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Reality as a construct: outline of a pragmatic constructivist perspective

Lennart Nørreklit

Professor Emeritus of Philosophy

Aalborg University

Langagervej 8, 9220 Aalborg Ø, Denmark; lennartnorreklit@gmail.com

Abstract

Consider the idea that reality is a construct. Are constructivist and realist perspectives not incompatible? Well, they are often construed as more or less incompatible and competing perspectives: Constructivism being mainly considered a subjectivist and idealistic perspective while the opposite perspective, realism, is considered an objectivist or materialist perspective. However, the ordinary usage of the terms 'reality' and 'construction' discloses no contradiction but a group of nicely interrelated concepts.

Keywords: Reality; construct; pragmatic constructivism.



1 Reality of constructs

Consider the idea that reality is a construct. Are constructivist and realist perspectives not incompatible? Well, they are often construed as more or less incompatible and competing perspectives: Constructivism being mainly considered a subjectivist and idealistic perspective while the opposite perspective, realism, is considered an objectivist or materialist perspective. However, the ordinary usage of the terms 'reality' and 'construction' discloses no contradiction but a group of nicely interrelated concepts.

The idea that reality is a construct may sound objectionable to some: Is reality not precisely the things that are unavoidably there, which we can bump into, the things that are given, and *not* some flimsy, fictive mental construct? Yes, and it is much more. But: the fact that real things are objective phenomena that exist independently of the human mind does not mean that they are not constructs too. Take a really solid piece of reality: Say, the pyramids. They are real, solid, objectively existing, - we can bump into them. But are they also constructs? Yes, of course. Definitely. There is no and can be no conflict between being a construct and being a piece of reality. *The very point in construction is to make something become real.* We do also construct fictions such as for instance novels or movies. To construct the piece of fiction is to make it become real: a real book, a real movie etc. In addition to the clear-cut cases where one easily distinguishes between real constructs and fictitious, non-existing constructs, there are numerous phenomena where it seems unclear whether something is real or not. That such cases exist is not surprising. Such uncertainty also exists in relation to the construction of, say, a movie or a pyramid: When is there a pyramid? The pyramid seems to exist as a pyramid before the last stone is put in place. But then when exactly does the construction become a pyramid? The borders of our concepts are not always simple and clear, and thus it is natural that one may be confronted with phenomena where it is unclear what reality they represent.

Constructs are meant to make something become real. Human beings are masters of constructs, whether physical, intellectual, organizational or social. And social structure, organization, control management and leadership are all about enabling human actors to succeed in realizing other constructs.

Now let us reverse the question and ask if there is something that is *not* a construct? Physical phenomena – the Earth, the galaxies - that were created by natural forces and did not involve human intervention are obvious candidates. Of course the pyramids are physical phenomena, created according to the laws of physics, but not without human intervention. Human constructs presuppose the existence of physical things produced by nature and the laws of the universe. Thus the world as such is not a construct, but many things in the world, on our Earth are.

To consider something to be a construct does not involve metaphysical idealism or any other metaphysical claim. It definitively does not mean that reality is something mysteriously hidden (cf. critical realism, e.g. Roy Bhaskar, 1975). On the contrary, to claim that reality is a construct means that it is the result of human activities and as such open to scrutiny.

But what about reality itself, is that a construct, is that real - is reality real? One should not confuse world and reality as is often done. These two concepts do not mean the same (Nørreklit et. al., 2006). The world as such is not a construct. It is 'given', we are in it, it is not something constructed. Our world-view is, however, a construct, which we want to be as realistic as possible. Thus we need to clarify the notion of reality in order to clarify its status as either a construct or as something given.

Contrary to this moderate realism, in a radical or constitutive constructivism¹ - as for instance previously advocated by Latour and Woolgar (Latour & Woolgar, 1979/86) - the object of reference is not something pre-given but constituted through the act of reference. The phenomenon exists as soon as the act of reference exists. In this view there is therefore no risk of mistake or illusion. All kinds of chimera are claimed to exist and the fundamental distinction between appearance and reality and reality and illusion is eliminated. Causal constructivism on the other hand merely claims that objects of reference may or may not be human constructs. The human constructs may be artifacts such as pyramids or constituted social constructs such as institutions, social relations and more. This is within the realist frame as e.g. Searle (1996) or Collin (1997). However, in causal constructivism the act of reference to a social phenomenon is not *per se* the same as the act of constituting the phenomenon. Thus reality vs. fiction/illusion is an issue that not only pertains to physical objects but also to constituted social objects.

In the following we outline the idea of reality as a construct aimed to enable human practice.

¹ I use the term constitutive constructivism following A. Kukla (Kukla, A., 2000).

2 Constructor and actor

Everything is generated and has a history. It is caused by nature or created and produced. This includes constructs as well as things that are not constructs such as stars, planets, mountains, clouds and oceans etc. The characteristic thing about a construct is that it presupposes an intentional constructor, a person working as a constructor. Physical analysis of the universe involves natural laws but not intentional actors as such.

Thus a construct presupposes *constructors*. However, most constructs are too advanced and complex for one constructor. Cooperation is needed. To be an *actor* is to be involved in works of construction. This involvement is not like the involvement of a machine. A machine, a robot, is not an actor. To be an actor is to be involved as an intentional person who takes responsibility for parts of the construction work. This presupposes coordinating communication with which the actors co-author the construction and guide their construction efforts by creating platforms of *actorship* for the actors involved. This involves shaping the communicative tools, the *topoi*, i.e. the then-current set of concepts and ideas² that guide the ongoing coordinating narration controlling the (inter-)action. To manage such a process is to guide the co-authorship.

Thus one must distinguish sharply between actor management and activity management. *Activity management* means that management tries to control the actions of employees directly by rules or dictates in a strictly hierarchical system in which the employees are treated as robots. *Actor management* on the other hand considers the actor as the author of her actions and the role of management to be the organization of the authoring process (Nørreklit, L. 2011).

Although we restrict actors to persons, there is in a sense no absolute border between purely physical creations on the one hand and intentional constructs on the other. There seems to be a practical duality, but no clear ontological dualism. There are all kinds of gradual transitions in the world. When life emerges, then a form of construction activity takes place. To be alive means to do things, i.e. to create change. Life is an important causal factor in itself. It is an active principle, which creates change in the world, sometimes by making special constructs. The precise point at which such changes may be considered constructs is not clear. The intentional human constructs are so dominant that we only recognize humans as genuine actors – but one may argue that one should include some animal constructs such as nests, hives and more.

Many physical structures on Earth are the result of various life forms as for instance the oxygen in the atmosphere, the fertile soil, the layers of chalk and oil in the ground, etc. But these structures are not in any sense aimed at but inevitable byproducts. This raises the question whether or when unintentional effects of human activity are to be considered constructs. The climate change for instance is not an intentional effect, but a byproduct of human construction activity. When for instance, the mining activity digs tunnels and holes in the ground, these underground tunnels are constructs, obviously. The intention of mining is to obtain a certain mineral; the tunnels are just a means.

I suggest that *when the effects of the activities are known in general and therefore should be known in practice, then the effects are also to be classified as constructs*. The fact that we did not strive to get climate change does not mean that climate change is not a created construct. The very fact that we know that climate change is partly an effect of our activities does make it a construct for which we are responsible. And the same is true for numerous other effects that arise from our activities.

3 Illusions and other fictions

While the concept of the *world* is characterized by its inclusiveness, since everything is in the world, the concept of *reality* is characterized by its exclusiveness: Everything is in the world, but not everything is real. There are many forms of not being real: dreams, fictions, plans, delusions and other illusions. Mostly, we think that we know whether something is real or not. The problem is that we may be mistaken.

The exclusive character of the concept of reality is indicated by the distinction between appearance and reality. The notion of appearance raises the question: is it real or is it only an appearance? The phrase “as if” is also used to raise the question of reality of the reference (cf. Vaihinger, H., 1911) as in: “it is as if ..., but it may be it is not.” Thus simulacra (cf. J. Baudrillard, 1976) are often powerful constructs with no reference. Most cultures seem more or less based on identities of questionable reality. Although they are used as a way to construct meaning this does not make them exempt from criticism. Meanings have to be good before they should be accepted as reasons. Terrible acts have

² Re ‘topoi’: Nørreklit, L, Nørreklit H. and Israelsen, P. (2006), Validity of Management Control Topoi — Towards a Constructivist Pragmatism, *Management Accounting Research*. Vol.17., No.1, pp.42-71.

been driven by bad meaning based on lack of realism or motivated by negative feelings. Eliminating the distinction between real and not real is to give all meaning constructs status as legitimate reasons.

The distinction between appearance and reality indicates that the semiotic and the material may or may not be at odds. The operating semiotics may reflect an appearance that is an appearance only without referring to an existing reality or reflecting a reality quite different from the one it appears to reflect.

The ability to create fictions is essential in all intentional acts, in the form of desires, hopes and plans - all looking ahead towards the future. An actor cannot relate to the future without it. Thus such kinds of fiction are a necessary condition for the existence of actors and for constructs as well. But the actors know that it is a kind of fiction and basically use it as a guide for their actions in order to make such - desired - fictions come true and thus avoid less desirable alternative visions to come true.

Delusions and other illusions are, however, a problem because the actor is unaware that she mistaken as to the nature of reality and somehow unable to detect the mistake with the available means of checking and gathering of evidence.

Therefore science by scientific methods is considered essential to wipe away superstition and other illusions that have been used in explaining phenomena, such as witchcraft and consequent persecution. But these issues are still important in modern society. This gives scientists a special responsibility because it is their task to provide basic and trustworthy knowledge. Legitimization of acceptance of fictitious reality always involves the potential danger of persecution, especially if it is scientifically legitimized. Science cannot give up on this contribution without reducing its own status to a system of belief and superstition that is merely at par with other belief systems.

Ordinarily, a world-view is based on a set of functioning methods of recognition that depend of the structure of the world-view, and if this world-view is mistaken, then one may be unable to detect errors, i.e. one may be caught in the illusions. Like in a dream, one may not know that it is a dream and be caught in the events, be out of control, one's ability to function as a constructing actor having vanished.

The ability to create fictitious representations also automatically involves the ability to create delusions, deceptions and even illusions that are difficult or impossible to uncover with existing means. Thus actorship and construction are tied to the notion of reality as a way to distinguish between reality and fiction and must ensure the validity of the ability of the way the distinction reality-fiction/illusion works.

Animals also act on the basis of their perception of reality and they also need to perceive the *real* world and see past the camouflage and deception that exist in their world to deceive the perception of enemies. Thus camouflage and deception do not only take place among humans, but apply in the living world as such. As soon as the life form develops representations of their surroundings, deception and creation of illusions become an issue.

This illuminates why the terms reality and world often are used as synonyms: That something is real means that the representation is correct, i.e. it matches what exists in the world.

4 Reality as actor-world relations

Obviously, reality addresses the system of relations between the actor and her world, the world that surrounds her and of which she is a part (Nørreklit 2006 & Nørreklit 2011). It is because she herself is a part of the world that she needs adequate representations of it in order to function in it.

Thus reality is created in a three-way relationship: Actor-representation-world: The cognitive system of the actor interprets the representation. There is no illusion unless there is an actor to whom the representation creates an illusion, i.e. the belief that the representation represents something real, while in reality it does not exist. A mirage is an example based on physical laws of such a representation. It creates an illusion only if the actor does not know that mirages exist.

Reality: Actor - (adequate representation) – world

Fiction, illusion: Actor - (inadequate representation) – nothing

There is no direct way to distinguish between reality and fiction/illusion. There is no direct access to reality beyond the representation since perception is itself part of the actor's representation systems.³ The only way to recognize the

³ In ordinary terms, seeing and hearing is seeing and hearing things directly, i.e. we do not perceive representations of the things, but things themselves. This conceptualization presupposes that there is no illusion. The reality of sensory illusions illustrates that sense perceptions also depend on interpretation.

adequacy or truth of the representation is by its function, i.e. by testing its dispositions to see whether it behaves and reacts according to the expectations induced by the representation. This leads to a pragmatic learning-based perception of truth (Nørreklit H. et al. 2007).⁴ The lack of functionality is clearly involved in typical forms of illusions. Say a dream: Things in a dream do not behave and function as expected. That is what makes it a dream and not reality. Similarly, the mirage of an oasis in a desert: Although one continues walking towards it, one never reaches it. The representation (perception) does not function as it is expected to. The system of representation does not work. It represents something that is not truly there.

The issue of reality is an ongoing issue in life. Some examples: Relation building is a hot field for reality issues. For instance, flirting is a phenomenon in which it is yet undecided whether there is a real invitation and a real mutual agreement. It is an intermediate stage between relation and no relation. Some people get disappointed when they misread a flirt as a promise, i.e. as a commitment. Some people feel it difficult to create the transition from flirt as an apparent invitation to a real invitation. Later in a relation a partner may be troubled by the seemingly unsolvable question: Does he/she really love me? Also: People have to document a lot of things to authorities and managers, for instance their education and general background when applying for a job. The belief is that the documentation vouches for the reality of the qualifications claimed. However, sometimes the documents presented are fake, and the person presenting herself as a master from a prestigious school may not have any degree. Or, a person may hand in a major work, e.g. a dissertation. But is it the person who wrote this dissertation, or is it a work of somebody else just with a new name? IT business is loaded with fictitious claims - from primitive e-mail phishing to sophisticated hacking attacks - aimed at luring people to give away information that gives access to their accounts. Identity theft is another example, usage of stolen passports, using the identity of a dead people and more. The list of fictions that intend to delude people to a wrong perception of reality is long and ranges from an artificial beard to plastic surgery, from replacing a photo in a passport to advanced hacking, from counterfeits to false money cards. The happy family that in reality is a nasty disaster and the liars who create images of other peoples' weaknesses to cover their deception. The list is long: political deception, spying, strategic deception in war etc.

5 Reality as function

A representation functions if and only if actions, which utilize the expectations that the representation expresses, can succeed in bringing about the expected results. If such actions succeed then the representation is true or adequate. For instance, if the gun shoots when I pull the trigger, then it is a real gun. If it sprays water, then it is a toy, which only looks like and thus represents by pretending to be a gun, but is not. Here is a difference between appearance and reality. The difference is uncovered by the lack of functionality.

The functionalistic perspective addresses the abilities to count on our actions. It is pragmatic in the sense that meaning is concerned with the expectations and that truth is concerned with the possibilities to realize the expectations by appropriate actions. Here, the time horizon is important: the expectations indicate a time horizon. A declining time horizon seems indicative of a dwindling hold in reality.

States of loss of reality are states in which the system of expectation has lost its credibility. The system of expectations is basically tied to the belief system that operates in the society in general or in specific groups or businesses. When an individual makes claims that are contrary to the belief system in a way that cannot be resolved by the procedures of the recognized system, people may find that the person has lost sense of reality. A group establishes procedures for the ways it perceives reality through ongoing discussions and any member who is unable to follow the procedures is dismissed and deemed unable to share the reality in question. This perception of reality may be a scientific paradigm, religious traditions or other norms that determine conditions to be accepted in a society.

Thus there is a system which organizes the claims of reality. The system itself may, however, be problematic, rest on superstition, racist or nationalist prejudices and more. It may not have a credible foundation, i.e. be without credible foundations. Such reality claims may serve narrow purposes but has no scholarly justification and establishes illusions as if they were realities. A pragmatic approach aims at avoiding such prejudices and productions of illusion.

That there is a group or a whole society who agree on a certain reality is no proof that it is not an illusion. All insights and understanding are those of individual actors. The respect for the individual insight and understanding must therefore be cultivated to avoid or diminish collective errors.

⁴ It also explains why the Latin based 'thing'-oriented notion of reality is translated to the Germanic functional oriented notion of 'Wirklichkeit' ("wirk..." = "function/work").

6 Integration: facts, possibilities, values and communication

Actions are to be based on realistic expectations in order to succeed. For expectations to be credible and realistic they must integrate facts, possibilities, values and communication:

- They must have a factual basis. If the starting basis is uncertain and unknown, the outcome is uncertain.
- The outcome must be possible. Thus cognition of possibilities is most important. But the possibilities must be based on, i.e. integrated with, the facts. Speculative possibilities will not do. But if the possibility is factual, then it can be done. The act *can* succeed. Success is controllable.
- The achievement must represent a subjective value that motivates people. Possibilities alone are not sufficient to create action. If the desired values are outside the possibilities, the actor is not motivated to act. Values must be integrated within the range of the factual possibilities, if they are that, then the actors perform.
- Finally, in relations communication is necessary to organize actorship. Communication involving the actors must convey the factual basis, the possibilities and values. If this is the case, then the group works successfully. Thus this integration is a sufficient condition for realizing a target. Conversely, general problems with realizing a target can be diagnosed as lack of sufficient integration.

These four dimensions represent four integrated relational systems.

6.1 Facts

The factual dimension connects the actor-world relationship through observation and empirical information. That something is a fact means that its existence is observed according to good procedures so that there is sufficient evidence to make the claim trustworthy. In one end of the relation, the world end, there is the phenomenon, thing, events and conditions. In the other end, the actor end, there are the observations and the evidence. If the evidence is poor then the phenomenon may not exist.

Thus to call something a fact means that there is a special relation between the actor and that something in the world. Facts are not things in themselves. The idea that facts are special types of phenomena appears to penetrate the debate on facts. Facts do not have their own special ontology. Anything may be a fact provided the appropriate evidence is available to the actors considering it. Thus for there to be a fact, there must be *something*, which is a fact. And for it to be a fact, it must be a fact *to somebody*. For instance, there are 'many more' truths than facts. For any sensible statement, it may be true or its negation may be true. But for any of them to express a fact, appropriate evidence is needed and thus only a few of the infinite range of possible truths express facts. For instance, it may be true that there are 20€ in my valet or it may be true that there are not 20€ in my valet. One of them is true. I do not know which. But neither of them is a fact because I do not have the evidence. When I have counted the money in the valet, then I can say if it is a fact that there are 20€ or that it is a fact that there are not 20€. Thus, the world is by no means a sum of facts. But reality is based on facts.

Therefore, although facts are constructs in the sense that the actor-world relation involved in fact creation is a construct - our analysis accords with the intentions of realism. The phenomena have to exist independently of our perception and evidence in order to be facts.

6.2 Factual possibilities

Further, the intended outcome must be possible. This possibility must not only be a speculative logical construct, it must be a possibility that is factual, i.e. it is to be grounded in the facts - factual possibilities which are possibilities integrated with the facts.

While the factual world largely has an appearance and thus is empirically observable, possibilities have no direct appearance. They are identified by experience and reflection based on systematic logical analysis. Based on given facts reflection can construct logical possibilities by logical operations, starting with the logical negation of the facts: If A is a fact, then non-A is a logical possibility. To narrow the possibilities down to factual possibilities all kinds of analysis and experience are used.

This form of analysis is already embedded in our concepts of the things and phenomena. It is even embedded in the heart of our pragmatic understanding of meaning and truth. Basic definitions of factual possibilities are embedded in the concepts of things where they function as the core of distinguishing real from fake. Things are not just entities with

a certain type of appearance. They are entities that behave in a certain way. The real gun and the toy gun may look alike, but they function differently. The real invoice from the bank and the fraudulent invoice from a criminal may look alike, but they function differently – this means: The possibilities they embed are different. The real gun can shoot with real bullets - the toy gun cannot. The real invoice expresses a legally binding commitment; the fraudulent one does not.

Again we notice that the dimension of possibilities addresses a relation between actor and world when factual possibilities are concerned. In the world there are the real dispositions and causal systems that generate the possibilities in question. In the actor's end of the relation there is the cognitive analysis of the world that enables the formation of concepts and theories that reflect these causal dispositions.

A number of important points relate to factual possibilities. First, they express causal dispositions. That something is factually possible means that given the appropriate and achievable conditions then the possibility in question materializes. If it did not, then it was not a factual possibility. Thus, in the endeavors of construction, factual possibilities serve as the basis for creating causal strings to create advanced results.

Second, possibility is one of a set of concepts in modal logic. In empirical studies the study of necessities has been most important in the endeavors to identify trustworthy causal relations and identify policies and routes of action that leadership claims that one *must* perform – here assuming that there is only one set of possibilities which is therefore a necessity and thus translated into some kind of categorical imperative that overrules any debates as to possible alternative lines of action. However, given that possibilities are not directly perceivable, neither are necessities. They are identified through analysis. Here there is an obvious shortage and thus a huge demand for studies of the construction of possibilities.

A general scientific view has been that the phenomena in space and time are deterministic. However, determinism is an outsider view on the phenomena. But people cannot be outside the universe and cannot be outside their own life. Thus our whole cognitive apparatus, from spatio-temporal perception to concept formation, addresses the issue of how to analyze and construct possibilities. It has been illustrated with concepts. Let me briefly demonstrate this with the spatial structure of perception: From a life world perspective to perceive things in space is to perceive them as simultaneously present and thereby representing a string of alternative routes of action that are possible for the actor. This is the very point in organizing perception spatially - that it creates possibilities among which we can choose. It also outlines impossibilities. For instance, there are two doors, thus I have a choice of which one to use if I want to leave the room. The wall, however, limits my possibilities. When we focus research on the necessary it is like focusing on the wall and not on the door. The doors are important if one wants to go in and out of the room.

A wonderful thing about factual possibilities is that they constitute real possibilities. If one wants to realize a factual possibility, then one *can* do it. There is no question. Such possibilities are essential. There may be several conditions for a possibility to be factual: one must have the resources, the knowledge, the finances, the allowance and more. But if they are fulfilled, then it can be done. This is the most important thing to know for any practice.

6.3 Values

However, in order to do it, one must want to do it. One must feel or believe that it realizes some of one's values. If it represents zero value, or if it represents a negative value, then there is no motivation. To ensure the act to be done one must ensure that the values of people lie within the range of their factual possibilities: The values of the actors must be integrated with the factual possibilities. If the actors believe that their values are not realized in the agenda, then they lack motivation.

The intentional actor automatically tries to organize her situation in a way so that her values are within the range of her factual possibilities. There are many issues in this endeavor such as: How does the actor know her values? How do the values of the actor emerge and develop? Society constantly flashes value images, i.e. social values, which may or may not match or influence the subjective values of the actor. Thus an actor may be more or less aware of her values and may even be misguided as to her subjective values. Here the feelings of a person may be considered as a signal to the person or her partners as to how her values are thriving in the world, thereby uncovering her real subjective values. If she is joyful and happy, her values seem to thrive in her world. If she is angry and anxious, her values seem to be oppressed or threatened in her world. It is therefore important that the communication between actors is sensitive to the various value signals.

Thus the value dimension is also relational between the subjective values of the actor and the objectified values of society. It is obvious that the values of an actor must lie within the frame of the factual possibilities. Consider again relation building: A person is unhappy in love: "He/she does not want me!" – i.e. the value is not within the range of the person's possibilities. One might point out that there are so many other fine men/women that probably would like to

enter a relationship – thus there are plenty of possibilities. But the person is still depressed because they are not the one cherished person. The subjective value must be within the range of factual possibilities for the person to act successfully.

6.4 Communication

To function as an actor, complicated communication is needed that integrates the facts, possibilities and values of all actors involved. For actors to cooperate, communication is necessary. It is, however, necessary that this communication addresses the values and factual possibilities of all the various actors. A communication that abstracts from some of these elements – as for instance purely top-down communication or purely theoretical or technical language - is reductivist because it abstracts from necessary conditions and thus does not convey reliable power to motivate and control the activities. It is complicated to establish such a communication system, and a set of common concepts, a topos, emerges to express the main idea and arguments of the cooperation. It is important that actors are part of authoring the system. Thus the system constantly develops and re-authors itself. Also new actors imply a reconsideration of parts of the system in order to ensure an optimal integration of the actors.

6.5 Integrated units

Organizational structures are naturally systems of integrated units. Each unit has its specific specialized integration. For instance a family is an integrated unit, the departments of a company are integrated units each with their values and specific factual possibilities analyzed in their specific operating topoi, etc.

If the integration fails such that the values are not kept within the range of factual possibilities and the factual basis becomes insufficient to make the possibilities become factual, or if the communication is reductivistic and unable to connect to the values, motives and skills of the workers and customers, then the organization will face troubles, losses and eventually danger.

If integration fails, i.e. if the values are not kept within the range of factual possibilities, of the factual basis is insufficient to make the possibilities spotted become factual or if the communication is reductivist and unable to connect to the values, motives and skills of workers and customers then the organization will face troubles, losses and eventually danger.

There is, however, no theoretically *a priori* correct way to integrate the four dimensions. In the end there is only a pragmatic answer. Therefore the integration, which is a construct, is a pragmatic construct.

There are, however, methods for observing and creating structures of integrated units, and the theories and models are to be considered such methods in that each of the four dimensions are associated with a system of methods: the factual dimension with methods of observation and data collection, the possibility dimension with tools of logical analysis, the values dimension with ethical and interpretative tools and the communicative dimension with tools of rhetoric and communication. The existing operating integrated structures are ‘floating’ units. They change and develop because values and factual possibilities change. Strategic organizational work is constantly concerned with directing the production of organizational narratives so as to integrate emerging values and factual possibilities.

6.6 Philosophies of integration

On the one hand we have a one-dimensional reductivism such as:

- a philosophy of pure empiricism (whether statistics or qualitative studies), or
- rationalism, the purely mathematical economics that analyzes the logical necessities of economic structures, or
- pure voluntarism, the value management which basically is a fascist structure of command stating that employees must do what the upper levels in hierarchy demand and not what their professionalism tells them is good and correct or
- a radical subjectivist approach in which communication alone constitutive.

All these reductivist approaches fail because they have no tools to distinguish between success and failure; between reality and appearance/illusion.

On the other hand, we have the integrational philosophies, i.e. non-reductivism philosophies. A parallel to the present pragmatic constructivism is found in Aristotle’s influential philosophy: His theory of four causes resembles our

theory of four integrated dimensions: To Aristotle, the primary cause is the purpose, the teleological cause. This drives the process. Next is the formal cause. This is the design or plan for the way in which the purpose or value is to be realized. Next is the material cause, i.e. the resources that have the possibilities to make the plan real. And finally there is the effecting cause that sets things in process. An example: *The purpose* is to have a place for a family to live. The architect *draws* a house with the relevant facilities needed. *The materials* in the form of bricks and timber etc. are obtained. The bricklayers etc. *build* the house. This schema of four causes is again a schema of the *sufficient conditions*. That is why it was such a powerful tool.

Modern science rejected Aristotle's philosophy of causes and replaced it with scientific calculation. In philosophy, modernity and the enlightenment split between the reductive empirism (positivism) and the equally reductivist rationalism. Thus a gulf emerged between the various dimensions. Facts were studied independently of logic and modalities (possibility / necessity), values and ethics were demonstrated to be unrelated to the factual world⁵ and communication was reduced to a world of its own in radical constructivist approaches. Even today the struggle between these various forms of reductivism persists.

With Kant a new synthesis / integration between the factual of the empiricist and the logic of the rationalist emerged. This integration between the two dimensions has taken many different forms: the integration between theory and empirical data in traditional methodologies or – following the linguistic turn of the 20th century - between semiotic and the material as in the ANT.

The problem is, however, that this integration is too simplistic. It does not enable an analysis of actions and practice in a way that outlines a framework for the sufficient conditions for activities to succeed and fail. Thus it inevitably leaves open a theory-practice gap. This can be overcome only by deconstructing the material aspect in empirical facts, possibilities and values.

While the Aristotelian integration was related to a static world and implied metaphysical constructs such as the essence of things, no such limitations apply to the present theory of integration.

7 In conclusion

Human beings establish relations with their environment. These relations concern their observation of facts, their analysis of possibilities, their subjective evaluation of the environment and their social position in the communicative system. Things are real and function only if the integration is proper. This means, on the one hand, that reality is a construct – all our relations depend on our behavior, choices and communication. None of the relations exist just by themselves. They all depend on the actors' activities – activities that are subject to all kinds of choice. And on the other hand, it means that this theory also represents a form of realism in the sense that real phenomena are phenomena that exist in the world independently of our knowledge of them, which fictions and delusions do not.

⁵ The is/ought problem, for instance in Hume's guillotine and Moore's open question argument, (Hume D. 1739, Moore, G.E. , Nørreklit 2013).

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