Metarepresentations and Paradigms

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Abstract

Following "An Approach to the Physics of Complexity"[1], we generalize the intellectual frame of general concept and try to draft a universal phenomenological instrument of perception and representation of knowledge, the paradigm. The theory of these universal phenomenological instruments we call the Theory of Paradigms.

We compare the traditional and the paradigmatic approach, and we show the relationship and the place of metarepresentations in the matrix of paradigmatic archetypes (section 2.7).

Content

Chapter 1, Paradigms and Processes, the Initial Paradigm

1.1 What is the task?

The semiotics deals with three basic phenomena: sign as the image of thing or act (syntactics), handling with signs as the indirect fit of dealing with things (pragmatics), and meaning of all them as the reference to some other things or acts (semantics). The semiotics – free after Ferdinand de Saussure[2] – uses the terms *syntagma* for sign and its composition, *paradigm* for example of handling with signs, and *semantics* for connotations of meaning.

We develop and generalize the concept of paradigm as an implicit process of behavioral generation. Based on our generalized paradigms we try to understand all four: sign, handling with signs, connotations of meaning, and the paradigms themselves. In the following, we omit the word "generalized" while speaking about paradigms in this sense.

We observe that in any activity we are working with features like green, red, hot, stupid, visionary, cold, big, little, mild, hard, brutal, old, young, existing, not-existing[a], here, there, above, under, between, within, inside, outside, single, bounded, restricted, limited, unlimited, open, closed, connected, matched, whole, destroyed, solid, fluid, understandable, known, forgotten, loved, dead, born, yours, hers and so on.

We analyze and interpret our perception and we find
- A set of qualities, which are names[b] or signs of features;

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[a] Some of the features are features only in a specific context.
[b] Features are measurable qualities are not.

- Somebody or something who/which shows behavioral activities. We associate him/it with subject, observer;
- The matter of these activities, which we associate with objects;
- Difficulties to understand clearly, what we are doing, why we are active, and how good is our activity;
- Difficulties to understand clearly, what is good, what is will, why and how we want to be and to do well?

We are not able to deduce answers or explanations of such an analysis and such questions. However, nobody and nothing except us are responsible for the answers.

What can we do? We generate some special forms of behavior and *we decide* that these forms of behavior are the answers to our questions. These forms of our behavior have connotations of the consequences concerning us and are the conditions of our existence.

A long experience in dealing with such questions and answers forces us to discover the *phenomenon of the consequences* of our activities. For instance, if we saw off the branch on which we are sitting, we will fall down. If we do not use words in the right order, we do not make a meaningful sentence.

How can we realize our responsibility for the answers and therefore for the consequences of our behavior? We create and manage the special behavioral instruments for the realization of our activities. Such instruments are for instance:
- Decisions
- Features
- Comparison
- Processes
- Categories
- Names
- Labels
- Qualities

- Operators
- Maps and mapping
- Concepts
- Strategies
- Structures
- Rules in general and logics in special cases
- Representations
- Metarepresentations
- Paradigms …

The list is obviously not complete of course.

These cognitive and mental instruments build some close connection and are not arbitrary in use, but also not a priori defined or deduced. In this sense, they are building a *system of instruments*. May be that the connection of instruments will be significant different if one of the instruments works in some different way.

Therefore, these behavioral instruments – as categories, concepts, features, complexes of features, and paradigms – build systems. In each system of instruments, we find the respective hierarchies, dealing rules, values, and manner of representation, believability rules and more. The term of "representation" in respect to the initial paradigm, we interpret in the beginning of 1.2.

Some of these systems of behavioral instruments seem to be not compatible with other ones. They all are grown up in history and each of them was proficient in their time and their cultural context. We want to learn of all of them.

Then we must discern between the different systems of mental instruments. The mentality [3] is a special kind of behavior. The preference or selection of one system is *a decision*. This decision makes the *primary context* of the deal with recognition of the phenomena of being.

To realize the decision one must be able to represent it. One must be also able to evaluate how good the representation is inherently and how good the representation is for some purpose.

Our task is: We want to construct the possibly ***universal representation of systems of behavioral instruments***.

We call the *systems of behavioral instruments **paradigms***. We call the representation of systems of behavioral instruments *Theory of Paradigms*. Our construction should also allow comparing and valuating any systems of behavioral instruments.

*We call **metarepresentation** the representation, which makes it possible to valuate and compare representations.* Later we will show that the term "metarepresentation" corresponds to our term of "*small paradigm*".

1.2 Initial paradigm, the beginning can be only a phenomenological one

Historically the semiotics ties in with the "symptom-logy" of ancient medicine. Like (not only ancient) medicine, the semiotics deals indeed with quite complex phenomena: the phenomenon of physician, one of patient, and one of healing. In our context, we speak about observer, entity, and deal of or with all three together: *observer, entity, and deal*.

We see four types of dealing. One is the *recognition* of things, symptoms, roles, positions, relations, and so on. The second one is the *recognition and evaluation of recognitions*. The third one is the *creation* of new things, symptoms, roles, positions, relations, and so on or the reproduction or the reconstitution of them. The fourth one is the *production* of the same items like the third one, however not anyhow, but *with the a priori exactly defined results*.

All this requires a lot of things and abilities, but some of them are indispensable and generally essential to make sense. Such elementary things are memory of the dealing entity and ability to map events in the memory and to match them inside the memory.

Pure phenomenologically without any further explanation we set as understood **the term "representation" as a sign of memorizing, mapping, and matching of any events by the dealing entity**. The *dealing entity* we call previously *observer*.

All this might be accepted as *preliminaries of the initial paradigm*.

The most general form of representations of the being is process. We want to show, how we can describe processes and how to deal with them.

To illuminate our approach we remark that our approach has some kind of *a priori* scheme of possible recognition on a higher level of complexity. Then it is a kind of *preliminary paradigm* that initially replaces the needed and yet missing experience.

On this way, we break the "natural" *vicious circle*, consisting of that: *we need already the experience to describe the experience*. Such preliminary experience will now be replaced through our decision for the intuitively or hypothetical based initial paradigm.

Such *initial paradigm* can be only a phenomenological one. Historical examples for initial paradigms are
- Creation of the world like genesis-description of the Bible
- Genesis of the world by the Greek myths Gaia – Chronis – Zeus
- Nascence of babies in the head of cabbage
- Appearance of order within initial Chaos
- Origin of Universe by the Big Bang from a singular point

- Emergence of the thinking ability within the famous rip of the prehistoric man Adam, and so on

For initial paradigms, it is the most important aspect to have an initial point of view for starting, and not to be true, whatever the cost. The different initial paradigms can be admittedly more or less productive for the further development of understanding.

One of the models of such phenomenological paradigm with the simplest formalism we can describe as a set of formal creation and annihilation actions in the corresponding feature spaces (see 1.7). In the simplest version, the phenomenological set of creation and annihilation actions we can construct like the method of the secondary quantization of the formalism of the classical Quantum-Field-Theory. One of the best descriptions of secondary quantization see in [4], one of the shortest in addendum to [5].

The reader, who wishes to be impartial, may classify our decision as an arbitrary one. We mean indeed that the *semiotic research* should recognize all possible kinds of initial paradigms. The traditional semiotics has of course different initial paradigms in differently times and tastes. To valuate and compare them we need at least the small paradigm of semiotics, which we should yet develop.

In any case, we think that the initial paradigm or paradigmatic approach can be only a phenomenological one as a *weak hypothesis* that we suggest herewith. The axiomatic form of the Theory of Paradigms as a *strong hypothesis* is possible only in a very mature stage of its development.

1.3 The paradigmatic approach

In our paradigmatic approach, we reflect the experience of Theoretical Physics and of Mathematics[6]. The paradigmatic approach we see as an

attempt to generalize the Physics beyond the boundaries of the standard concepts of science. For this purpose, we must generalize the item of concept[7] from logical to the mental one. The generalized item of concept – the paradigm – should be able to generate concepts and to show their boundaries of validity. With other words, paradigms should be able to generate concepts together with their contexts.

The main feature of the standard *concept of science is that the result of the scientific work may not depend from the scientist*. This is a requirement of *objectiveness*. This requirement leads to restrictions of the set of scientific researchable phenomena. The result is that scientific researchable phenomena would be virtually quite simple ones.

The traditional understanding of science expels all phenomena, in which an agent creates, eliminates or varies his world or some part of it including himself. Therefore, the traditional understanding of science expels the phenomenon of the will and forces an a priori conviction that the free will should be impossible.

The framework of paradigmatic representations should be able to deal with the researched issue together with the researcher, to operate with the phenomenon together with its observer, and to perform the "signifié" together with the corresponding "signifiant".

We expect that the description of a conventional issue in the frame of paradigms will pass into valid scientific results, if the contemplator fits the paradigmatic context to the corresponding context of the issue-relevant science. In this sense, the *principle of correspondency* will be one of the criteria for consistency of the paradigmatic representations.

The paradigmatic approach has to generalize the scientific efficiency of handling with simple phenomena especially with methods of Physics and Mathematics for the representation of the entirety of events including ones of creativity and of will. In our opinion, what we are doing here, should be the *fundamental task of Semiotics*.

1.4 Observer and observable truths

The physics knows from the beginning that each sentence about some physical event, thing or fact has sense only in respect to the framework of the observer, who observes the event. If the sentence is correct, then its content represents the observer-related *relative truth*. The representation of event, thing or fact is then true in respect to the corresponding observer especially to observer's framework.

The *classical physics* sets the possibility and existence of a universal or absolute observer. The content of correct sentences in the framework of the universal observer is the *absolute truth*. The absolute truth of classical physics is the complete representation of the event, thing or fact.

The *classical quantum physics* renounces the necessity of the completeness of the absolute truth. The uncertainty relations express that the completeness of the describing of classical physics is not always possible or that the quantum-mechanical description is just the maximal possible completeness of the describing at all. The quantum-mechanical truth stays also absolute, but it is not complete in the old sense of classical physics. This quantum-mechanical density-matrix expresses the maximally possible truth about observed phenomena.

The *relativistic physics* renounces the possibility of an absolute observer. All observers in the relativistic physics are equivalent and no one of them is absolute. Thus, there is no absolute truth and there are many different truths corresponding to the different observers, and each of them is equivalent to others.

The satisfying *unification of the relativistic and quantum physics* seems not be yet found. One thing is clear: the truth in the future physics will be non-absolute and non-complete in the classical sense.

The first step of the paradigmatic approach should be the

generalization of the relativistic principles and the renouncement of the traditional requirement of the completeness of truth. The *paradigmatic truth* is non-absolute and non-complete. Moreover, the different truths of different observers in the paradigmatic approach must not be equivalent. The paradigmatic generalization of the relativistic principles implies the *renouncement of the equivalence of the observers* in the general representation of systems of behavioral instruments.

In this sense, the paradigmatic truth is in any case context-sensitive. It depends from the context of the observers and especially from his, hers or its *decisions*.

1.5 Qualities and entities, the minimal paradigm

With the paradigmatic approach, we have no explicit help from any a priori knowledge. Therefore, each understanding begins as an initial biographical act of an observer. For us it means that we begin our representation of the initial act of the observer on the phenomenological way. Thus, we realize the initial paradigm (see 1.2).

The observer begins with the generation of initial differentiations within his implicit context. This context is present, but not expressed as a result, i.e. there is no actual representation of it.

We assume purely phenomenological that first of all the observer appears, may be spontaneously or on some non-clarified way. He differs himself from all others. This is the first differentiation in his representation. Then he continues his observation activity in an open set of differentiations.

After some first differentiations, the observer notices that he is not able to differ between some results of his observations and some other ones.

At the same time, he is just able to differ between some third results and some fourth, fifth and so on.

For that reason, the observer detects different groups of observation results in his memory. One kind of the groups consists of non-discriminable elements. It does not matter if the observer cannot or if he does not want to discern the results of his observations. In this group, each result displaces each other because of their non-discriminability. Consequently, the observer can represent the whole group with an arbitrary element of it.

We call such groups of non-discriminable observation results the equivalence classes. **We call "*quality*" the representation of an observation result from its corresponding equivalence class, which is differed from other classes.** This representation is of course valid only for the observer as a generator of the observation and for each member of his equivalence class i.e. for the equivalence class, in which the observer is an element.

The question, if we need some observer of observers in the paradigmatic approach, has its answer in the construction of the observer. If the observer is self-observant, then the answer is *no*. If the observer is not self-observant, then *yes*. The property to be an observer is a quality. If we are handling with non-self-observant observers, then we need in the fully paradigmatic approach a hierarchy of observers at least until the hierarchical highest observer will be a self-observant one.

The quality is then a result of the specific kind of observation, which builds an equivalence class represented through an arbitrary element of it. The non-discriminability of the elements (single observation results) is decisive for the constitution of quality also if it seems to be an artificial one. In the last case, the quality is an artifact. The reasons of the observer to build eventually a quality, which seems to be an artificial one for another observer, belongs in any case to his actually context. The last is the case if the observer lies.

Thus, the **quality** is the result of a special kind of observation, which is a special performance by the observer. The observer produces with the special performance the equivalence class of elements while he ignores all that what differs between the elements and picks or builds only what differs between the elements of the equivalence class and the remaining world. What differs between the elements of the equivalence class and the remaining world is just the quality defined by the special performance of the observers.

The tentative outline about the observer gives the following scheme: observer–context–result.

Observer: The observer exists. The observer produces results of observations. On the level of initial paradigm, it is important, that the observer produces results, but not necessarily to know, how he is doing it.

Context: The observer has a context. To his context belong: we; our comments; circumstances of the observer's biography including limitations of his abilities; and our imagination about what could be happen if his limitations would disappear partially or entirely.

Results of observation: The observations are intentioned as the *repeatable forms of* behavior of the observer. We understand the repeatability as given if the same observer as well as another one or even an observer of totally another kind can build in principle the same equivalence class of the intended result.

The interpretation of the expressions "in principle" and "intended" of previous paragraphs is the thing of observer's context. It must not be explicit in the practical activity of the observer.

The existence of circumstances, principles, influences, and others, which are working, but not directly represented in the results, we call occult or *implicit existence*.

The generation of qualities is the minimal function of the observer in the paradigmatic approach.

Based on his activity as minimal function the observer can mark the stable differed phenomena of the world with the labels of qualities. The process of marking and building of labels we will describe in another paper. It has to do with the construction of qualities in the represented above sense.

Entity: We call entity such phenomenon, which we mark by the set of qualities, so that a qualified observer can discern this phenomenon from all other phenomena of the world. The matter of observer's qualification is part of the context.

Minimal paradigm: A system of behavioral instruments by which an entity can be surely differed from all other things of the world we call the ***minimal paradigm*** of this entity.

1.6 Features and metarepresentation, the small paradigm

The terms "quality" and "feature" have much in common. We use qualities as names of features. The colloquial language uses often both meanings without discerning between features and names of features i.e. between features and qualities.

Wikipedia writes about features[8]: "Feature may refer to:

- Feature (archaeology), any dug, built, or dumped evidence of human activity
- Feature (Computer vision), could be an edge, corner or blob
- Feature (CAD), could be a hole, pocket, or notch
- Features (pattern recognition), in statistics, individual measurable properties of the phenomena being observed

- Feature data, in geographic information systems, comprises information about an entity with a geographic location
- A feature story is an article in a periodical that is meant to take an in-depth look at issues behind a news story
- Distinctive feature, the most basic unit of structure that can be analyzed by phonetics and phonology
- Feature film, a film intended initial distribution in theaters"

We do not know any sufficient general definition of features. There are many heuristic introductions of features for a lot of special domains like pattern recognition, non-linear dynamics, medicine, linguistics, metrology, computer sciences and much more, but not a universal one. Therefore, we do that in the context of the paradigmatic approach.

We remember our definition of quality (1.5): *The quality is a result of the specific kind of observation, which builds an equivalence class, which we can represent through an arbitrary element of it*. Consequently, the quality is not the result of the observation of quality, but the representation of it.

The logical design of this definition builds up on the binary construction of the term "equivalence". The equivalence is either given or not. The colloquial language knows many examples of such binarity, for instance pregnancy, kosher, live. It seems not to be possible if somebody is a little bit pregnant or living. However, the contrary is right. To become pregnant is a complex and long enough process until the pregnancy really stays stable. The graduation of the nearness to the result should be just possible.

We said that the quality could be an artifact because of a specific context or of a specific intention of the observer. This is the fact if the observer has an alternative to his construction of the equivalence class. If the behavior of the observer makes it possible to take out an element of the equivalence class through discerning it from other elements, than it shows the subjective character of the quality in the context of the observer. On the other hand, if the behavior of the observer allows him

to put another element into the equivalence class and if he then can organize himself so that he will not be able to discern it from others, it also shows the subjective character of the quality in the context of the observer.

If the observer by correct observing procedure is not able to change his construction of the equivalence class, then the quality, won in this procedure, is a property of the observed entity. In this sense and only in this sense the observed quality can be called impartial. Nevertheless, also this impartial quality stays dependent from the context of the observer.

The idea of the scientific objectiveness implicitly uses the above construction of the term "quality". However, the contemporary science misses the criteria of the intended objectiveness of entity's representations in many cases.

Within the initial paradigm, also we miss at this stage the criteria of the objectiveness of entity's representations. However, we focus our line on the general case in which the quality is both: It has to do with the observed entity and it includes the sometimes non-vanishing influence of the observer. On this way, it should be possible to investigate the correspondency between the paradigmatic and the scientific representations of entities.

Let us say it once more: The paradigmatic approach must give the scientific representation of entities as a special case. In this case, the observer is not able to change arbitrary his construction of the equivalence class by the ascertainment of qualities. The correctness of the observer's activity belongs as always to his context.

If the quality is the assemblage of observation results represented by each of them, *the feature is the quality within the order between the constituents*. The order requires ranking. To have ranking requires the possibility of comparison of single observation results, thus it must be decidable, which of them has the higher and which the lower rang. The

ruler is a good example of ranked assemblage of possible observation results: About each two lines on the ruler, it is possible to say which is higher and which is lower. Thus, the ruler is an example for the feature of height or length.

Therefore, if we have the *quality as a distinguishing instrument*, then we can say whether an observation result belongs to the entity of this quality or not. If we have the *feature as a distinguishing instrument*, then we can say whether the observation result belongs to the entity of the observed quality, *and* what range has each separate observation result in the set of all possible observation results.

Feature: *The feature is the representation of a **possible (!) observation result** from its corresponding equivalence class together with the representation of its rank inside of its equivalence class*. With other words, we call "***feature***" the ***represented metarepresentation of a possible observation result*** from its corresponding equivalence class, which is differed from other classes.

We remember (1.1): the ***metarepresentation is** such representation, which makes it possible to valuate **and compare** representations*. The feature is therefore the represented metarepresentation of the basic quality as the property of some entity in case of entity's absence at the corresponding observation.

Small paradigm: A system of behavioral instruments by which an entity can be surely differed from all other things of the world, and it is possible to say about this entity, what range it has in the corresponding class of such entities (their equivalence class); we call the ***small paradigm*** of this entity.

The minimal paradigm represents entities in the sense, that it produces detection of entities as the discerning of them from all other things of the world, equal whether real or imagined. Indeed the minimal paradigm produces not only one of separations, but also implicitly the whole class of them, which belongs to this one quality.

The small paradigm represents entities in the sense, that it produces not only detection of entities, but also explicitly their ranking place in the whole class of entities with the same quality.

Now we see that if the minimal paradigm generates qualities, then the small paradigm generates features.

Since we understand under *metarepresentation* such representation, which makes it possible to valuate and compare representations, we see now, that exactly the *behavioral instrument of the small paradigm of representations* fulfills this function.

The minimal paradigm of representation generates the discerning between representation and non-representation. Thus, the minimal paradigm of representation is not identical with the representation of representation.

The small paradigm of representation generates features of the representation, whereas features are represented metarepresentations of quality's representations. Therefore, small paradigms of representations are not identical with metarepresentations of representations, while both of them have much in common.

We bring an example about this paper. You are able to see, that this paper deals with basics of semiotics, because you dispose of the *minimal paradigm* of papers about semiotics. If you dispose of the *small paradigm* of papers about semiotics, you can judge about how good our paper is in the ensemble of recent flow of papers about basics of semiotics. If you change at some time your opinion about this paper that means you develop your paradigm of papers about semiotics and possibly also about the semiotics itself.

1.7 Feature-complex and feature-space

Like the definition of features, we have found no sufficient general definition of feature-space and nothing about feature-complexes in public sources. There are some heuristic introductions of feature-spaces in several special domains like pattern recognition and quantum mechanics.

Wikipedia writes about feature-space [9] : "In *pattern recognition* a feature space is an abstract space where each pattern sample is represented as a point in *n*-dimensional space whose dimension is determined by the number of features used to describe the patterns."

Why it is not enough for paradigmatic approach? We have arguments for that.

The Wikipedia's definition suggests, that all pattern samples are already been represented in the past, and the future use for each pattern sample is only re-finding of its corresponding address in the *n*-dimensional "address-system".

In the paradigmatic approach we do not assume that all samples are already been seen. We assume that the recognizing entity – the observer – is able to construct the missing part of the "address-system" that he/she/it needs for the purpose of recognition. In this sense, we miss the words "can, required, and context" in the definition.

With the paradigmatic approach we would say: "In *pattern recognition* a feature space is an abstract space where each pattern sample **can be** represented as a point in *n*-dimensional space whose dimension is determined by the number of features **required** to describe the patterns *in the context of the observation*."

However, also this is not yet enough for the paradigmatic approach.

We think the observer creates the feature space in dependence of the special context of the observations. The context is here an equivalence class of the intended observations. For this task, the observer needs at least the corresponding *small paradigm* of the intended observations, if he has already provided some feature-spaces. In this case, he **can** choose the compatible one.

If the observer has to deal with the observation outside of his previous experience, then he needs the *big paradigm*, which we explain later.

Nevertheless, it is only an illusion that we deal here with feature-spaces. In all previous considerations, we are working not with spaces, but with feature-complexes.

The feature-complexes are the pragmatic and therefore phenomenological "address-systems". The address-system does not exist as an a priori gift. It integrates and accumulates the previous experience of the observer. In this sense, the feature-complex is the representation of the actual context of the observation.

We recognize each thing not as a single being with independent behavior, but imbedded in a lot of relationships with multivalent properties and influences. Each relationship and each valence require its own representation in respect to what quality it is related and what rank it has in comparison with other relationships.

In this sense, we recognize each thing at least as a tuple of qualities, which are not reducible one to another. The number *n* of the non-reducible qualities we call the dimensionality of the recognition. If *we mean*, that the observer does not influence the result of the observation, then we say that the dimensionality of the recognition is also the dimensionality of the feature-complex corresponding to the thing.

Then the dimensionality *n* of the thing is also the number of minimal paradigms, be needed to create the discerning of one entity from all others.

If we should not only recognize, but also operate with entities, we need not only *n*-tuple of qualities, but also the corresponding *n*-dimensional feature-complex, which the observer creates at least with *n+1* corresponding small paradigms. The number *n* of them corresponds to *n* features and one corresponds to the **tuple of features, that we call the feature-complex**.

The feature-complex is then a sufficient address-system, where the entity (not each entity!) *can* be represented in the relationship of the entities belonging to the equivalence class or to the context of the feature-complex.

If *n* is an integer then the features can be recognized separately and we call the feature-complex separable. If *n* is a fraction then the feature-complex is in general non-separable. In this case, the completely non-separable feature-complex can be seen as a whole system, as one synthetic multi-feature.

Such synthetic multi-feature can always be imbedded into a majorante separable feature-complex with the integer dimensionality. We can show, that the lowest integer dimensionality *k* of the feature-complex, in which the fractal feature-complex would imbedded, this integer number *k* is the minimal number of minimal paradigms, be needed to create the discerning of the fractal entity from all other things.

If for instance two entities belong to different non-crossing feature-complexes of dimensionalities *n* and *m*, then they can be represented together in the united feature-complex of dimensionality $m + n$, which is the direct product of both feature-complexes. The other case is of course also possible; however, we will not discuss it in this paper.

The representation of feature-complexes if adequate is the usual frame of almost all operations with entities in the common course of life. For certain tasks however, it is not sufficient and we need indeed the concept of feature-space.

In usual deals with entities, we build sequences of representations, which lead to the corresponding sequences of address-points in the match with the feature-complex. We deal of course always with final number of points. However, if we deal with the possibilities of doing, then we deal indirectly with an infinite number of representation points.

In this case, it is very possible that we deal with sequences of infinite many points. Then, the procedural result is very much dependent of the circumstance if the infinite sequence converges or not.

The infinite sequence converges if almost all points of the sequence lie inside of any final interval around a special address-point of the feature-complex. This special address-point we call the convergence-point, the fix-point or the limit of the infinite sequence. With other words, if we choose any final interval around the fix-point, then only finite number of the sequence points is lying outside of the interval.

Feature-space: *If each address-point of the feature-complex is a fix-point of some non-trivial[c] infinite sequence, then the feature-complex is the feature-space*.

Whether we need the feature-space or the feature-complex is a sufficient structure, depends of the context of the observer.

The special comfort of feature-spaces is that each feature-complex can be imbedded into the abstract feature-space with the same tuple of qualities. The representation of entities and their motion in feature-spaces allows often more simple forms in the language of continuous analysis with integral-differential equations and pleasant analytical solutions.

We know that the maximization of comfort deforms many wise things

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[c] The sequence is trivial if almost all points of it are the same. The sequence is non-trivial if it has infinite different points.

of life. It may be that the comfortable use of feature-spaces as the representation frame instead of feature-complexes deforms the picture of the observation result in some inadequate way. Nevertheless, we will do that for the purpose of transparency of the first representation line of the paradigmatic approach. Most things (but not all!) we say about paradigms with the frame of feature-spaces will stay valid also with the more correctly frame of feature-complexes.

We want to order the relationships of the introduced terms to the usual categories of mathematics.

The *minimal paradigms* create qualities and make possible compositions with properties of entities. In this sense, the *representations* of minimal paradigms belong to *algebraic structures*.

In general, the *small paradigms* create features and feature-complexes and make possible the comparison between entities and the observations of them. In this sense, the *representations* of small paradigms belong to *order structures*.

In the special case, if the feature-complexes are feature-spaces, the corresponding *representations* of *small paradigms* belong to *topological structures*.

On this place, you ask, why only the representations of paradigms belong to the corresponding structures and not the paradigms themselves. The answer is because paradigms are behavioral instruments and therefore they are processes. Only their representations can be structures, but not processes themselves.

In the section 1.10, we shall describe processes in general and especially three classes of processes: synchronic, diachronic, and synagonic ones.

On the level of initial paradigm, it is important, that the observer produces results, but not necessarily to know the manner, how he is doing it. However, it is necessary that the observer uses at least the frame of a feature-complex and he disposes of the mechanism to map his perception as an address-point of the feature-complex.

It is the decision of the observer, how many features he needs. Let us make an example. Think that the observer observes three apples. The observer *decides* that he is seeking only what position-related happens with the apples, and only under condition that the distances between them are much larger then the extent of each apple. Then he replaces each apple through one point inside of the apple marked with an element, which each apple has. I.e. he replaces the apple in Cartesian space through its stem-foot. All this is a part of his observation context.

Now the observer should decide about the dimensionality of his feature-space. In this case, the feature-space is just the adequate frame. If the observer decides to have one- or two-dimensional space, he will not be able to deliver the complete picture of the apple motion. Only with the three-dimensional space, the motion picture of three apples would be complete. In that case, three points represent the picture of three apples.

Alternatively, the observer can take the nine-dimensional Cartesian space. The complete picture of the system of three apples will be represented here with only one point. The observer constructs his nine-dimensional space as the direct product of Cartesian spaces of three separately spaces of point-apples.

The only position- and velocity-related picture of motion is kinematics. For the purpose of kinematics tasks, the representations of three point-apples with three points in the three-dimensional space and with one point in the nine-dimensional space are equivalent. Even more, the representation of dynamics of our three-point-apples system as dynamics of only one point in the nine-dimensional space is also well possible.

On hand of this example we hope to show, what it means, if we say

that we represent each system with one point in some corresponding many-dimensional feature-space or feature-complex. In the correct description, the different representations should be of course equivalent. If needed or comfortable, we can switch between different representations by the way.

The space or complex with only collective features of all possible entities with finite extensions is obviously non-specific for any entity. We call such feature-complex or feature-space the **ontological complex or space**.

The space or complex with all possible features of all possible entities of a system we call the **Liouville complex or space** of this system.

The convenience of the describing of a system as activity of one point in a very high-dimensional feature-complex is that it is easy to focus *our* attention on general aspects. All results of the considerations in a very high-dimensional feature-complex are of course valid also for other representations.

The *ontological space* and the *Liouville space* are the most used in the treatments and theories of Physics.

For instance, the system of N point-apples will be represented with N points in the 3-dimensional ontological space and with one point in the $3N$-dimensional Liouville space. In the ontological space, the observer counts the representation points; in the Liouville space with the one-point representation, he counts the number of features that he needs.

1.8 Time, space, and observer of processes

What are the minimal requirements to describe processes? – They are:
- The (immediate) observer and the observing interpreter. We call such observer "first, immediate, direct or participating" observer.

- The signals that the observer can observe and interpret.
- Features and the feature space as basics, in which the signal producing events are imbedded.
- A (secondary) observer which is able to observe both, the signal producing "primary" events in the basic feature space and the "secondary" events of the observation of that "primary" events through the immediate observer.

On this place we suggest that the immediate observer can be a "real" observer in that sense that eventually his influence on the being in the basic feature space may be eliminated by no way.

If the secondary observer is not identical with the immediate observer, then it should be possible such description of the "primary" events in the basic feature space in which the influence of the secondary observer on the "primary" events in the basic feature spaces can be neglected.

If the secondary observer is identical with the immediate observer, than his influence on the "primary" events in the basic feature spaces cannot been neglected in a general description, but only by very special cases, which should be marked as such ones. In such cases, the secondary observer should prove if the neglect of themselves contradicts to the general principles. If a contradiction will be found, than such neglect is not allowed.

There is a specific case, in which the secondary observer is a permanent imagination of the immediate observer. Then there is an effective permanent influence of the secondary observer on the behavior of the immediate observer. In such case of a firm binding between secondary and immediate observers, the influence of the secondary observer on the being in the basic feature space cannot be neglected. Therefore, it is the same if the secondary observer in this case is only an imagination of the immediate one.

In the case, when the secondary observer is only an imagination of the

immediate observers, the question will be, is it correct to speak about a secondary observer at all? Is he then just only an aspect of the immediate observer?

If somebody means, that he observes directly the "being", the "nature" or the "essence", than he must give a negative answer on the previous question. Then this somebody must confirm that there is no secondary observer in this case.

However, we do not know how it is to observe such entities as the "being", the "nature" or the "essence" directly. In our opinion, we note the events and we memorize them, and in the consequence of this, we observe processes. Only the interpretation of observations and the imagination (as a pure imagination) of the from the context dependent invariance of the observer's behavior or of an observing interpreter, are able to create such entities. Because of the interpretation of the behavior of the observers, we recognize seriously the secondary observer also if he appears "only" in well reproducible patterns in the behavior of the immediate observers. As the well reproducible patterns of behavior, the secondary observer can be mediated inter-subjectively and thus be represented.

> In all feature spaces, which can come into discussion, there is at least one joint feature. In relation to this joint feature, all events in all spaces can be ordered to one specific manifold, which can be ranged in respect to the whole class of all possible observers. *This joint feature we call **the classical time***. It corresponds to the time concept of classical physics.

For the development of the concept of paradigms, we need jet a more general concept of time. For that purpose, we modify the concept of classical time as following.

> In all feature spaces, which can come into discussion, there is at least one joint feature. In relation to this joint feature, all events in all spaces can be ordered to at least one specific

manifold, which can be ranged in respect to at least one of all possible observers. *This common feature in the context of a chosen observer we call **the relativistic time***. It corresponds to the time concept of relativistic physics.

From the paradigmatic point of view the classical time and the relativistic time have both a discouraging aspect, namely both are not dependent from any decision of the observer. In this sense, the observer of the physical time is not intelligent, then he notes only and interprets events, but he makes no decisions about himself. He *only exists*, but he does not *decide* over himself and he does not *create* himself.

> In all feature spaces, which can come into discussion, it is possible to create the joint feature with at least one specific manifold, which can be ranged in respect to an observer, eventually to be created together with this joint feature. *This joint feature we call **the paradigmatic time***.

We hope that all other concepts of time are a special case of the concept of paradigmatic time.

The observers (immediate or secondary) which have the time feature can estimate a special relationship between some events, the relationship of causality. It is not necessary that all events correspond to the relationship of causality. The special property of the causality is that if the observer eliminates the time feature from his description, then the relationship of causality between the events ceases, but the events stay associated.

1.9 The creation-observation antinomy

This is of course not the first time that someone tries to construct the fundamentals of *general knowledge-ability*[d] or of Semiotics. All our predecessors had have the preliminaries of the previous paragraphs in some form, sometimes explicit, sometimes implicit. However, there is one singular preliminary that the predecessors assumed almost only implicit, because it seems to be self-evident. This is the relationship between the observer and the feature to be observed.

For us this relationship – between the observer and the feature or the feature-complex to be observed – is neither self-evident nor evident at all. Thus, we call this relationship the *creation-observation antinomy*. Or with other words: How to answer the question: Does the observer in the most general case observe features, which are appearing independent of the observer and before the observer intends his observation (**case A**)? Alternatively, does the observer in the most general case observe the features, which are appearing due to the intention or at least due to the attempt to observe (**case B**)? If we will ask whether the observer appears due to the attempt of a feature to become observed, then the creation-observation antinomy will be a paraphrase of the antinomy of hen and egg.

The variant of case A leads to the so-called *objective conception of the world*. Today the construction of the objective conception of the world follows the didactics of school-pedagogic. Their myth is as follows: It was initially a feature space and the time; the space was empty and represented the fundamental categories. The initial state of the world was very simple and developed itself to formations that are more complex. The evolution (there are many models of them) is going until

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[d] Knowledge-ability – We understand the knowledge-ability as the ability of a feature-complex to be the matter of the consistent knowledge in the context of an observer not as the exclusive property of the observer. We assume that not every feature or feature-complex can be recognized or be the matter of knowledge by each observer.

a mind-entity like the observer appears and the observation became possible.

We owe almost all our daily comfort and technical progress to the objective approach of thinking. The way of thinking or the paradigm of the case A brings very much effort on the pragmatic applications. However, it seems to have fundamental difficulties in making understandable the initial knowledge-ability and the entity of complex being.

The case B leads to the so-called *subjective conception of the world*. Today the construction of the subjective conception of the world follows the didactics of antique stories of genesis (there are many myths of them). The common part has two typical variants. Variant B1: sometimes a godhood appears through self-creation, and B2: there is an eternal godhood, which decided sometimes to appear. Then there are many myths about the creation of the world through the godhood or creation of the world through the ensemble of secondary godheads, which were created by the initial godhood.

The most precious result of the subjective conception of the world is the entity of human being or humankind which will be done (also in many variants) through postulated relationship between the godhood and the human being. The fundamental similarity between human being and the godhood is a functional source of all definitions of human being in the multicultural praxis of the civilized world. In this way, we owe almost all conceptions of ourselves to the way of thinking or the paradigm of the case B. That means between others right, law, dignity, inviolability, grace, justice, fairness, soul, mind, integrity, and many others.

We will also make a statement about the creation-observation antinomy, but as an explicit decision in the most week form. *We do not exclude that in the primordial process of evolution the co-development of both – the observer together with the observed features – is possible.* We assume that such concept of an effective intrinsic decision in the

duality of observer-and-features-to-be-observed will be necessary for the representation of the relevant processes of observation as corresponding implicit event, but not as an exclusive truth.

More then this, we assume that each effective intrinsic decision causes the corresponding context, and the reality can be correctly described only in terms of the ensemble of such contexts while the concept of truth will be not more than the expression of the correct correspondency between the effective intrinsic decision and the context, generated by it.

In this sense, the case A represents one boundary decision, which marks an extreme position in the ensemble of the possible decisions about the creation-observation antinomy. Moreover, the case B represents another boundary decision, which marks another extreme position in the same ensemble of possible decisions.

The construction of the complete ensemble and the weight of the singular decisions of the whole complex corresponding to reality should be the matter of semiotic research.

We suggest the Theory of Paradigms as both, as tools for the semiotic research and as the feature-medium for representations of results. The outcome of the intended research should be operational useable paradigms.

Only based on paradigms we hope to become able to give a convincing representation of the concepts of representation, metarepresentation, and of the paradigms themselves.

In this way, the decision about the creation-observation antinomy belongs to our initial phenomenological paradigm. It will be not the question if our approach or our concept of paradigm is true. In our understanding of semiotics, the question about truth is a logical one, but not in any case semiotic question.

The semiotic question will be "Are our approach and concept of paradigm self-consistent or not?" Only in the part of approaches concerning the consistency, we see the domain of logical features. Then the question should be correct: Is it true that our approach is consistent? Meanwhile the definition of consistency should be given in terms of paradigms. We will see that consistency is an example for exactly such features that appear correctly only together with the procedure of prove of the consistency in the relevant context.

1.10 Processes – synchronic, diachronic and synagonic

In view of the previous consideration especially of the creation-observation antinomy, we are coming to a paradoxical insight. The observer does not observe features directly, and consequently he observes neither feature-complexes nor feature-spaces. All this is the necessary part of the context of observation and should be prepared or created as the observation tools before or at least during and in the closely interaction with. ***The observer observes how often a feature appears in the observer's frame!***

Let us memorize the series of representations of *N*-point-apple-system in respect to the *paradigmatic time*. Let us map all memorized results into the feature-complex without the explicitly feature-component of time, but marked with the range-number of the representation in the time-sequence (see end of 1.8).

Let us fix the frame as a Liouville feature-complex. ***The ranged set of memorized results is the trajectory*** of the *N*-point-apple-system in this frame.

If we switch now the representation to the ontological feature-complex, then we get the graph that is the usual picture of trajectories. The same in the ontological time-space gives the usual picture of processes in the *N*-point-apple-system.

If our apples are material bodies, we have a picture of their motion. Process is a much more general phenomenon as motion. Creation, elimination, restructuring, mapping, reproduction, and recognition are processes but not motion in the close sense. Nevertheless, we can interpret processes as a generalized motion in a corresponding abstract feature-space. In feature-complex as a recognition frame, we can also speak about generalized motion. The motion in the feature-space can be constructed as a limit of the sequence of generalized motions by generation of feature-space based on corresponding feature-complex.

In the context of physics, we get the corresponding laws of motion expressed through the dynamics equations or the propagation operators. In more general cases, that the *laws of processes* are not or are not known, *the cause-and-effect relations play the role of the laws*.

However, no description is able to represent the complete going on *in a closed form*. This is not a problem of the limited capacity of memory space. This is also not a problem of the finiteness of the system observer–context–result. This is the problem of the observer's will and his ability to decide and to change his decisions before, during, and after the observation. In this sense, the pragmatism of the initial paradigm is very helpful.

Thus no future is completely predictable also if the description of the present were complete because in general the process of being generates the future partially within the unpredictable elements of the observer's will. However, the influence of such elements can be in some critical situations decisive. Therefore, the future should be wholly unpredictable on the long time scale.

The process in general is the *phenomenon of some trajectory* in a time-feature-complex of the observer. Here is said nothing about the properties of the trajectories. In the most general case, the trajectory can be any set lattice.

The trajectory of the process contains a series of acts or episodes. An act or an episode is here a section of the trajectory, which the observer interprets in his actual context as an indivisible part. In this case, the observer uses acts as elements. The fact, that an element consists of further sub-acts, plays no role for the observer's representation of the trajectory of the process.

On this place, we can ask, does the above sentence mean that if no observer, then no process? Think, the feature-complex of the observer's frame is a part of context and therefore indirectly the part of the observer. If there is no observer, then the process is a hypothesis, which implicates the hypothesis of a corresponding imagined observer. That means if no observer at all (also no notional observer), then no disclosure and no information.

Furthermore, each description premises an actual or virtual observer. In the most of cases, this observer is we, and the features-frame is that we think. It is so also if we do not reflect about it like somebody thinks as well if he is busy with his thoughts und is not thinking about that he thinks.

In addition, it is the matter of the observer's context to form his frame so that he beholds one entity, or many entities separately, or many entities conjointly, or many entities conjointly and some entities separately. For us all these variants play an important role for the classification of processes.

The synchronic processes. All processes with one or more entities, which an observer with the fixed feature-complexes can see under given cause-and-effect relation, we call the *synchronic processes*. That implicates that the *observer can predict the result* of the observation of an event in the synchronic process in principle. It is right also if the prediction has the form of expectation or probability of a result.

All kind of motion is synchronic processes. The speech as a

communication medium is synchronic process. The fly of an airplane, and the movement of a quantum particle, and the course of a play, and the development of a market value, and any routine are synchronic processes.

The diachronic processes. All processes with unpredictable number or kind of entities, or of qualities, or of features we call the *diachronic processes*.

The typical diachronic processes are the phenomenon of will, any kind of creativity, the birth of love, the appearance and disappearance of languages, the change of vocabulary and grammar, and the manifestation of new species, inventions, artistically activity, and each kind of surprise especially if your hostile neighbor says an unsolicited welcome. As well, the wonder, if it passes, should be considered as the diachronic process and the creation of the world, of course.

The synagonic processes. All processes of integration of an entity (also of a missing of an entity) in an experienced ensemble of another entities we call the synagonic processes.

The synagonic processes are for instance technological innovation and reformation of society, and political tasks, and change management. They are the integration of a new child in the old family. They are to persuade your colleagues that your new idea is right. They are education, and solving of conflicts, and peace making, and perpetuation of love. They are religious conversion, social rehabilitation after prison or long hospital inhabitation. They are all the things of *being or doing together*, which make problems and which are most important for our everyday life, humanity, and civilization.

The synagonic processes are the fewest understood, explored and controlled. In the same time, they are the most processes of our world.

It may be that a physical or social act in a large embracing context belongs simultaneously to more than one type of processes. These three types of processes constitute three types of contexts and respectively of time-space-scales. It is easy to remark, that you realize most of synchronic processes in your daily routines. You realize diachronic processes in planning of changes in your life or of some singularities like marriage, religious conversion or if you are writing a new poem. You realize synagonic processes while you try to implement your new plans in your actual doings on the background of your old routines.

Please mark the difference between planning and implementing of something. I.e. the planning of religious conversion belongs predominantly to the diachronic processes, whereas the realization of religious conversion belongs largely to the synagonic ones. According to our observations, the seriously intended marriage (the typical social conversion) is very like to the religious conversion.

Chapter 2, Concepts and Paradigms

2.1 Concepts never can be universal

Features as well as structures of features or feature-spaces are artificial objects.

- Structures are geometrical and topological relationships of features in the feature-spaces or feature-complexes
- Artifacts (artificial objects) are maps of something, what the observer calls the "reality", in the special part of the feature-space of the observer, that the observer calls "the representation-space" of himself or herself.

We say, "The observer calls" because it is not obligatory that every observer recognizes as true what the implied observer says. Then structures and artifacts are always bound to the context of the observers. The context represents the kind of the implied observers and the specifics of the mapping-rules.

Concepts are on their part structure-like formations in the feature-space of the observer. Thus, they are bound to the context and depend of the observer. Consequently, *concepts can never be universal*.

All being is primordially manifesting in processes. The domain of validity of concepts is from the outset restricted to the feasibility of the mapping of processes to structures. Thereby the mapping itself is still a structure-like relationship.

If we would be able to show or to construct at least one explicit example for processes, which cannot be mapped in a structure-like consistent formation as a recognizable feature-complex, then the existence of the fundamental restriction of validity of concepts as the medium of representation would be proven. Now we try to do that.

The idea of the construction of a proving example is that the feature-space of the concept-representation feature-complex of a *self-creating finite observer* cannot be identical with the feature-space of primordial events. So the structure-like formations in the feature-space of the observer, which are valid only in a corresponding part of the feature-space of the observer, become non-consistent if their domain will be stretched up to covering the total feature-space of the primordial events. For the infinite observer it is of course possible i.e. for the observer who is like to an infinite fractal.

However, we should also require that the image as the result of mapping into the feature-space of the observer is at every time operable. In this sense, we construct an example of expanding of the domain of the observer to the total space of primordial events so that either the image looses its consistency or it looses its operability.

If the concept-representation feature-complex of the observer is a subspace of the feature-space of the primordial events, then we cannot exclude that the mapping feature-structures will be formed and changed by the same creation-and-annihilation processes like the primordial events.

In the special case, it is possible, that the creation and annihilation processes of the inherently regular primordial events will be stochastic ones in the feature-space of the observer. In addition, due to the special mapping rules of the observer or due to specifics of his feature-space, we will find no correspondence between primordial events and their image in the representation feature-space of the observer. Alternatively, the structure of this representation will be pure random.

For this, it is not necessary that the creation and annihilation processes in the feature-space of primordial events are pure random processes. Consequently, they have only the rate of random processes concerning the design of the representation feature-space of the observer or of the mapping rules.

By reason of our definition that the concepts are not more than the structure-like feature-complexes in the concept-representation feature-space of the observer, it depends from outside criterions namely from the *features in the supplement* in feature-space of primordial events to the representation feature-space of the observer, whether the concept-relevant structures of the observer maintain their consistency or not. Thus, the concept-relevant structures of the observer must in general case loose their consistency if the concept-representation feature-space of the observer will be expanded up to covering the total feature-space of the primordial events.

In the situation of expanding of the representation feature-space of the observer up to covering the total feature-space of the primordial events the initially context-dependent concept-relevant structures loose their context-dependency due to the artificially attached totality and consequently they loose their procedural consistency.

2.2 Universal concepts are either trivial or contrary or arbitrary

The loss of the procedural consistency can become manifest in three ways.

Way 1: Triviality. In the situation of expanding of the representation feature-space of the observer up to covering the total feature-space of the primordial events, the concepts loose their specific content about the events outside of the context of the observer. Before the expanding, the concepts were meaningful about the events inside of the context of the observer. After that they keep only the information about the general properties of the corresponding feature-space and thus they express only the basic-tautology of the feature-space himself.

If the information about feature-space does not deal with the topology of the space, then it is always the information about

the ensuring of the identity of the space elements. The identity of the space elements is on their part the tautological expression of the kind: A=A, 0=0, 1=1, etc. In the context of asking about the events-based content (the interest of the observer), the tautological result is a triviality.

Way 2: Contrariness. With the expanding of the representation feature-space of the observer up to covering the total feature-space of the primordial events, the propositions originally bounded to the context become context-independency and herewith the character of allness-propositions. The allness-propositions can be of two groups. One group is the one of trivial propositions in the sense of the way 1. Another group is the one of purely inconsistent propositions. The inconsistency of the propositions may have many forms; from the well-known sophism: "An inhabitant of Crete says, that all inhabitants of Crete are lying" up to contraries which bear witness to absurdity like the question "Is the almighty God able to create a stone, that He isn't able to heave?"

The phenomenon of procedural contrariness is known not only in the sphere of spoken or written language. The impossible figures of Escher for instance give an example of procedural contraries. They emerge through the attempt to realize the notorious two-dimensional propositions (propositions in the two-dimensional visual feature-space of one observer) in the three-dimensional operation-space of consciously another observer.

The mathematics uses this phenomenon of procedural contrariness as a symptom for deficient handling of concepts or of mapping rules.

Way 3: Arbitrariness. The set of recorded experiences such as artistic fantasy; religious ecstasy; drug-affected states; medical, social and ethical abnormity; but also some of try-and-error-based

learning-experience shows the arising of pseudo-concepts or concept-like feature-complexes in the representation feature-spaces of the respective observer. These concept-like feature-complexes can be matched with the events outside of the observer-specific context only on an artificial way in the hermetic context of the concerned observer in his behavior. It does not matter if the outside observer qualifies the inner sensation or "pseudo"-concepts of the troubled observer as nonsense. Such "troubled" observer is not able to revise his pseudo-concepts and to correct them within the system of concepts; he needs for this a more general and mighty instrument like paradigms.

Madhouse-monster parable: A typical example of arbitrariness would be given by a joke about the insiders of a madhouse. The patients are clacking rhythmically with the hands. The male-nurse, asking what they are doing, gets the answer: "We eliminate the brutal monsters from our madhouse". "But there are no monsters in our house", says the male-nurse. "Of course", the madmen emphasize, "there aren't here any monsters because we expel them daily with the clacking".

Such pseudo-concepts can constitute in certain circumstances systems of concepts – if somebody ignores their absurdity – with for usual concept-systems typical immanence, hierarchies and depth. Such concept-systems seem to be consistent in the context of an ignoring somebody. *The ignoring of the absurdity* is in many cases the necessary condition for the effective functionality of the concept-systems with unproved consistency. However, it works only for a certain time, before the inner inconsistency brings the functioning of such systems to implosion. This notice also demonstrates the process-related character of the reality and the imaginative nature of concepts.

We can find a set of examples for well functional absurdity in literature and art as e.g. the immortal "Alice in Wonderland" from Lewis Carol. Such examples we can find also in our society as normal prevailing customs and habits let alone in politics and administration. For reasons of political correctness, we forgo on respective examples. We are sure, that every conscious reader is able to find such examples in his own experience.

We should ask ourselves if perhaps all our concept-systems are of that kind like for instance of the way 3. We mean that no system of concepts will be able to answer this question reliably. However, the fully developed theory of paradigms will.

2.3 Global inconsistency of local-bounded concepts

Now we return from illustrations back to the construction of our example for processes, which cannot be mapped in a structure-like formation as recognizable complex of features without the breaking of consistency.

We remark over again that the concepts forming feature-complexes in the representation feature-spaces are *per construction* geometrical structures in the domain of the observer. Thus, concepts are local formations in the corresponding feature-spaces. As long as the logical and other operations like transformation and composition of concepts do not change the topologies and thus the global properties of feature-spaces, they do not modify the local character and the domain of validity of concepts.

The topologies may be changed only by two ways: first by changing of the domain (definition, dimensionality, and metrics) and second by changing of imbedding and composition relationships. To the composition relationships also belong the interpretation-rules.

Indeed, we have already constructed the wanted example even twice.

One of them is the expending of the initially limited domain of the representation feature-space of a context-bounded observer to the context-unbounded one. If this happens, the becoming inconsistent of concepts cannot be registered by the local connotation of concepts. But it can be registered as soon as the global properties of the feature-space will be touched e.g. by obtrusion of context-free predicates as "all", "always", "everywhere" "almighty", and so on.

The processes of changing of the topology of the feature-spaces are processes, which cannot be consistently mapped in geometry-like formations as well recognizable feature-complexes in the representation space. The mapping of topological features into the geometrical ones like set-lattice cannot be consistent. The point is that the topological features deal with convergence of sets. The mapping of the infinite structure of convergence on the not necessarily infinite structure of the set leads to the lost of almost all information about the topological feature in the geometrical feature-complex. Under certain circumstances, it could be possible in the *metarepresentation*-space.

The necessary condition for that would be if the *metarepresentation*-space could have topologies as its elements without endangering of its constitution. The concept of metarepresentation-space should be the basis for the *concept of metarepresentation*.

The inconsistency of global application of local-bounded concepts bases on the notedly geometrical nature of concepts in the feature-space. While we know that, the topology cannot be mapped on the geometry, even if geometries or geometrical relationships can play the role of indicators for topologies.

Herewith we mean to have shown at least one-way to demonstrate the processes, e.g. of topological change of the domain in the representation space, which cannot be mapped on the geometrical feature-complexes of concepts in this space. If the construction of the consistent spaces with topologies as elements would be possible (metarepresentation-spaces), then it would be possible to map the

processes of topological change in the metarepresentation-space. However, the concept of concepts as structure-like complexes of features cannot build up the space with processes of changing of topologies as elements. The manageable knowledge and competence of this can be achieved through the corresponding paradigms.

Another example for processes, which cannot be mapped in a structure-like formation as recognizable complex of features without breaking of consistency, we try to allegorize in a profane manner.

All of us know a bad power game. The participants will be forced to follow the rules of the game that the game-leader spontaneously changes. He has the power to punish the lapses against the respectively valid rules also if the participants did not know about the actual rules. Moreover, he can award the quick recognition of the renewed rules. The sense of the play is the learning of change in the rules from the experience as quick as possible. The winner is the best learner.

However, if the play-leader changes the rules too quickly or to drastic, humiliation, disaster, calamity, and other traumas will follow. The arising behavior patterns can be indeed eventually rational understood and impacted, but not with the concepts of a normal game.

2.4 Concepts and paradigms

Would the conditions of life – we mean the play-rules in the middle of prosperity – in our civilization be stable enough, the instrument of concepts could suffice for services of our mental, intellectual, and following social and economical survival. Nevertheless, our reality as humankind on the step-by-step becoming smaller globe is not stable enough. Our life has only few strict rules. Our actions are rational in the local perspective, but often not to be forced fitting in our noble intentions.

Furthermore, the questions remain open to what extent our systems of

concepts and theories are sufficient for representation and controlling of the procedural centered and operational defined reality in the sciences and processes of becoming a human being.

We try to generalize the gnoseological tool of concepts with the instrument of paradigms on such way that the new instruments, the paradigms, allow the rational representation of phenomena especially in the situation when the classical frame of concepts looses his validity.

Paradigms shall help us to recognize the boundaries of applicability of concepts. Inside of the boundaries of validity of concepts, paradigms shall at least give an equivalent description of the connoted reality and in the best case; they shall generate the corresponding concepts.

We introduce paradigms as deep-*processes* (or implicit processes) of the behavior of observers, who generate the respective feature-spaces and *act* within. The elements of the behavior of observers are processes. We also introduce concepts as deep-*structures* (or implicit structures) of the behavior of observers who generate the respective feature-space, marks the concepts with names, and *represents* them in the respective feature-space.

Which names depend from the context of the observer? It is the matter of the observer's decision whether a name will be a paradigm or only a label. In the last case, it is nothing other than an occupation of an address in the feature-complex.

We introduce the formal defined *processes of creation and annihilation* of the respective features or of the occupation-states in the corresponding feature-space as the *initial universal phenomenological model of processes*. The occupation numbers and the occupation configurations correspond in this description to the states of the system in the respective feature-spaces.

2.5 Knowledge and the initial concept of the world

In our position which is neither objective (case A of 1.3) nor subjective (case B of 1.3), we are forced to construct a new more general position. Such position should admit both possibilities, case A and case B, but also all the intermediary possibilities between cases A and B. Such position requires indeed a strong reflection on the concepts of the world.

The conception of the world is a mental frame that from the beginning (a priori) allows some theories and forbids other ones. One of the myths of the modern times is that it is sciences what implicates the conception of the world.

Indeed sciences are the whetstone, on which conceptions of the world are to be grinded into form. In this judgment, the sciences bring a negative feature: they say us which conceptions of the world *are not able to be* in the rational sense. Consequently, it is a usual mistake to think, that only the conceptions of the world, which are recognized as compatible with the already known sciences, are alone feasible.

We have also here some antinomy like the creation-observation antinomy: The conception of the world as the frame gives an a priori judgment for the creation of science and the science works as a correction medium backwards for the conception of the world. It is obviously an evolution chain.

As an evolution chain, the development of conceptions of the world may sometimes also build dead-end streets. The conceptions of the world with literally understood natural gods are one of them. However, we mean the Marxian one, the Creationism, and many others are only myths as well.

We will not be able to deduce conceptions of the world alone from the sciences. With other words, if we imagine doing that, we will never

know: are we in a dead-end street or not. Somebody can perhaps contradict: "So what?" Earlier or later, the development in connection with the experiment will show the inconsistency of intellectual doing. Then we will revise it more-and-more.

The danger of such position is the possibility of spontaneous creation of a suggestive circle like the madhouse-monster-parable in the Way 3 of 2.2. In each living myth, we have views, which create experience, which confirms views, which create confirmation of the experience, which imagines the views to be proved, and so on.

In the sense of the paradigmatic approach, we try to understand the productive issues of the initials of thinking and Natural Philosophy and to make them free of all, which contradicts to the pragmatically proved sciences.

From the times of Ancient Philosophy, the following construction of concepts of the world was accepted as valid. The knowledge is built on procedural divisions.

The feature of the non-knowledge branches off into two features; one of them is knowledge and the other one knowledge about non-knowledge. This initial division was the base of two mental processes in deal with knowledge and non-knowledge.

The positive knowledge is self-developing through précising of known features adding of new features and eliminating of the features that are recognized being false.

The primary first step in a possible deal with non-knowledge is eliminating the primary non-knowledge and instead of it the creating of two kinds of knowledge. The first one is the knowledge based on operational reproducible features conjugated with the *measure* of the corresponding feature. This kind of knowledge we call positive knowledge.

The second one is marked as the knowledge without measurable features. We call this second kind of knowledge the general knowledge. The theological tradition in some religions calls the knowledge without measurable features the divine knowledge.

Thus, the general knowledge consists of possible non-knowledge based on features without any measure.

The remarkable note of this procedure is that the Ancient Philosophy understood the non-positive knowledge (features without measure) without any doubt as knowledge.

Then the map of the basics of the Ancient conception of the world is the following[10]. It exists the total being. The total being is based on two functional parts: The divine and the natural parts of being. The natural part bases on features with measures. The divine part bases on features without measures.

The forming of knowledge was understood as a process in which some features of the divine part will become concrete through the recognition of the corresponding measures and the conversion of the part of the divine knowledge into natural knowledge.

The natural part of the conception of the world was understood also as consistent of two parts, the material one and the functional and spiritual one. The work of conversion of the part of the divine knowledge to natural knowledge was the matter of both, the spiritual part of natural being and the unknown part of the divine being.

Since ancient times this work of conversion was understood as a real cooperation between gods and humankind.

The revolution of the conception of the world in the époque of Enlightenment was very simple in the context of the Ancient Philosophy. The completely divine part of being was neglected. All the phenomena in connection with the divine part were declared as

psychological phenomena. Moreover, the spiritual part was reduced to the function of matter.

We do not a priori exclude the conception of the world, which came with the époque of Enlightenment in the beginning of modern times. Nevertheless, within our own conception of the world we do not agree with this reductionist simplification. Our reasons we have presented in [11].

Simultaneously new imaginations of what the Ancient world thought about the divine and spiritual part of knowledge were created without any understanding of Ancient thinking. They are modern myths producing only misunderstandings of what Ancient thinking was.

The main function of the old gods was not their intrigues but their *ability to create and annihilate features and feature-complexes*. This creation-and-annihilation function we want to accommodate in our initial paradigm, and herewith in the *initial concept of the world*.

2.6 Sumjects

In correspondence to the creation-and-annihilation behavior, we want to construct the functional frame for the description and control of the representation of reality in the context of the respective observer. We need for that also the concept of whose behavior realize the systems of creation and annihilation of features, and who is not necessary identical with the respective observer.

We need such phenomenological universal creator-and-annihilator in the initial paradigm in the most general manifestation. Thus, we must not exclude from the beginning that the creator-and-annihilator also creates or annihilates him-self in the frame of the general representation of knowledge.

As self-creator-and-annihilator, it must be possible to see him as well as subject as well as object of his behavior or activity. We call the entity of such self-creator-and-annihilator "the *sumject*"[e]. The sumject can be seen dependent from respective contexts sometimes as subject sometimes as object, but it is not reducible to one of them.

In the following, we develop a presentation about the behavior of sumjects. In general, we call *paradigms* the operational deep-processes of behavior of sumjects.

We call **concepts** the consistent feature-complexes of knowledge, which shall be generated by paradigms. We introduce the *concept of paradigm* as well as its subspecies as specific feature-complexes of behavior of sumjects.

Paradigms are *entities of the sumject's behavior*, which create concepts and ensembles of concepts. *Ensembles of concepts are entities of the metarepresentation*, while concepts (also concepts of paradigms) are *entities of the representation*. Consequently, paradigms cannot be reduced to the concepts of paradigms. Hence, the concepts of paradigms are injective projections of paradigms as processes into the feature-space of the respective observer; where the concepts of paradigms – as well as all concepts – are the structure-like feature-complexes in the representation-space of the observer. The correspondence of paradigmatic processes to the structure-like feature-complexes by the observer is the matter of context definition together with the interpretation rules.

The exercise of paradigms is possible only through paradigms, because paradigms are not reducible to the concepts of paradigms. The concepts of paradigms are useful by showing on the paradigms like the finger showing on the star and help us to control our behavior in deal

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[e] The word "sumject" is a neologism. We deduce it from Latin "sum" = "I am" and we build it according to the word "sum" like "*sum*ma". This deduction emphasizes the aspect of generic wholeness. German: Sumjekt, Russian: суммъект.

with them. In addition to this must be said, that there are our paradigms, which generate our behavior. Then we control our behavior in the frame of a self-consistent and self-similar paradigm of ourselves.

As a metaphor, we can illustrate the relation between paradigm and concept with the following image. We often recognize trees (paradigms) on the leaves (concepts, features). However, for generation of a leaf (concept) we need either to be a tree (sumject, paradigm) or to use such one (as an instrument). The trees (paradigms) also bring fruits (daughter-paradigms, sub-paradigms). The generation of paradigms is a part of the general ability of sumjects to generate in general and to self-generate in special.

2.7 Paradigms and metareprasentations

Remember a few sentences already said about paradigms.

We call the *systems of behavioral instruments* **paradigms.** (1.1) Paradigms should be able to generate concepts together with their contexts. (1.3) In general, paradigms generate behavior.

Minimal paradigm: A system of behavioral instruments by which an entity can be surely differed from all other things of the world we call the ***minimal paradigm*** of this entity. (1.5)

The minimal paradigm represents entities in the sense, that it produces detection of entities as the discerning of them from all other things of the world, equal whether real or imagined. Indeed the minimal paradigm produces not only one of separations, but also implicitly the whole class of them, which belongs to this one quality. (1.6)

Small paradigm: A system of behavioral instruments by which an entity can be surely differed from all other things of the world, ***and*** it is possible to say about this entity, what range it has in the corresponding

class of such entities (their equivalence class); we call the ***small paradigm*** of this entity. (1.6)

The small paradigm represents entities in the sense, that it produces not only detection of entities, but also explicitly their ranking place in the whole class of entities with the same quality. (1.6)

Now we see that if the minimal paradigm generates qualities, then the small paradigm generates features. (1.6.)

Paradigms are ***entities of the sumject's behavior.*** … The exercise of paradigms is possible only through paradigms, because paradigms are not reducible to the concepts of paradigms. (2.6)

Big paradigm: A system of behavioral instruments by which an entity can be created surely, we call the ***big paradigm*** of this entity.

Complete paradigm or technology: A system of behavioral instruments by which an entity can be created surely with the a priori planned features, we call the ***complete paradigm*** or ***technology*** of this entity.

Therefore, we see four kinds of paradigms:
- The minimal one
- The small one
- The big one and
- The complete one or the technology

In respect to the three types of processes:
- synchronic
- diachronic and
- synagonic

We see the four kinds of paradigms for each type of processes.

Consequently, there are a total of nine in the basic collection of paradigms. These nine *archetypes* of paradigms form the whole set of basic generators of behavior.

The difference between big and complete paradigms is gradual. The technology is the extremum of the big paradigm in the case if the realization of paradigm's entity exactly corresponds to the sumject's intention.

Matrix of paradigmatic archetypes

Kind of Paradigm / Type of process	Minimal paradigm	Small paradigm	Big paradigm	Complete paradigm or Technology
Synchronic processes	Minimal synchronic paradigm: *Representation* of *events and phenomena*	Small synchronic paradigm: *Metarepresentation* of events and phenomena	Big synchronic paradigm: *Creation* of events and phenomena	Complete synchronic paradigm: *Production* of events and phenomena
Diachronic processes	Minimal diachronic paradigm: Representation of new synchronic paradigm	Small diachronic paradigm: *Metarepresentation* of *new synchronic paradigm*	Big diachronic paradigm: Creation of new synchronic paradigm	Complete diachronic paradigm: Production of new synchronic paradigm
Synagonic processes	Minimal synagonic paradigm: Representation of the implementation of new synchronic paradigm	Small synagonic paradigm: Metarepresentation of the implementation of new synchronic paradigm	Big synagonic paradigm: *Creation* of *the implementation of new synchronic paradigm*	Complete synagonic paradigm: Production of the implementation of new synchronic paradigm

The matrix of paradigmatic archetypes is on its part the representation of a classification paradigm of paradigms.

All phenomenological perception and deal can be generated due to combinations, superposition, imbedding, complementation, union, recursive procedure, and other operations with the paradigmatic archetypes in the corresponding context of the sumject.

The relation between the observable behavior and the corresponding paradigm is non-unique. Eventually certain paradigms in different contexts generate the same form of viewed behavior and some paradigm can generate different forms of behavior by different contexts or different sumjects.

2.8 Key and lock

Paradigms and the construction of the view of the world. The most dramatic difference between the Theory of Paradigms and the traditional conception concerns the construction of the view of the world.

The traditional conception begins the construction of the world by the a priori empty space and running, but also empty time. Then it fills them with points, lines, figures, bodies, watches, and other processes. After that, it equips them with properties like mass, charge, spin, charity, and so on. It builds with them, constructs, and assembles the phenomena like a watchmaker the watch or a generalized *"Lego"*. The traditional conception always steps from easy to more complicated, from simple to more complex.

The Theory of Paradigms proceeds just obversely. The paradigmatic construction of the view of the world begins with the architecture of the thinkable most complex, i.e. with the *complete diachronic and synagonic paradigms of being*. They carry initially the ethic dimensions in the context of the origin sumject. They deduce the

individual and the concrete due to the working of paradigms. The complete diachronic paradigm generates itself and new synchronic paradigms. It realizes itself by the synagonic process of the implementation of new synchronic paradigms. The new synchronic paradigms produce the new events and phenomena.

Nobody assumes, that the processes of creation and embodiment proceed timeless or instantly. Anything needs time and depends from its context.

The metaphoric imagination of *the representation* we can show as an opening of a lock with a key, so that it will be successful, if the key exactly fits, and if we use it correctly without stress and force.

In the same manner, we can see *the metarepresentation* as an attempt to open a lock with a bunch of keys due to the evaluation of keys, which is good enough, what needs at least the small paradigm. The evaluation is just the metarepresentation. Then we hope, that either the exactly fitting key is in the bunch or a similar key will be found that opens the lock with certain effort and with not to much force.

On the same metaphoric way we show *the paradigmatic approach* as an attempt to create the correct fitting key instead of looking for him in the safe or in the bunch of keys on the neighbor's belt. Then diachronic paradigms are the corresponding factories, which realize the necessary creation, annihilation, and correction processes to manufacture the objects of the paradigms.

To put the new created key on the neighbor's belt is a synagonic process and needs at least the big synagonic paradigm to implement the synchronic paradigm of placing of the new key in the bunch. If the synchronic paradigm of placing of the new key in the bunch is the same like the one of the old key, then the synagonic paradigm becomes the operator of identification of the old synchronic paradigm, which should be used in this case.

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