

## DISPOSITIONAL BELIEFS

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### ABSTRACT

Dispositional beliefs are part of an account of belief-formation and of belief entertaining in view of possible action. Belief-formation and belief entertaining are activated from morphological content. So dispositional beliefs are activated from morphological content.

### KEY WORDS

dispositional beliefs, belief formation, morphological content, dynamical system

### CLASSIFICATION

JEL: Z10

## DISPOSITIONAL BELIEFS NATURALIZATION

Naturalization of mind is a wide-ranging project, dealing with reduction, elimination and compatibilism embracing ways to go. Suppose that there are two substances, the mental and the physical. Reductive approach will try to reduce the mental to the physical. Eliminativism will try to show that there is nothing substantial that is left after such effort on the side of the mental. While compatibilism will try to explain both substances in a wide ranging nonreductive manner, that will announce the importance of both areas and their interdependence.

We think that naturalization of *dispositional beliefs* is an important case which may show an interesting way of naturalizing the mind, and which up till now was under-appreciated. We try to give a certain beginning direction to this enterprise.

First we briefly mention *dispositional properties*, which in heydays of behaviorism were used to shed some light upon beliefs. Ryle [1] and U.T. Place [2] wrote about this, among several others. One such property is sugar solubility. We may take a look at the naturalist description of the matter. Obviously, sugar has some physical and chemical structure which is such that under appropriate conditions its property of solubility will be activated. Notice that surrounding circumstances trigger coming into realization of that property. Sugar should be put into water, but of course it should not be mixed into the frozen water. The temperature should be such that the sugar will dissolve. Some people had their concerns about dispositional properties, one of these being that the explanation of dispositional propensity may be circular. They reminded us of Molière's depiction of medical doctors, explaining the effectivity of sleeping pill by evoking *virtu dormitiva*, the sleeping ability. Of course, Molière despises some guys from his times trying to profit from people's ignorance. Obviously, what Molière wished for as against these was a naturalized account of property with some explanatory dignity.

One could take belief to be a kind of *dispositional property* as well. For we have all the time dormant beliefs which get activated in appropriate contextual circumstances. If I talk with you and you remind me of the existence of squirrels, my squirrels related belief will come to the fore. Looking for naturalization explanatory support in such a case we can observe two directions: the naturalistically specifiable basis of the belief in my brain, or again the naturalistically specifiable basis that triggered my dispositional belief to appear in an occurrent shape in the environment of community. Neither of these, it seems to us, will provide an adequate basis for *dispositional belief's naturalization*.

In what follows we will try to sketch a possible departure for dispositional belief's naturalization in as far as the *naturalization of mind* is concerned, knowing full well that a naturalistic account related to community is important, having to do with contextual normative circumstances.

Saying that naturalization basis of dispositional belief is the physical underlying system that allows for belief to be stored and to appear under appropriate circumstances leads to views of emergence or of supervenience. The difference is that the emergence of mental properties one of which is the mentioned belief succeeds upon a physical basis without that an explanation involving general natural laws would be involved. As British emergentists say, we should acknowledge the appearance of the mental upon a certain physical arrangement with religious piety. The supervenience to the contrary provides a general natural law based explanation, with the minimal requirement that identical physical arrangements will produce identical mental arrangements, such as that of occurrent belief. Both emergentism and supervenience are compatible with the relation between physical and mental structures, just that explanation in accordance with natural laws is available just in the second case.

But naturalization of dispositional belief stays restricted. We propose the following in order to provide some ammunition for further investigation. On the side of *dispositional belief*, we

will distinguish between its function in *belief-formation* on the one hand, and between its function in *belief entertaining in view of possible action*. In this manner, we introduce two different accents into our investigation, in respect to the dispositional belief's role. The stress in belief-formation namely is upon the causal environment, the space of causes. Here we have to do with the role that dispositional belief plays in categorization of the encountered stimuli. Dispositional beliefs on the other hand can motivate our actions, and this has to do with the normative *space of reasons*. In the first case dispositional belief provides reason for categorization, and in the second case it provides reasons for possible action. I see a cup of tea on my table and I *form* belief that there is a cup of tea, using dormant categorizing capabilities of my corresponding dispositional belief. The formation of this belief and its dispositional storage gives me the ability to reach for the cup of tea and take a sip, even after an hour or so since I have formed the belief. Dispositional belief will then shape the direction of my possible actions.

It seems that the simple *physical basis – the structure of mind* relatedness is not sufficient for a viable *naturalization* of dispositional belief. We claim that an appropriate naturalization of dispositional belief is possible if we envision a *middle dynamical level* of cognitive system's description. Just such an approach will offer appropriate naturalization basis for dispositional belief. The introduction of middle level between physical and mental realms is nothing special. We talk about three levels of description concerning cognitive systems: the description at the physical level, the one at the upper cognitive level, but there is as well the description at the middle level establishing relation between the physical and the *mind*. A viable naturalization of mind, again, requires an introduction of middle level. We believe that this level is *dynamical*, and that it cannot be described by exceptionless general rules. *Naturalization of dispositional belief* thus requires middle level of cognitive system's description dynamics. Cognitive background enabling appropriate naturalization of dispositional belief is at the *dynamical* middle level of cognitive system's description. Given that dynamics is involved, the appropriate naturalistic description of the middle level is mathematical and not inferential, representations and exceptionless rules involving one.

We will proceed with a sketch of an argument first, along the following lines. Dispositional beliefs are part of an account of belief-formation and of belief entertaining in view of possible action. Belief-formation and belief entertaining are activated from morphological content. So dispositional beliefs are activated from morphological content.

## **DISPOSITIONAL BELIEFS ARE PART OF AN ACCOUNT OF BELIEF FORMATION AND OF BELIEF ENTERTAINING IN VIEW OF POSSIBLE ACTION**

I believe that there is a cup of tea in front of me on the table. And I believe that it would be appropriate for me to help a person in need. The first of these beliefs is descriptive and I have acquired it through my perceptual capabilities. The second one is normative and I take it to be the result of my cultural environment and educational impact. As I write these lines, I form the first of these beliefs, for I notice the cup being positioned left of my computer. This belief was brought into the center of my attention once as I felt that I needed some tea, looked for a cup, and spotted it. Then I said to myself: "Well here is the cup." Then I took a sip of tea. As follow-up of all this, the belief concerning cup became *occurrent*, it took the position of my *total cognitive state* at this very moment. The other mentioned belief of mine, about the appropriateness to help the people in need, was not *occurrent* at that time. Rather, it was sitting there in my background belief system, waiting for a suitable occasion to trigger it, so that it would then become an *occurrent* belief. At a certain moment in time I only form one *occurrent* belief. Other beliefs are there in the just mentioned belief system, waiting in the background. There are many of them, encompassing everything that I know, in the widest

sense of the word. I believe that cats are four legged animals. But I did not believe this in an occurrent manner before my attention was driven to it. So up to this point in time the mentioned belief was dispositional, slumbering in the background of my cognitive system. Each of these *dispositional* beliefs is waiting for a suitable context or circumstances so that it would be able to enter my attention. *Dispositional* properties such as that of sugar being soluble enter upon the scene once as the environmental circumstances are appropriate. Sugar has its solubility property all the time as it is waiting in the dispenser. But the dispositional property only comes to life in suitable circumstances, such as when I put a spoonful of sugar into my cup of warm tea. Similarly, dispositional or standing beliefs become occurrent when I encounter appropriate contextual circumstances.

First we have to take a look at the status of belief. What differentiates belief from the content – which may be featured in this belief? What makes the belief that there is a cup different from the psychological content figuring the cup? The answer may be that content is an objective commodity, and that entertaining such content may be seen as a shared enterprise in which several of us can take part. Such an objective kind of content – perhaps proposition – entertaining and sharing may be then quantitatively compared and traded, and it may be called *credency* [3]. If myself and you disagree in respect to some of our credences, we may compare their quantitative impact, each of us giving way to the other, and we then finally conciliate in direction of a middle ground. This is not the case with *beliefs* though, for we hold these in an all or nothing manner. We will not be easily ready to give up on our beliefs, until there is something such as an underlying change occurring in our overall attitudes. Our political beliefs may be a case in point. As well there is quite a changed perturbation of my system when I discover that something that I believed to be a hamster is actually a rat<sup>1</sup>. We are inclined to take beliefs that we entertain, in dispositional and then in occurrent manner, to be part of our rationality, and thus to be our cherished property. They are not something objective but rather a first person point of view matter. This goes for dispositional and occurrent beliefs. Some of these are linked to normative pressures that we comply to, and others to the goal of truth. The evaluation of beliefs, however, in counter distinction to that of credences, succeeds through *phenomenological experience* of beliefs inhabiting the space of reasons, although they may well be produced in the environment proper to the space of causes [4].

The question now is whether dispositional beliefs have some role to play in my *belief-formation*, and in my *entertaining beliefs* in view of a possible action [5]. *Belief-formation* of factual beliefs happens in the space of causes. We start with *factual* beliefs because they avoid discussion of possible realist commitments proper to normative or moral beliefs. Perceptual belief would be a case in point. I form factual belief about a chair being over there by observing the chair, thus entering in causal relation to it. But this external causal relation is not sufficient for my formation of the mentioned belief. Although chair is in the same causal relation to myself as I am in respect to it, it is more than doubtful whether it would be able to form a belief about myself being there<sup>2</sup>. An answer is that myself, in counter distinction to the chair, possess the ability to *categorize* features and entities that I happen to encounter. But just what would this ability consist in? One answer at hand is that it is there in *dispositional content*, in my dispositional belief involving the chair. But is this explanation circular, given that belief-formation concerning the chair relies upon the dispositional general belief about the chair? The explanation is not circular because of the following. We try to explain *belief-formation*, namely how a belief gets formed, dealing here with factual perceptual *occurrent* belief as the result of this process. But occurrent belief is not dispositional belief<sup>3</sup>. And dispositional belief just helps occurrent belief to be formed by offering categorization support for it. Besides to the external causal support of relation with the chair, there is as well the support of *dispositional belief* that allows me to recognize the chair and categorize it. This usually succeeds in a

moment, in a fraction of a second. Dispositional belief about the chair that is there in my overall belief system enables me to form perceptual belief about the chair<sup>4</sup>. Connection between the stimulus that is coming to my system and between the dispositional belief allowing me to recognize it is of the predominantly causal nature, perhaps quasi-causal would be an adequate term for describing it. There is no substantial inferential process involved into such recognition and categorization, it rather proceeds kind of reflex-like. Dispositional belief is a belief all right, but it acts in a directly active causal manner by providing categorization to the encountered stimuli. The usual perceptual belief-formation that we talk about here is of course different from my original belief-formation which allowed me to form the now existing *dispositional belief* in the first place. At that time I had to learn what a chair is, and such a learning is portrayed as consisting of several hundred trials at least in the proceedings of connectionist networks. Once the category is learned though and once as the dispositional belief gets formed, there is the ability to apply categorization to the possible vague encountered approximations of the category in one's surroundings. This is a brief account about how dispositional belief is involved in *formation* of perceptual beliefs. Dispositional belief provides ability to form an occurrent belief, through the quasi-causal impact of categorization.

There is as well the role of dispositional belief in *belief entertaining* in view of a possible action. Beliefs that are stored in my cognitive system wait for an appropriate occasion where they can eventually lead to my action. These are *dispositional beliefs* as well. But their role is different to the one that they take in categorization which is linked to belief-formation. Now we deal with the *motivational* role of beliefs. Once the motivational role is recognized in dispositional beliefs, its direction is not easily reversed. As it is customary for dispositional matters, dispositional beliefs exercise their possible agentive role in contextually appropriate circumstances. In belief-*formation*, standing or dispositional beliefs have categorization role and in this sense they figure as *reasons for categorization* of the encountered items. They are thus partial reason of belief-formation. Dispositional beliefs are as well *reasons for action*, for a possible action, and this is quite a different role from the former categorizing one.

Dispositional beliefs inhabit the background cognitive system, or belief-system. There is presupposition that they are atomistic entities, with a role that is close to propositions which enter into inferential relations, sometimes with other supposed entities such as desires. If I undergo a desire to drink some beer, and if I also entertain belief that the beer is in the fridge, then I am motivated to go to the fridge and fetch myself a can of beer. Believing  $p$  and as well believing  $p \rightarrow q$  brings me to believe  $q$ . Dispositional beliefs look to be like pebbles waiting to be involved into the game of inferential links.

## **BELIEF-FORMATION AND BELIEF ENTERTAINING ARE ACTIVATED FROM MORPHOLOGICAL CONTENT**

Given that beliefs are part of one's cognitive, psychological constitution, it is a pertinent question what kind of model is appropriate as an account of human cognition. Often, rationality of human psychological processes is emphasized, and inferential processes are provided as a model. Beliefs are then taken to be atomistic ingredients fitting into rationality engaging inferential relations. They also provide reasons for the inferential flow to carry on. Language of thought<sup>5</sup> [6] would be one such model, where representations end up as atomistic points pushed around by inferential relations. Language of thought model of mind was inspired by the classical computational von Neumann architecture, trading on rules and representations. Rules in such a system need to be tractable, and the supposed atomistic nature of representations helps them comply with this direction. Such classical computational model has advantage of putting atomistic beliefs in an inferentially ordered overall rationality displaying system.

As against classical computational architecture inspired model of mind, the so called connectionist or parallel distributed processes involving systems were proposed, inspired by connections between neurons and their intertwined paths such as these that may be found in human brain. Connectionist approach is not inferential rationality friendly as was the representations and rules involving model. Rather, direct responses to the encounters of the system with its surroundings and empirical reactions are important here. *Learning* as repeated exposure to stimuli with their always changing details is embraced. Through such exposure patterns are learned by the system. System recognizes patterns after repeated encounter with them in variable conditions.

Three levels of cognitive systems' description were proposed [7]. The upper level figures representations. The lower level takes care about physical implementation of the system. Whereas the middle level of system's description provides mechanisms enabling and regulating appearances at the upper level. In the classical computational model of mind, inferential links are to be found at the middle level, determining the appearance of presentations as total cognitive states at the upper level of the system's description. Mechanisms at the middle level of cognitive system's description enabling appearances of total cognitive states at the upper level are different in connectionist networks and in abstract dynamical systems that are inspired by these. Such an approach allows for *dynamics* and it does not depend upon rules<sup>6</sup>. Once as one presupposes the existence of a dynamical system at the middle level of system's description, the appearance of total cognitive states at the upper level gets supported by dynamical interactions. Following such a departure one may doubt that total cognitive states are atomistic and that they appear as the result of activities guided by classical inferential relations. Rather, patterns or representations are positioned in their *dispositional* form at the middle level of dynamical system's description as attraction points. Once as forces at the multi-dimensional landscape navigate towards a certain point with sufficient insistence so that they make a momentary stop there, this one is displayed at the upper level as a total cognitive state. This intractable dynamical middle level of the system that is inspired by but is not identical to the connectionist network's computational architecture, may be called *morphological content* [8, 9]. Morphological content is an overall dynamical system including everything that one knows, which is not occurrently but *dispositionally* positioned in the background of the multi-dimensional landscape. Innumerable possible activation points at the dynamical multi-dimensional potential activation landscape may be seen as dispositional beliefs. This holistic background is not tractable and neither is it itself explicitly presented at the upper level of total cognitive states. Multi-dimensional landscape is inspired by connectionist networks whose activation environment consists of numerous potential directions, called dimensions. Such a landscape is not presented at the upper level of system's description, at least not in a direct manner. But it is again present there in the way that it *chromatically illuminates* total cognitive states once as they appear at the upper level<sup>7</sup>. We may now say that dispositional beliefs are embedded into this dynamical morphological content at the multi-dimensional landscape proper to the middle level of system's description. They are positioned as activation points at this dynamical landscape. As system of dispositional beliefs they exercise their impact upon each of their peers, as well as at the upper level featuring total cognitive states. This presence of *morphological content* has an impact upon both belief-formation and upon belief entertaining in view of a possible action.

Why should atomistic nature of beliefs be abandoned? This hangs together with the dynamical nature of cognitive system such as it is there. Notice that one faces a constant influx of information which one experiences. Although I am in my room that is really static as compared to a crowded city street or windy and steep mountain path, there is abundance of information that I process at each moment. The light coming through the window is

constantly changing, following the interplay of sun rays with the moving clouds. There is some sound that I barely hear from the nearby room, the typing sound of my keyboard, and so many other humming alterations. I also experience my position of sitting in my chair as I type, the specific warmth of the air, the pressure of my body upon the chair exercised by gravity. All these and many more pieces information are coming to me all the time. Some of these are noticed and other build the background which enables this noticing to occur. All along this, some of information is stored in my system, whereas so much more of it is there in what may be described as an unconscious manner. Notice that cognitive system goes on with its activity all the time. Even during the night as I sleep there are some dreams, and information in my background keeps to be reshuffled. Some of this information is accessible to consciousness under some circumstances, and some information in the system is not so accessible. Considering all this, it is plausible that beliefs, such as dispositional beliefs, are in the grip of *dynamical* information impact all the time. But there is as well *constancy* in beliefs, according to their content that allows their categorization role to unfold itself.

The holistic Quinean picture can be of help here. Perhaps the most important question for Quine was that of explaining how the information that we empirically gather at our receptive surfaces (audible, visual and the like) ends up constituting the shape of our developed theories. His criticism of analytic – synthetic distinction proposed the picture of scientific theory as a bunch of concentric circles, whose kernel consists of basic axioms that cannot be abandoned, such as the law of noncontradiction, and whose borders are under constant impact of empirical information [10] (just as we have described it for our perceptual situation as well). These external matters have impact upon outer embedded circles, but in principle their transformative force does not touch the kernel. But kernel itself may also be transformed once as the impact of the outer information comes about with sufficient strength. This is a picture of Quinean holism that can now help us to explain the position of dispositional beliefs.

First we take a look at *belief system*. Each of dispositional beliefs inhabiting it is under constant dynamical pressure. Dispositional beliefs as points at the activation landscape may come into dynamically ever new relations, given that their distance at this landscape is constantly varied under pressure of incoming information, reshuffling the situation. This can give a picture of the background morphological content upon which dispositional beliefs or potential total cognitive states are positioned as so many attraction points.

Each dispositional belief itself, again, may be depicted as consisting of invariable kernel with the surrounding border where there is constant impact of incoming information from the system. But even the kernel of such a dispositional belief can be put under question if there is sufficient pressure on the periphery. This gives an idea about belief's constancy once it is there in the morphological background. Belief may be changed though once as the impact of the entire environment that it inhabits is altered.

This goes for *belief-formation*, where the dispositional belief will imprint its mark upon the incoming information, by categorizing it. The dispositional belief's kernel will be active here, providing justification for categorization. The *entertaining* of belief is even closer to the holistic kernel and periphery picture, showing the tendency of beliefs to persist in its kernel, all along the peripheral accommodation, encompassing such matters as belief's vagueness. In entertaining belief as reason for a possible action, there is motivation attached to its relatively unchangeable kernel. Just under sufficient pressure from the periphery will there eventually come the change of motivational direction provided by belief. In such cases, the whole of belief system would change in order that that belief's kernel will display different motivational weight. All this becomes manifest once as both belief-formation and entertaining of beliefs in view of a possible action are seen as forthcoming from the dynamical background

morphological content shaped belief-system, with its kernel and periphery involving structure. Both kernel of the dynamical system and its peripheral pressures may as well be used for an account of dispositional belief's vagueness. There is no wimpy boundary that would account for the possible qualitative transitions. Anyway, morphological content dynamical nature fits well the behavior of dispositional beliefs. As attraction points at the multi-dimensional landscape they offer stable categorization support in belief-formation, and motivational support for possible actions. Holistic morphological background exercises its causal impact in the categorization case, and it is reasonable impact in the motivational case.

## **THEREFORE, DISPOSITIONAL BELIEFS ARE ACTIVATED FROM MORPHOLOGICAL CONTENT**

What are *dispositional beliefs* if we take a look at them from the holistic dynamical background system of the morphological content perspective? They are *activation points* at the multi-dimensional activational landscape of morphological content. There are ongoing pressures all around them, as the system changes under experientially incoming variation, all in trying to preserve the needed constancy, both as a whole, and in respect to its many activation points. The expression morphological content turns our attention away from the implications of the name belief system, which aims to depict individual beliefs as atomistic entities that form a *net* through substantially inferential relations. Perhaps this is close to the coherentist epistemic quantitative graded support picture, with its displacing the evidential support from its privileged place<sup>8</sup>. Once we take morphological content as our departure, we can realize that there is constant pressure exercised in respect to a certain dispositional belief, from the dynamical happenings in the system as a whole, and in some of its regions. Dispositional belief is namely something such as a *point* positioned at the multi-dimensional dynamical activational landscape. The surroundings of a certain point, of one specific dispositional belief, will be agitated and partially transformed as the dispositional belief will adopt its occurrent role, be it in belief-formation, or in belief's motivational entertainment. So periphery of that point changes all the time, supporting through its variation in a kind of adaptive darwinian spirit the constant kernel of dispositional belief through its adaptive activity. The beliefs' kernel stability increases as it complies to the changed support through its surrounding landscape.

What is the activational role of morphological content in belief-formation? Dispositional belief is a floating point at the morphological landscape. As it is used for categorization of encountered items or features, its persistence increases. If there is a link between activation of one point leading to another point in classical terms this may be called inferential relation. But in the morphological content dynamical perspective inferential relation is just one between several supporting relations. A special and important case belongs to the chromatic illumination that comes as an indirect qualitative impact upon a certain dispositional belief from its surrounding. Inferential relation is just a certain link between the positioned points, which comes embedded into dynamical background surrounding, this impact showing itself in an indirect qualitative illuminating manner.

As a certain point at the morphological landscape becomes a *reason*, this time not for categorization, but for a *possible action*, its surrounding (the surrounding of this dispositional belief point) provides *motivational direction* to the agent who entertains such a dispositional belief. Motivation of a certain belief therefore again relies on an *indirect* impact that the point's, the dispositional belief's surrounding, namely the embedding multi-dimensional landscape, exercises in its respect. If I am motivated to go hiking, this specific hiking-belief comes as embedded in relation to several other points at the landscape, such as my awareness of hiking impact upon my health prospect and many more reasons that I can think about as related to this. If I go hiking repeatedly, the motivational impact of my dispositional belief in



this regard, the activation points, gets boosted through the background connections related to other points, to other dispositional beliefs at the landscape, as forming of habitual connections and *patterns*. The formation of such patterns itself displays impact of the morphological content. Notice that patterns in question may link different dispositional beliefs as activation points between themselves, occasionally producing a new point, a new dispositional belief.

The fact that morphological background landscape with the morphological content activates beliefs opens a question about such dispositional belief's justification through such activity. Justification is an epistemic matter. There is a thesis that justified belief provides justification for action, except for what may be called deviant cases [11]. But justification for a certain belief comes from the support of this belief from its surroundings, encompassing such matters as *gettierized* worries. And this surrounding is a feature of morphological content, dynamically weighing and supporting a certain dispositional belief as activation point at the multi-dimensional activation landscape. From here morphological content activates justification profile of dispositional beliefs.

What about belief-*formation*? It would be quite implausible to look at categorization ability of dispositional belief, in face of encountered situations, as happening without support of its environment, in kind of atomistic manner. To the contrary, categorization, especially in variable perceptual circumstances say, will be successful just in case there will be the impact of the activation point's surrounding landscape, chromatically illuminating the encountered scene. So again it is morphological content that activates dispositional belief.

## REMARKS

<sup>1</sup>Forming of a pattern in this background sense exercises its influence upon appearance of specific patterns as total cognitive states, and upon the shape of their dispositional storage. Compare patterns coming to surface in moral belief formation. Phenomenological experience of moral judgment formation is provided by Koehler's friend Maurice Mandelbaum [12]. Here is a story told to us by an old lawyer friend. On the occasion of his Thai vacation a guy saw a nice looking hamster and took him home as a pet. Then one day his cat disappeared. He took the hamster to the vet, and this one said: "Where the hell you have got this creature? It is a kind of oriental rat, so no wonder he ate the cat."

<sup>2</sup>In terms of intentional relation, the question to be answered here is to explain how it is possible that I form a belief about the chair, whereas the chair is not able to form belief about myself. Chisholm [13] posed this question, answering with the primacy of intentional upon the basis of an evidential relation.

<sup>3</sup>By the very nature of dispositional belief this one is general in respect to its content, which is different from specific occurrent beliefs. Categorization ability of dispositional belief goes together with its functional generality.

<sup>4</sup>The categorization contribution of dispositional belief to the formation of occurrent belief succeeds in a reflex-like, intuition displaying manner. This shows dispositional belief's effectivity in categorization to be causal-like and to proceed by avoiding inferential step-wise manners.

<sup>5</sup>Language of thought rationalist model is opposed to behaviorist and pragmatist trends. Both atomistic representations and inferential setting provide reasons for functioning of computational processes. Systematizability and productivity provide basis to the structure.

<sup>6</sup>Dynamical system is described mathematically by arithmetic means and not by the logical inferential relations.

<sup>7</sup>Chromatic illumination may be illustrated by the sources of light that illuminate the scene, providing a specific qualitative feeling to it, without that they would be themselves depicted in the scene. This approach may be used to describe the impact that reasons exercise upon our actions.

<sup>8</sup>Keith Lehrer [14] vs Roderick Chisholm, in a broad outline of epistemic justification.

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