, with states of electromagnetic fields, with fields symmetries, with time homogeneity. It is through these metamorphoses that energy has become more and more esoteric and distant from what can be experienced. At the same

---

that is embodied by people through a ritual. This interpretation of metaphors, myths and rituals can be found e.g. in Vico, G., 1744, *La Scienza Nuova*; Blumenberg, H., 1979, *The Legibility of the World*, etc.

It is finally worth stressing that the aberration mentioned here is being assimilated with the condition generated by *constantly* living under the influence of a same ritual (e.g. an ancient tribal ritual or a small game ritual like the one mentioned in the example). By doing so, it is not certainly meant that rituals represent an aberration per sè. In the opinion of the writer, rituals are so fundamental within societies that they can be identified with the social itself in many respects. It is however as much fundamental that people manage to *enter* and *exit* these particular contexts of interactions to come back to everyday life. The capability of putting these contexts "between parentheses" is as important as the rituals themselves. The aberration mentioned here would hence be generated only when people live *constantly* within a ritual and take therefore constantly literally the associated metaphor.

[2] The word "work" is being used here to refer to a motor/machine like conception of the organization of productive activities that prevailed after the invention of the energy concept. The word "labor" is instead used to refer to a pre-existing conception of the human activities whereby goods and services were provided within economies. The decision to use these two words to denote these two radically different ways of intending human activities is not accidental. Compared to work, labor denotes indeed a type of activity where the body of persons and their physical effort is more directly involved and needed. A similar distinction is also present in French (travail vs. oeuvre), Italian (travaglio vs. lavoro), German (Geburtswehen vs. Arbeit).

[3] See Illich, I., 1983, *The Social Construction of Energy.* Published in New Geographies 02 – Landscape of Energy. Harvard University Press, 2009 and Poerksen, U., 1995. *Plastic Words – The Tyranny of a Modular Language*. The Pennsylvania State University Press.

[4] Illich, I., 1983, *The Social Construction of Energy.* Published in New Geographies 02 – Landscape of Energy. Harvard University Press, 2009

time, however, physicists have made energy come back to common speech by popularizing its supposed *real nature*. The account provided by Illich and Poerksen tells us that this roundtrip has caused a colonization of the vernacular by an abstract concept whose precise meaning cannot be discerned anymore and that, contrary to other abstractions generated within languages and practices, makes impossible that people can use it with precision by adapting it to the different contexts of their everyday life[5]. In the reasoning presented here, this roundtrip is supposed to have led to the creation of energy metaphors which are being interpreted literally and which are transforming us into consumers of a phantom entity.

If this account is taken seriously, the main question that arises is: how can the implications and the dynamics generated by this mindset be understood?

It can be assumed that this kind of understanding can be achieved by stopping taking the energy metaphor literally. It is indeed through this change of posture that the influence of the energy metaphor can be taken to the foreground. By taking the first mentioned metaphor as an example, it can be stated that the main route to stop taking a metaphor literally consists in managing to put ourselves under an observation perspective wherefrom the metaphor can become a *similitude* and an "as if" can hence be added in front of the statement "Mr Smith is a Lion". By doing so, we automatically put ourselves in a different context, we put ourselves outside and take distance from the world of the metaphor. In this way we become able to observe Mr Smith under a perspective that allows identifying in which respect Mr Smith is different from a Lion and in which sense he can be assimilated with a Lion. Put in other words, possible close similitude between Mr Smith and the Lion notwithstanding, we must become able to *speak* about Mr Smith whilst *not* speaking about the Lion. When we manage to speak of a metaphor in terms of an "as if", this is the sign that we are performing an act of *interpretation and translation*; we are exiting the world of the metaphor and we are taking Mr Smith and the Lion into our world, into the place and the time where we are staying. This means that, in order to exit a metaphor that is being taken literally, it is necessary to take either a spatial or a temporal distance from the place where the metaphor is being lived. In case of energy, this means that we have either to attempt to move back to the past in a time when this metaphor did not hold, or to move to a possible still existing social context where people live without energy (believe me, this is still possible!). There is, however, also a third and very interesting possibility. Given the categories used within the proposed account, I like to call this third approach *profanation*[6] *of energy*. Profanation of energy means to bring the materials, the technical apparatus, the institutional settings and the technical skills out of the "sacred" world where liturgies and rituals around energy are administered by experts and give them back to the profane life of ordinary people. This is probably the most practical approach to experience the *exiting* and understand the implications of living *within* the energy metaphor. The more the administration of so called energy resources, related technologies and technical skills are left to the management of ordinary people, the more it can become possible to observe the flourishing of a diversity of practices whereby people can provide for their necessities by

[5] For further information concerning how energy and other abstractions undertaking a similar roundtrip can be characterized and distinguished by the abstractions generated within common languages see (Poerksen, 1995). Before describing thirty criteria allowing characterizing a series of science abstractions like energy, Uwe Poersken explains how they differ from other abstractions, like e.g. the concept of “love” as used within common parlance. He explains how the meaning of the word "love" can be expanded to embrace a wide range of meanings (from affection within families, to physical love, to pleasure at a piece of music, to the love of humanity, etc.) allowing the speaker to employ it in a series of different ways depending on the context where it is used. The word energy does not instead allow the speaker to define it. It disempowers the speaker, it cannot be replaced by pantomime or gesture, it is like a lego block that can be put everywhere within speech, its meaning is not affected by the context where it is used, etc.

[6] The description of the proposed approach in terms of a *profanation* has been derived from a series of considerations on how persons should relate themselves with technological artefacts as formulated in (Agamben, 2009).

using natural resources without becoming energy addicted and causing an unnecessary depletion of these resources.

The decision to call it "practical" approach is not accidental. It seems to me that the just described approach corresponds to the possibility of developing and exerting a "practical knowledge" as intended, for example, by Martin Heidegger[7]. The exertion of practical knowledge generally corresponds either to an adaptation of an abstract concept to the circumstances of own daily life or to a generation of an abstraction from own daily experience. According to this view, practical knowledge can be generally seen as a specifically human capability of maintaining and constituting a hermeneutical cycle whereby people can generate given abstractions starting from events of everyday life and can subsequently return and adapt these abstractions to the particular circumstances of their everyday life. This point represents in my opinion an important link between the ideas above expressed and practice theory that will be further discussed in the following sections.

Whenever the above mentioned adaptation is not achieved, it has to be assumed that the exertion of practical knowledge is being inhibited and that the abstractions at stake actually continue living in another world, i.e. they are not being brought back to our world. As happening in case of abstractions like energy, their metaphorical nature remains hidden and the metaphor that has been constructed by moving to a place where the rules of everyday life do not hold is subject to a constant literal interpretation having distorting and blinding effects on our action into the world.

The perspective being proposed implies a quite particular approach to knowledge produced by science (notably by laboratory based science[8] linked to widely used technical applications) whenever this knowledge creates general abstractions (like energy) guiding the organization of everyday life. What is being proposed is that these often undoubtedly necessary abstractions have to be taken as very particular kinds of metaphor. To do so, they have to be somehow read in transparence. They have to be kept at sufficient distance in order to become hopefully able to see how they are framing and constraining our ways of life. At the same time, they have to be read from the inside. We have to listen to the stories they tell us and we have to take them very seriously (these metaphors are extremely powerful. They speak to us and confirm themselves through an immense technical apparatus).

Coming finally to a central topic proposed in the discussion paper on change, we have to be aware that, given the way in which they guide our everyday life, some central metaphors produced by science have changed and are changing the way we intend *causation*. The proposed perspective offers indeed also the possibility to study *change* in transparence. The question of how to employ the proposed binocular investigation approach to study change will be addressed under the third part of my response. This will be done after having tried to put the approach so far exemplified under a more general framework. It may indeed probably be useful to first discuss how the proposed metaphorical approach reflects what in my opinion can be considered as a founding *complementarity* regulating societies and the role played by practical knowledge within this complementarity.

2) Complementarity and social practices

It seems to me that the investigation approach being sketched reflects the need for a philosophy of complementarity within social science. This necessity is the consequence of

[7] See (Heidegger, 1927) for further information. This point is also addressed in the second section of my response.

[8] By laboratory based science I intend science based on the study of events generated within laboratory settings and assuming that these events can be re-produced anywhere, at any time and (in principle) by anybody.

the funding role played by a particular type of *complementarity* within human affairs. The dynamics and movements generated by the particular dual structure associated with this complementarity are constantly present within *rituals* and *rules* whereby people have always administered their societies and constrained their desires and the violence these can generate (Girard, 1987).

Emotional and rational, analogical and logical, unconscious and conscious, profane and sacred, particular and general, feminine and masculine are useful couples of adjectives that can serve to connote and characterize the two polarities of this duality. Out of the two polarities, the former is usually more primary (i.e. it pre-exists to the latter) and generates the latter whilst constantly embedding it. The former polarity is more closely associated with the human body, senses and feelings, whereas the latter may be seen as a result of a process of abstraction, objectification, hypostatization. The way in which this generation takes places can be described archetypically by referring to the myth of *Eros* and *Psyche* (Neumann, 1971). It has however to be pointed out that, despite their original union, the two polarities at stake are two separate and completely different worlds governed by radically different rules and principles.

The generative power and the primacy of the first polarity are a consequence of the fact that the human body and perception are the necessary precondition for the production of what might be probably called authentic knowledge and good actions. Authentic knowledge is indeed generated by the body and remains embodied. The evidence of this embodiment is that the abstractions and the concepts this knowledge generates can always be adapted by people to the context and the particular circumstances where they are applied. In other words, this kind of knowledge is always bent over and submitted to the primacy of the particular. It consists in the exertion of the human habit that Aristotle (Nicomachean Ethics 6.8) named *Prudentia or Phronesis* (i.e. the wisdom of prudence and practical thought) and that allows being guided from and adapting general rules to the particular case when producing good actions. This habit involves primarily human senses, not reason. It requires a kind of opening to the possibility of being constantly surprised by the disclosing of unexpected developments and the capacity to cope with them by taking own perception and feelings as ultimate guide[9]. The exertion of this habit corresponds to the exertion of a practical knowledge described also in (Heidegger, 1927). As already mentioned in the previous section, it can, in my opinion, be assumed that practical knowledge acts within a kind of infinitely recursive cycle. It allows properly generating general rules and abstractions from the particular and then allows taking the general rules back to the particular case. Important insights can be gained on how this primary, fleshy and fruitful coupling is achieved by keeping in mind that the two worlds where the two aforementioned polarities live are completely separated and disjointed. Given this radical separation, the inhabitants of one out of the two worlds can indeed speak about the other only by metaphors. Given this otherworldliness, the only reasonable statements that can be produced are statements like "Mr Smith is a Lion" with Mr Smith and the Lion being the

[9] It may be interesting to observe that the capabilities required for the exertion of this habit are the same that Aristotle attributed to artisans. While advancing with their works, artisans are indeed supposed to be able to adapt the ideas they have in their minds to the specificities and particularities emerging within the matter and the materials being used. The ultimate guide for the making of their activity is not reason, but perception (see Mitcham (1994) at pag. 122; Carl Mitcham produces this description of artisans' activity based on what reported in *Nicomachean Ethics* 2.9.1109b23; cf. 2.2.1104a1-9). Same capabilities were considered also essential for politicians. Politics was indeed assumed to be concerned with action and deliberation about particulars. Grounding in law was assumed to be necessary, but law alone could not serve to do justice. Judges, for example, had certainly to be educated by the law, but they were also supposed to perfect and complete it while applying it. Judges and politicians were in this respect the functional equivalent of artisans (see Mitcham (1994) at pag. 125; Carl Mitcham produces this description of politicians and judges based on what reported in *Nicomachean Ethics* 3.3, 10.9 and in *Politics*, 2.8.1269a10).

inhabitants of the two radically different worlds. The fundamental role played by practical knowledge from the production of good actions derives from this unescapable separation. Practical knowledge can indeed be seen as a kind of boat connecting the shores of these two worlds[10]. It can be assumed that the realization of this connection entails the same capabilities at stake with hermeneutical *interpretation* (i.e. the exertion of practical knowledge entails the same capabilities and involvement at stake when performing texts translations, interpretation of historic events, etc.). Interpretation brings foreign worlds under the interpreter's spatial and temporal perspective. Interpretation implies that foreign worlds are brought within the context of the interpreter (i.e. it automatically brings foreign worlds within the geographical and historical space where the interpreter lives). Interpreters are (or should be) always within an "as if" condition, i.e. they are (or should be) aware that their interpretations consist in the construction of metaphors and that these metaphors should not be taken *literally*. The two worlds bridged by their interpretations should never be considered as strictly equal: they are analogous. This (in my opinion very important) characterization of the role of practical knowledge indicates the kind of awareness to be cultivated in relation to knowledge in order to produce good actions and provides important insights concerning a particularly relevant type of perversion which often passes unnoticed.

The previously mentioned generation process may indeed be perverted and the primacy of the first polarity may be disregarded. Societies can be organized based on abstract concepts which are not anchored in what persons can feel and practically make and verify[11]. The kind of knowledge and rules generated by starting from these abstractions, symbols and ideals can be highly disembodying and generally corresponds to a blind and passive submission to idols and myths of very different nature. Despite the possible best intentions of people submitting to them, the idols so created become the actual delegates of the administration and regulation of human violence and desires. This is basically what happens when the metaphors whereby these idols are created are taken literally and, due to a social blindness and misplaced concreteness, they are considered as actual entities operating during our daily life. The consequences of this social blindness are anything but negligible and, unfortunately, this social blindness can probably be observed also in some large scale applications of scientific abstractions[12].

---

[10] It seems to me that this particular role of practical knowledge can be verified also within human languages. It can indeed be probably assumed that practical knowledge allows converting own feelings and sensations into utterances that can be understood by others and allows interpreting utterances produced by others by converting them into own feelings and sensations. A noun or a sentence can after all be considered as one part of a metaphor, the other part being constituted by the feelings and the sensations of the speaker pronouncing it. The exertion of practical knowledge for understanding languages could then be identified with the act of interpretation as performed by the listener during the process whereby he understands the words pronounced by a speaker and connects in this way to the speaker's internal world. Due to the way in which science can attach particular operative meanings to some words, the above mentioned process can be inhibited (see, what mentioned on this point under the first part of my response).

[11] It seems to me that this situation can be associated with another type of cyclical dynamics that is radically different from the hermeneutical cycle previously mentioned. This different cycle is made of the periodical violent manifestations generated by mimetic desire (aka triangular desire; see Girard, (1987)), their sedation through the "symbolic" sacrifice of a scapegoat offered to the idols and a subsequent period of peace after which violence will be generated again.

[12] The reasons for this have to be found in how the exertion of the previously mentioned Aristotelian *Prudentia* to adapt general rules and abstractions to particular cases can be inhibited. The application of science abstractions is, unfortunately, often disemboding. This is due to the fact that science is axiomatically rooted on abstractions supposed to hold anywhere, at any time and (in principle) for anybody. These types of abstractions are the result of the application of the irrevocable principle of repeatability and reproducibility of observed events. Due to the strict observance of this principle, science cannot typically tell or suggest anything in relation to how explain particular and unique events. Relationships with single and unique entities can be explained by science only by referring to qualities that are shared with other entities, i.e. by neglecting what makes these entities unique. On the temporal side, not repeatable events occurring in a specific instant are considered by science either as never happened or (in case they produce durable and detectable changes) they are considered as the result of pure "chance".

As idols, these abstractions may tend to dis-embed[13] from any type of social control and generate violence. It can be assumed that this process of dis-embedding is correlated to the inhibition of practical knowledge. What is being proposed, among others, is to study this process of dis-embedding in relation to a series of presently dominant scientific abstractions, energy abstraction included.

3) The myths of change

How can the previously described approach help answering the questions raised in the discussion paper on change? To explain this, it is probably necessary to reassert that the approach being proposed identifies *practices* with bundles made of *metaphors, myths* and *rituals*[14] whereby practices are reproduced. Moreover, *practical knowledge* is seen as the human habit whereby people can *enter* (or create) and *exit* (or adapt) the metaphors, myths and the rituals (i.e. the practices) they orchestrate within society. Practical knowledge is therefore seen as the human habit whereby practices can be entered or exited, created or adapted to specific necessities of our everyday life. Practical knowledge principally represents the possibility that we are *socially* given either to free ourselves from or to enter any cultural constraint by taking the outcomes of the personal, unique and embodied relationship that we can establish with the world as ultimate guide. The proposed view sees practical knowledge as the manifestation of a kind of vital and grounded force that animates and complements while remaining irreducible to any rational account of its functioning. As already mentioned, the exertion of this habit can, nevertheless, be inhibited whenever we *constantly* live within a myth, i.e. whenever we *constantly* take the metaphors underlying the myth *literally*. Whenever this happens, it can be assumed that this inhibition can soon or later generate some kind of violent reaction[15].

The identification of metaphors and myths animating the reproduction of practices is being proposed here as a very effective way to describe and understand practices.

Material and even conceptual arrangements for the celebration of rituals can indeed change sometimes without being necessarily associated with a change in the myth that is being celebrated. We can, for example, change cars with bicycles without changing the metaphor according to which "transportation is the act of moving people from point A to point B in a given amount of time". The literal application of this metaphor alone is sufficient to provoke radical modifications in the landscapes and to drastically limit the infinite ways of transit that can be adopted by people within these landscapes. This metaphor does so by projecting all the possible conceivable ways of transit along the common metrics of travelled kilometers/hour either cars, or bicycles, or trains, or airplanes are used to move people. The same may happen, for example, when gas boilers and gasoline cars are substituted by heat pumps and vehicles consuming PVs' electricity. The production and the employment of

---

[13] This idea of dis-embeddedness has been taken from (Polanyi, 1944). Polanyi argues that the large scale application of the international gold standard and the transformation of land, labour and money into fictitious commodities that can be sold within a market regulated by Adam Smith's "invisible hand" has been at the root of the upheavals and violent disorders that took place in the North Atlantic Community and its periphery at the beginning of the XXth century and has led to the World War I and the subsequent Great Depression. According to Polanyi these disorders would be the consequence of a "double movement" of long duration made of the expanding application of the above mentioned abstractions on the one hand and of the spontaneous resistance to the pressure they generate within civil societies on the other hand. As done by other scholars, I am assuming that this double movement of long duration can be generated also in other social spheres where scientific abstractions are largely applied (e.g. within social arrangements established to regulate energy and natural resource consumption).

[14] As already mentioned under part 1, I see metaphors as small myths telling a story that is embodied by people through a ritual. This interpretation can be found e.g. in Vico, G., 1744, *La Scienza Nuova*; Blumenberg, H., 1979, *The Legibility of the World*

[15] See the comment provided under footnote 11.

these two different material arrangements can be animated by an energy metaphor that can become the ultimate and main constraint shaping the way in which people address the issue of heating and transportation.

The identification of the myths and metaphors animating practices can therefore in principle allow understanding practices irrespective of the changes in how they are materially and conceptually organized[16]. This is a first point deserving consideration when answering the questions raised in the discussion paper.

It has then to be pointed out that, whilst it is in principle possible to gain important insights concerning future material and conceptual modifications *within* same practices by looking at the central myths animating them, it is most probably not possible (or even undesirable) to *predict* how these central myths can change in the future. This however, does not mean that insights cannot be gained concerning how myths and practices have changed in the past.

In other words, it seems reasonable to assume that a) it is possible to gain insights concerning how change can occur within same myths[17] (i.e. within same practices or bundles of practices) and that b) it is possible to try to infer how myths have changed in the past, but it is highly unlikely that meaningful predictions concerning how some central myths and related practices will change in the future can be made; this being due, among others, to an intrinsic impenetrability of social dynamics. Such an attempt would most probably represent an act of human *hubris* (i.e. an overestimation of own capabilities).

This view, however, does not certainly prevent meaningful investigations about future changes, provided we manage somehow to identify and we assume we will remain within the same leading metaphors within which this change is supposed to occur. After all, the way in which change materializes is not exempted from the process of mythicization and literalization mentioned in the previous two parts of this document.

Identification of the present central myths can therefore help understand, among others, what these myths tell us about change. As mentioned in the previous sections, this identification can be attempted, for example, by historical enquiries. Historical enquiries have indeed already helped understand how a modification in the central metaphors dominating given historical ages has taken with it also a modification in the way in which *causation* has been intended. Ivan Illich[18] has, for example, taken the Aristotle's four subdivisions of *causa* (*causa materialis, causa efficiens, causa formalis* and *causa finalis*)[19] as

---

[16] I am aware that this point of view might differ substantially from the analysis perspective proposed in the discussion paper. If I've understood correctly, in the paper it is for example assumed that different practices can underpin summary figures represented by vehicle kilometres because people can produce vehicle kilometres by *doing* different things. The interpretation I am proposing suggests instead to consider "vehicle kilometres" themselves as a potential metaphor animating a specific type of practice. In other words, what is being suggested is that whenever people approach transportation in terms of vehicle kilometres they might actually be within a same practice, despite they might be using different means and technical arrangements to produce these kilometres. Although it is probably difficult, or even impossible, to delimit practices, it seems to me that the social imaginary associated with some largely used metaphors and with what people *say* about what they are doing actually shapes their practices. The way in which this social shaping takes place can certainly vary with the context and be constrained by an infinity of factors. It is however difficult for me to renounce to the primacy of metaphors and sayings when practices have to be delimited.

[17] The account I am producing reserves a leading role to myths operating within practices. This is due to the fact that myths are directly connected to what people do and say and allow, in my opinion, a deep understanding of the practices they animate. It seems to me that spatiotemporal accounts of practices can lose the fundamental connection existing between practices and people. Put in other words, I've the impression that accounts aiming at explaining how the elements of practices are interlinked, how these links change, how practices accumulate or dissociates, etc. can become very abstract and somehow lose the above mentioned connection with people. Moreover, it seems to me, they incur in the risk of entering the mess of having to spatially and temporally identify and distinguish among dynamics of practices, complexes of practices, complexes of complexes of practices etc. Myths, on the contrary, organize and act according to principles that are themselves mythical (i.e. myths and the practices they animate can always be somehow *personified* through the stories of these myths). For further explanations on how this can be done see, for example, Hillman, J., 1975, Re-visioning Psychology.

[18] For further information, see (Cayley, 2005).

[19] In his Metaphysics, Aristotle distinguishes among four types of causa: *causa formalis*, *causa materialis*, *causa efficiens*, *causa finalis*. The difference among these can be grasped by the classical example of the sculptor. To make a statue the sculptor (causa

holding up to the XIIth century as reference perspective to study how causation has changed afterwards. He has then managed to identify important elements supporting the hypothesis according to which a new type of causation (that he has named *causa instrumentalis*) has been conceived around the XIIth century. According to Illich, this has probably occurred when theologians (first) and common people (afterwards) started assuming that God had delegated to the Angels the task of moving the spheres of the world by means of instruments named *corpora coelestia*. Illich maintains that the new type of causation associated with this new version of a myth would have made possible for the first time to conceive specific type of artefacts as a *means* that can be used by *any* person to achieve given *ends*[20] and, consequently, made possible to think of mass production of same artefacts that can be used by everybody. The utilization of the *corpora coelestia* as neutral instruments transmitting angels' intentionality would have led to conceive that also human intentionality can be transferred to neutral artefacts and it can be also assumed that this transformation is probably responsible for the creation of the central metaphor whereby the universe has been conceived as a gigantic machine most probably starting from the mid of the XVIth century[21]. Despite the few indications being provided here, this type of historical enquiry is exemplary of how a myth and the modifications it generates in the way in which people conceive causation and their relation with the world can be studied in transparence by moving the observation point to an age preceding its birth. This is what, in my opinion, should be attempted also in relation to the central metaphors animating the present age in order to understand what these metaphors tell us about *change* and learn to take distance from them in order to understand, among others, how they can possibly inhibit the exertion of practical knowledge.

It seems to me that this can be attempted by acknowledging that we live nowadays in the age of *complex systems*. The image representing the main central metaphor of complex systems is the *computer*. The abstraction whereby we are brought into the world of this metaphor is *information*. As happened with energy, information has undertaken a round trip started from everyday life during the second decade of the XXth century. Then it has reached the laboratories of cyberneticians around the mid of the XXth century and has subsequently come back to everyday life as a completely transformed and abstract entity[22]. This roundtrip has brought us within the rituals animated by a relatively new phantom named information. In the light of what mentioned so far, it is not so bizarre to assume that the nature and the impacts of the transformations induced by these rituals (including how the idea of causation has been modified) can be grasped by studying the elements of the central metaphor that can be identified by looking at how information has been defined by cybernetics. This is the kind of approach I would like to try to briefly sketch here.

Cybernetics tells us that "information is a difference which makes a difference"[23]. It can be probably stated that by re-defying information in this way, cybernetics has led to the

---

efficiens) is supposed to produce changes in a block of marble (causa materials) with the aim of producing a beautiful object (causa finalis) having in mind his idea of the statue to be carved (causa formalis).

[20] The notion of tools as "instrumenta separata", as objects independent from the hand that holds them, would indeed have been unknown until the twelfth century. Before this century it was not possible to distinguish even linguistically between e.g. a hammer, a pencil or a sword and the hand that held them. The hand, the hammer and the hammering hand were all called *organon* and the Aristotle's *causa efficiens* did not make possible to distinguish between the artefact and the hand handling this artefact. It is only after this century that a hammer can be seen as something made for hammering and the sword as something for killing irrespective of the type of person using it.

[21] For further information see (Rabinbach, 1992)

[22] See (Poerksen, 1995) for further details concerning this roundtrip.

[23] See for example (Bateson, 1972). Terms and expressions like *information, information about a difference, difference that makes a difference* are used interchangeably by Bateson. In order to produce information, two (real or imaginary) entities are needed such that the difference can be immanent to their reciprocal relationship; moreover this difference must be such that information about this difference can be represented as a difference within some information processor (e.g. a brain or a calculator). Each of the two entities producing information is a non-entity if taken alone. A relationship between two parts or between a part at time 1 and the same part at

technical implementation of the latest vision of "change"[24] provided by science. This is most probably the metaphor that deserves to be studied to understand the central ritual in which we are collectively engaged by complex systems. To do so, it is necessary to try to grasp the nature of this particular type of information and how it has been modifying the way in which we interpret change and our action into the world.

An example taken from linguistics, as formulated by one of the fathers of cybernetics (Gregory Bateson), can perhaps help grasping the nature of this transformation.

Bateson provided the following example to explain what gives meaning to letters, words and sentences. He maintained that the letter "p" would have no meaning if, for example, it were not part of the word "perhaps". The word "perhaps" would have in its turn no meaning if, for example, it were not part of the sentence "perhaps this is soap". This sentence would in its turn have no meaning without the context where it is stated and this meaning would be different if the sentence were stated, for example, in a bathroom, on a stage or within the reasoning presented in this document. Meaning and information content would therefore be purely relational and depend on an infinite series of piled contexts. The contexts at stake would always be hierarchically organised and it would never happen that the smaller context determines the characteristics, the evolution and the meaning of the larger context. According to Bateson, this type of hierarchical organization regulates the organization and the evolution of all complex systems. Either we deal with the phylogenesis of biological organisms, or with the phenomenology of perception, or with linguistics, or with social organizations, the very particular type of information above described would always be regulating the functioning of the aggregates at stake. The nature of this information is purely *relational*. Through this type of information, any entity of the natural world comes ultimately to be defined and regulated by infinite chains of relationships (i.e. differences) with other entities. In the world made of this type of information, there are no objects with proper and intrinsic characteristics. There are only relationships. Starting from the smallest elementary bricks constituting any natural object up to the largest aggregates available in nature, we only find dualities, i.e. relationships between two irreducible entities that are non-entities when taken alone. Natural objects would appear just when artificial delimitations are created within complex systems by defining an "inside" and an "outside". The descriptions of complex systems dynamics that can be provided in this way (i.e. a description in terms of delimited entities and related functions within an external environment) are assumed to result just from a decision/intervention by an *observer*.

It is for this reason that complex systems actually engage us into a ritual aiming at associating objects populating everyday life and their related functions with the entities populating an underworld made of the information bits that constitute the complex systems which these objects are supposed to belong to and that regulate the evolution of these systems. It is through this ritual that change is being reinterpreted. With complex systems, the "classical" explanation of change formulated by evolutionary theory and relying on a combination of variation (due to stochastic processes) and selection is indeed somehow assumed to belong to an outside world created by the observer. These two explanatory principles are being revised by complex systems theorists by interpreting *observed* stochastic variations not as purely “stochastic “ but as the result of thermodynamic processes generated by energy and matter flows occurring within a kind of underworld and obeying phenomenological principles that can be described and interpreted through

---

time 2 is needed in order to activate some third component that could be defined as the *receiver*. This receiver (e.g. a terminal sensor in an organism) reacts only to a difference, to a change. As the reaction of the receiver is in its turn nothing but a difference, this reasoning implies that *information is just a difference producing another difference* (see the original text providing this description in Bateson (1980)).

[24] Change can indeed be considered as a "difference which makes a difference".

information theory (given the central role acknowledged to the information metaphor within the presented reasoning, some words are spent in a footnote[25] do discuss how these thermodynamics processes are generally studied and how this study can be absorbed and integrated within information theory).

Nevertheless, besides this underworld made of matter and energy flows (or, equivalently, made of information), an upper world made of functions supposed to evolve and adapt continues to remain. Our attention has hence to focus at the microscopic interface existing between these two worlds in order to understand the ritual in which we are engaged by taking literally the information metaphor associated with complex systems. It is indeed at this interface that functions performed and observed during everyday life are being identified with the abstract information that can be managed by computers and that can be possibly associated with underlying energy and matter flows.

It has indeed to be stressed that functions observed in natural entities are being artificially jointed to bits of information and, thanks to information, to energy and matter flows. These type of artificial joints are being established everywhere. They are being established e.g. when it is attempted to merge molecular biology (studying life with a thermodynamic/informational posture) and organismal biology (studying life in terms of evolution and adaptation of functions). They are being established e.g. when it is pretended that each action we accomplish can be associated with the consumption of given units of energy and matter. They are being established e.g. when we, like cyborgs, act in the world through computerized prostheses thanks to the elaboration of information. Present possibilities to manage huge amounts of bits of information while observing nature from its most microscopic parts up to its most macroscopic aggregates make even appear these joints as something created by nature itself. Unfortunately, the establishment of these artificial joints always generate (or is generated through) a *discretization* and a reduction to *standardized* functions of the otherwise *continuous* spectrum of *unique* functions that nature and human beings can generate and observe[26]. This discretization and standardization is the sign of the artificial character of an underworld made of energy and matter flows supposed

---

[25] Variations appearing in the world of the observer are supposed to be generated by dynamics studied by science addressing far from equilibrium open systems. Put is shortly, these dynamics are described in terms of structures (i.e. structured/not random patterns of energy and matter flows) emerging through the dissipation of energy gradients. It is as if steep gradients applied to open systems would give open systems "a certain tension that creates a condition of an accident waiting to happen"(see Allen et al. (2003) at pag. 331. Thinking of a fluid within a box and of the convection currents generated through it because of a temperature difference applied at the two opposite extremities of the box may help to visualize what being described here). This accident generates then a kind of cascade through positive feedback loops whereby structures of energy and matter flows are created. These energy and matter flows would then tend to dissipate the previously mentioned applied gradient. The creation of these energy and matter flows can be equivalently described and studied by information theory in terms of probabilities and creation of information. It is through the establishment of this equivalence between probabilities and energy and matter flows that information theory incorporates and confirms thermodynamics (for a detailed account of how this incorporation takes place see, for example, Ulanowicz, (1997). pages 63-71).

[26] The type of *discretization* and *standardization* mentioned here can be seen as the result of an (at least partly) arbitrary resolution of an otherwise unsolvable allocation problem. The problem of having to establish how much energy (or e.g. time) one person consumes when he/she walks (i.e. when he/she accomplishes the function of "walking") can perhaps help clarify this point. Such apparently simple allocation problem actually involves a high level of arbitrariness and standardization. A person walking might indeed actually being also talking, looking at a landscape, making some kind of sport, etc. and all these activities can be assumed to require some type of "additional" energy input. We therefore might discover that in order to establish the amount of energy (or time) consumed while walking it is necessary to refer to a kind of reduced and standard version of walking (e.g. without talking, without exerting sight, etc.). On the other hand, we might discover that a given amount of allocated resources (whether these resources are energy, or matter, or time, or information) can serve to generate only very particular and specific aspects of the functions we are trying to reproduce. Complex systems somehow always invite to take decisions in relation to these types of unsolvable allocation problems and make people blind to the distortions they generate in this way. This type of distortion can, among others, contribute to artificially create a perception of resources scarcity, as it can be grasped, for example, by observing how the function of walking can be connected to *time* consumption by assessing the walking in terms of m/sec walked. All the possible ends that can in principle be achieved by this activity (the possibility to meet other people while walking, the beneficial effects for the body, etc.) are projected by this assessment along the Cartesian axis associated with the defined metrics (m/sec) and are subordinated to the values associated with this single unit. It can be showed that this kind of connection can generate a feedback loop whereby an assumed time scarcity causes an acceleration of walking that leads in its turns to a reduction in the number of ends that is possible to achieve while walking (and consuming time units) that causes in its turn an increased perception of time scarcity.

to generate functions reproduced within complex systems. This underworld comes indeed to represent an artificial layer that is interposed between people (between what people see and do) and the material world. Its energy and matter flows come to constitute a kind of artificial membrane impeding a direct and fleshy coupling with the material world and impeding to generate an infinite variety of functions while interacting with it. The inhibition of practical knowledge entailed by the constant literal interpretation of the information metaphor consists in accepting the constant presence of this artificial membrane constituted by a cybernetic version of information (and by the associated energy and matter flows) and in accepting the limitations[27] determined by its interposition in the interactions that we have with the world.

The constant integration into the above mentioned artificial membrane, as entailed by complex systems, implies also the inhibition of any form control. The dynamics of complex systems is indeed completely regulated by the energy and material flows we are integrated in. As the initial example produced by Bateson can also help understand, with complex systems we are always within a bigger context that can determine how things will go. Complex systems are always open and, due to their hierarchical organization, their smaller parts cannot be assumed to determine the evolution of the larger parts; they cannot be studied analytically (i.e. by starting from their components). Moreover, they cannot ever be studied from the outside. External points of observation are not possible. Like the images produced by computer technologies, they have not and cannot be described from any perspective. Somehow, complex systems make any responsible action impossible. Besides the aforementioned causation mechanisms associated with variation and selection, complex systems entail therefore also a type of causation that somehow reminds a kind of Aristotelian *causa finalis* by which we are guided and to which we cannot nevertheless give sense. Its effects are indeed intrinsically unpredictable. Within complex systems we are invited to live within an oxymoron. We have to prepare for and learn to manage the unpredictable. The adjectives used to describe what complex systems call for are: resilient, flexible, adaptable, etc.

It might in principle be attempted to identify similarities between the type of causation entailed by complex systems and the four previously mentioned types of *causa* defined by Aristotle. I nevertheless doubt that complex systems causation can be mapped into Aristotle's quadri-partition of causation and I think it would be definitely interesting to further investigate the nature of this new type of causation by taking Aristotle's *causae* as a term of reference and by identifying the changes induced by the energy metaphor and the information metaphor that complex systems invite us to live within.

The reasoning so far illustrate allows answering the questions raised in the discussion paper as showed below.

1) Does understanding energy demand as an outcome of practice challenge or defy linear causal/directional, singular, evolutionary and progressive accounts of changes in energy use?

Answer: the proposed perspective reserves to energy a role that does not probably allow interpreting it as a pure outcome of practices. Energy is rather seen as a central metaphor

[27] It has to be stressed that single and specific functions can actually be highly potentiated by the interfaces being mentioned here. The limitations being discussed relate mostly to the variety and the character of the functions that is possible to reproduce. The kind of limitation effect being described resembles in some respects to the effects produced by a magnifying lens. While magnifying single and particular details, this lens inhibits indeed the vision of all the details allowing constructing the whole picture of the object being observed.

that, together with associated rituals, contributes to shape and animates specific practices. Moreover, the proposed perspective puts *change,* and the way in which change manifests itself, under the influence of the central metaphors which are informing the present age. In particular, it is assumed that the present age can be considered as the age of complex systems where the energy metaphor and the information metaphor reinforce each other and shape the dynamics of change. This assumption allows highlighting that complex systems entail a peculiar evolutionary and teleological manifestation of change that deserves to be further investigated. The proposed perspective allows also arguing that the literal interpretation of the metaphors associated with complex systems determines in the long run a process of dis-embedding whereby the abstractions associated with these metaphors can escape social control and generate violence.

2) How does the idea that energy demand is an outcome of practice influence the kinds of questions we ask about change?

Answer: as already mentioned, the proposed reasoning suggests interpreting the energy metaphor as the main driver of practices being presently massively organized around the consumption of natural resources. Moreover, it suggests considering that the energy metaphor and the information metaphor are shaping the way in which change develops. In addition, it suggests that an historical enquiry aiming at investigating how these central metaphors have substituted or transformed preceding myths can help understand how they contribute to shape the dynamics of change.

3) How do we define and detect change in our empirical work, over what temporal and spatial scales, in relation to what models of 'stability', and from what (or whose) vantage point and perspective?

Answer: the proposed reasoning highlights that the material arrangements used to reproduce rituals can be markedly modified without changing the central metaphors around which rituals are organised. Rather than being focused on the spatial and temporal dimensions of practices, this reasoning focuses therefore on myths and metaphors animating people practices. Stability is hence associated with myths' stability and with the possibility that people can enter and exit associated rituals through the exertion of practical knowledge. The vantage point of the proposed approach may be found in the fact that it allows identifying the conditions for the exertion of practical knowledge with the conditions needed to generate a diversity of material arrangements for practices reproduction while maintaining these practices embodied in the social, so hopefully avoiding generating violence.

4) Does thinking about how demand for energy has changed, is changing and will change, require experimenting with methods and concepts that promise to capture shifting complexes of social practices and the changing forms of demand for energy that follow? Alternatively, does working with concepts of social practice already prescribe a particular way of thinking about how things and practices change?

Answer: the proposed reasoning assumes that the central metaphors and myths animating social practices are fundamental drivers of energy demand. In so far as it can be also

assumed that these metaphors are being identified by methods and concepts of social practices, this reasoning implies that these concepts and methods can actually help understand how energy demand can change, despite they do not necessarily prescribe how the material arrangements whereby energy is consumed will change[28]. In so far as myths animating practices are *not* constantly being taken literally, it can indeed be argued that people can freely adapt these practices to the particular contexts where they live. On the other hand, this possibility can be inhibited. Change becomes hence more easily predictable when there are good reasons to conclude that this literal interpretation cannot be escaped. The proposed reasoning suggests also that this type of understanding should be cultivated for the central metaphors animating our age without pretending predicting how these central metaphors can possibly change in the future. Overall, it might be concluded that the proposed perspective suggests that concepts and methods of social practices can prescribe a particular way of thinking about how material arrangements of practices can change but only in so far as they see the central myths animating the present age as the main drivers of this change and in so far as these concepts and methods can allow identifying these myths.

5) Many of the examples we use refer to the past. What does this discussion of concepts and theories of change mean for thinking about the future and about the scope for anticipating and perhaps predicting the directions, rates, forms and processes of change?

Answer: The proposed reasoning sees historical enquiries as one out of three main research approaches that can be conceived to identify present central metaphors and myths. This research approach appears as the most suitable to think about the future in the way briefly illustrated in the previous answers.

[28] This is due to the fact that the type of understanding being described here relates to the identification of the central myths animating social practices and not to the material arrangements whereby associated rituals are administered.

References

Agamben, G., 2009. *What is an Apparatus?* trans. David Kishik and Stefan Pedatella, Stanford University Press

Allen, T.F.H., Tainter, J.A., Hockstra, T.W., 2003. *Supply-Side Sustainability*. Columbia University Press. ISBN 0-231-10586-X

Bateson, G., 1972. *Steps to an Ecology of Mind*. University of Chicago Press. ISBN 0-22603905-6

Bateson, G. , 1980, *Mind and Nature: A Necessary Unit* ISBN-13: 978-1572734340

Bateson, G. et al. 1956 *Toward a Theory of Schizophrenia*. Behavioral Science 1:251-264

Blumenberg, H., 1979, *The Legibility of the World*

Cayley, D., 2005. *The Rivers North to the Future: The Testament of Ivan Illich as Told to David Cayley*. House of Anansi Press Inc.

Girard R., 1987, *Things Hidden Since the Foundation of the World.*

Heidegger M., 1927, *Being and Time.*

Hillman, J., 1975, *Re-visioning Psychology.*

Illich, I., 1983, *The Social Construction of Energy.* Published in New Geographies 02 – Landscape of Energy. Harvard University Press, 2009

Mitcham C., 1994, *Thinking Through Technology*, The University of Chicago Press

Neumann, E., 1971, *Amor and Psyche: The Psychic Development of the Feminine*

Poerksen, U., 1995. *Plastic Words – The Tyranny of a Modular Language*. The Pennsylvania State University Press.

Polanyi, K., 1944. *The Great Transformation*

Rabinbach, A. (1992) *The Human Motor: Energy, Fatigue, and the Origins of Modernity*. New York: Basic Books

Ulanowicz, R. E., 1997. *Ecology, the Ascendent Perspective*. Columbia University Press, ISBN 0-231-10828-1 pages 63-71

Vico, G., 1744, *La Scienza Nuova*.