

**Laurens Buijs**  
**Jaron Harambam**  
**Marijn Siebel**  
**Amsterdam, 2011**

## **Introduction**

In this exercise we will try to shine the light of human intellect upon its present environment. All concepts and relations articulated in our argument form a continuum. Our exercise intends to stretch out this continuum, revealing its concepts and their relations. Although we will sometimes use words that in everyday life express the passing of time (like 'result', 'become' and [...]), in our argument they express immediacy. This is due to the fact that essentially all concepts and relations are just parts that form the one (continuum).

We claim that every organism is an evolutionary being. We state that Darwinian Evolution (DE) is the mechanism that enables the evolutionary being to experience spacetime as sequences of points in place and time. This is why we call it the continuum of placetime. This continuum expresses by its name the intrinsic connection of DE with Time and the Natural Realm (NR) in which it occurs. With the occurrence of DE, the NR becomes the Habitat of the organism. As we see, the organism becomes an organism only when a 'non-organism' is able to replicate itself. This shift from inorganic to organic evolution (DE), which means the shift from 'non-life' to life, is like a shift from 'not-something' to something.

The experiences of points in place and time are accumulated over the course of millions and millions of years of DE in the evolutionary being. Thus, with DE, time and place become interpretable for the individual. These points of time and place are organically accumulated in the genotype, and form the *a priori knowledge* that enables the evolutionary being to interact with its environment. This will be contrasted to the possibility of socially accumulated, *a posteriori knowledge*.

We will argue that the continuum of placetime can be logically derived from the empirical foundations of DE. With the occurrence of this continuum, hence of DE, three interactions are initiated in which an individual and an environmental factor can be distinguished. The intrinsic connection of DE with the Habitat from which it originated makes for their distinction. We will see that the environmental factor is the "moment" of constraint, and the individual factor the "moment" of possibility. These are the three interactions that constitute the continuum.

The first interaction of the continuum is expressed by the on-going Adaptation of a species to its environment, "seeking" to reproduce. So Adaptation can be seen as strategies of reproduction. DE has unfolded an enormous diversity of possible strategies, which are executed by the evolutionary being within its environment. From out this enormous diversity, every evolutionary being is capable of interacting with a certain range of changing environmental conditions during its lifespan. We see that the complexity of these strategies is dazzling, especially in social species.

In the second interaction of the continuum, a phenotype develops by the execution of strategies of reproduction. By this, we mean the tools developed by the everyday interaction of the evolutionary being with its environment. In

ourselves, *homo sapiens*, this is expressed in legs, arms, the sensory system, the brain, et cetera.

Several of these phenotypes are capable of social interaction. This capability enables the social evolutionary being of entering in an interaction with similar but discretely different individuals and hereby creates the social environment. This is the third interaction of the continuum. The self-induced social environment adds to the environment of the evolutionary being and results in a logic that expresses the prevailing relationships in which society tries to make sense of its Habitat.

The results (or possibilities) of these three interactions (Adaptation, the phenotype and the logic of a society) are the qualities of respectively DE, the Individual Realm (IR) and the Social Realm (SR), therefore they are called quality generating interactions. These qualities are also the possibility of their consequent realm, and are therefore transposed from one realm to another. We shall see that the manifestation of a quality into its consequential realm is the possibility of the transposed quality: from Adaptation through the phenotype and through the societal logic, eventually creating the possibility for the quality of Projection, pragmatism. We conclude that the continuum of placetime entails three dialectic movements initiated by the occurrence of DE.

We will argue that the continuum of placetime, points of Time and Habitat, has two *reflexive shifts*. The first shift is the occurrence of DE, where a state of molecules is capable of making an almost identical copy of itself (by withdrawing energy from its environment). The placetime continuum is intrinsically reflexive upon the NR it occurs in by effectively replicating a part of itself. Therefore, the first shift is *reflexive upon the NR*. The second shift is with the occurrence of the SR, where the evolutionary being is confronted with other evolutionary beings. Able to recognize the other as both similar and discretely different, the individual becomes reflexive upon itself through its social interaction. This means that the placetime continuum (now) is reflexive upon time in which it occurs, because the social interaction makes for the possibility to accumulate logic of ancestors. By means of interpreting these socially conveyed points in time and place, the social evolutionary being is able to make predictions. We call this shift *reflexive upon time*, as time is perceived and projected. Because this is the second shift of reflexivity, this is the possibility of Meta-reflexivity (Projection).

The above unveils the intrinsic connection of the mechanism of DE with Time and Habitat in which it occurred, and hence the intrinsic connection of the evolutionary being with the environment from which it originated, and in which it resides. We shall argue that the points of time and place in the placetime-continuum are accumulated in two different manners: one organically, the other socially. Where the Organic Accumulation of Placetime (the genotype, OAP) is *a priori knowledge*, the Social Accumulation of Placetime (the societal logic, SAP) is *a posteriori knowledge*. Both kinds of knowledge are two different manners of accumulating time and place with distinct capabilities: one choosing direction, the other formulating possible directions. We shall further see that these manners of accumulation of placetime are both reflexively expressed in the Projection of the individual.

We start our argument with the assumptions on which it is based, its metaphysics.

## **Metaphysics**

Our metaphysics is very short. We propose to conceive Time (1) and the Natural Realm (2, NR) as always and ever constraining upon Darwinian Evolution (3, DE). With DE, we mean the shift from inorganic to organic evolution, from 'non-life' to life. The unique aspect of DE is the possibility of an inorganically formed combination of molecules able to reproduce itself, and thereby becoming an organism. By withdrawing energy out of its environment, it makes an (almost) identical copy of itself. This effectively means that the organism is a reproduction of a (small) part of the NR (which can now be called Habitat) from which it originated and now resides in. We shall see that because DE is situated in its origin, constraint and possibility are intertwined. CR0 represents these metaphysics.

## **Darwinian Evolution**

We claim that every organism is an evolutionary being. We shall see that DE presupposes the evolutionary being.

Because of the intrinsic connection DE has with its Habitat, where constraint and possibility are intertwined, and because we shall see that over time, DE is the possibility of its quality, Adaptation, we shall argue that DE entails a dialectic movement. We conceive Adaptation as possible strategies of reproduction. As we will see, this quality is made possible by the mechanic interaction between Natural Selection (NS) and Fitness. We will start with the explanation of this first interaction of the continuum.

Because DE is situated in its origin, we pose NS and Fitness as mutually inclusive. By this we mean the opposite of mutually exclusive: the one cannot be without the other, and vice versa. Without Fitness, NS is impossible, and without NS, Fitness is impossible. This mutual inclusiveness expresses the continuum, as they are both one (as the result of their interaction, Adaptation) as distinct (in their interaction).

The intrinsic connection of DE with its Habitat manifests itself by the interaction of NS and Fitness over an enormous timespan. Over hundreds of millions of years, this interaction unfolds in many different pathways of reproduction (or particular strategies). Such a strategy is the accumulation of all the adaptations of the ancestors. Nonetheless, these pathways are always limited (constrained) by the relentless flow of time, which accounts for ever-changing environmental conditions in the Habitat (CR1). So their interaction is both constrained *by* itself, as it is a possibility *in* itself (CR4 & PR1). It follows that in this interaction, Fitness is the individual factor and hence the moment of possibility, and NS the environmental factor and hence the moment of constraint.

We can see that the on-going interaction between NS and Fitness is mechanic, as it happens purposeless and unconsciously, and is the possibility of its quality, Adaptation (PR2). Inversely, as NS and Fitness also constrain each other, Adaptation is therefore constrained by its very own interaction (CR5). This effectively means that Adaptation is the mechanic interaction between NS and Fitness. It follows that DE is constrained by itself (CR6) and simultaneously a possibility in itself.

As Adaptation occurs in the evolutionary being, DE, with its quality Adaptation, presupposes the evolutionary being, the individual. Hence, DE is the occurrence of its quality, and by means of this quality, it creates (is the possibility of) the Individual Realm (PR3). Because of the mutually inclusive character of NS and Fitness (CR4 & PR1), which is the occurrence of a quality, Adaptation (CR5 & PR2), which is the possibility of another realm, the IR (PR3), we can state that through its concepts and their relations, DE entails a dialectic movement. This means that its quality is transposed onto the IR and expressed in the genotype, where the accumulation of all ancestral adaptations finds its expression.

We conclude that DE entails a dialectic movement, initiated by the mechanic interaction, which results in its quality Adaptation: possible strategies of reproduction. These strategies are executed through the evolutionary being, the individual.

Adaptation is the possibility of the genotype of an evolutionary being. This genotype is the accumulation of the on-going mechanic interaction between NS and Fitness over millions of years. The constraints of Time and Habitat imposed upon the mechanic interaction of DE mean that Adaptation is intrinsically dependent upon ever-changing Habitat and upon the strategies that are viable to reproduce under these changing conditions. So, the intrinsic connection of DE with Time and NR is revealed.

We state that with DE, the first reflexive shift occurs. DE is an intrinsically reflexive mechanism because with DE, a (tiny) part of the NR is able to (almost) identically mirror itself in an evolutionary being, the copy of itself. In strategies of reproduction, one can distinguish between replication (through fission) and regaining of form (through sexual reproduction). Both phenomena are impossible in inorganic evolution of Time and NR. We can state that an evolutionary being is intrinsically reflexive towards the Natural Realm from which it came.

We realize that Natural Selection and Fitness are very general terms, which have enormous depth. Selection mechanisms on Fitness can occur at many levels, both within the individual (which theoretically can also be a gene, or a (re)combination of them) and sometimes within the environment. Even among evolutionary biologists there is not always consensus on what can be distinguished as such levels. What we are stating is that in all these mechanisms of selection on all levels, a distinction can be made between an (individual) actor and its environment. These mechanisms are the interaction described above between Natural Selection and Fitness, in which the actor has a certain Fitness towards the environment it is confronted with.

### **Individual Realm**

We claim that every evolutionary being is an individual. We shall see that the individual presupposes the social evolutionary being.

The intrinsic connection between DE and the Habitat from which it came is, through the transposition of Adaptation, manifested in the IR. So, in the IR, again constraint and possibility are intertwined. And because we shall see that the IR is the possibility of its quality, the phenotype, we shall argue that the IR

entails a dialectic movement as well. We conceive the phenotype as expediency towards reproduction. As we will see, this expediency, IR's quality, is made possible by the functional interaction between the genotype and its Environment. We will explain this second interaction of the continuum below, but first we will have to clarify the functional character of this interaction.

The manifestation of strategies of reproduction (Adaptation) in the IR is the genotype, where all ancestral Adaptations are accumulated in. It should follow that in this manifestation, the intrinsic connection between DE and its Habitat is expressed, as Adaptation is the quality made possible by the interaction of NS and Fitness. This intrinsic connection is indeed expressed in the genotype. By means of the genotype, the evolutionary being executes a particular strategy of reproduction in more *or less* suitable environmental conditions.

We can see that the mechanic interaction of NS and Fitness is transposed through Adaptation onto the IR and by the execution of a particular strategy becomes a functional interaction, because the tools developed by this interaction are more *or less* capable of interacting with particular aspects of the Environment a genotype is confronted with.

We can now pose the genotype and its Environment as mutually inclusive. As stated before, the genotype is the expression of all ancestral "experiences" with their environments (adaptations). The functional character of their interaction makes clear that without the genotype, the Environment would just be NR (i.e. without the genotype, the Environment cannot presuppose functionality, selection criteria), and that without the Environment, the genotype cannot entail functionality. The intrinsic connection of DE with its Habitat is expressed here in the genotype, which presupposes its (range of) environmental conditions. Here again, the continuum is expressed by the mutual inclusiveness of their functional interaction, in which they are both one and distinct.

Here in the IR, the intrinsic connection of DE with its Habitat is manifested by the functional interaction between the Environment and a genotype. Over the lifespan of the evolutionary being, this interaction between its Environment and its genotype develops several tools that are more *or less* functional towards the environmental conditions it is faced with. We see here that Time and Habitat, in the form of lifespan and environmental conditions (which mean the set of changes between Environments during a lifespan<sup>1</sup>), are again constraining upon the interaction of Environment with a genotype (CR2). It follows that their interaction is both constrained *by itself* as it is a possibility *in itself* (CR7 & PR4). Here again, we can distinguish the genotype as the individual factor, which is the moment of possibility, from the Environment as the environmental factor, which is the moment of constraint.

In the lifespan of the evolutionary being, the on-going functional interaction between its Environment and its genotype is the possibility of the quality of the IR, the phenotype (PR5). Inversely, as the Environment and the genotype also constrain each other, the phenotype is therefore constrained by its very own interaction (CR8). It follows that the IR is constrained by itself (CR9) and a possibility in itself.

As we have seen in the introduction, several of these phenotypes are capable of social interaction, which enables the social evolutionary being of

---

1

entering in an interaction with similar but discretely different individuals and hereby creates the social environment, it follows that the (possibility of) IR is the possibility of its quality, and by means of this quality creates (is the possibility of) the Social Realm (PR6). Because of the mutually inclusive character of the Environment with the genotype (CR7 & PR4), which is the occurrence of a quality, the phenotype (CR8 & PR5), which is the possibility of another realm, the SR (PR6), we can state that through its concepts and their relations, the IR entails a dialectic movement. This means that its quality is transposed onto the SR and expressed in the Intersubjective Reality.

We conclude that the IR entails a dialectic movement, initiated by the functional interaction that results in its quality the phenotype: expediency towards reproduction. The expediency of the phenotype (the evolutionary being, the individual) follows from the functional character of the interaction between the genotype and its Environment. Because the tools developed by this interaction are more *or* less capable of interacting with particular aspects of the Environment a genotype is confronted with, we can clearly distinguish that the interaction of the genotype with its Environment is functional, while the individual itself is expedient to reproduction.

The phenotype of social evolutionary beings is the possibility of the intersubjective reality. The intersubjective reality is the accumulation of phenotypes in their (social) environment. Here we already glimpse upon the unique character of the Social Realm (SR). We see that the SR is the accumulation of these qualities (phenotypes) themselves confronted and interact with each other, making for a self-created (social) environment. This self-created social environment will prove to be a crucial element of the second reflexive shift.

We realize that the use of the terms NR, Habitat, Environment and environmental conditions might be confusing. We want to make clear that the NR becomes Habitat with the occurrence of DE. Moreover, we want to make clear that Habitat becomes environmental conditions with the occurrence of the IR. As stated before, these environmental conditions are the set of changes in Environments during the lifespan of an individual. From this it follows that we see Environment as a sequence of points in time and place with which the individual is again and again confronted. This is how Time (lifespan) and Habitat (environmental conditions) become interpretable for the individual. This can be imagined as the individual who watches a movie, where its interaction is constantly with a single frame (Environment) of the movie, and not with the movie as a whole. Only once the movie is finished, the individual can reflect upon the movie as a whole (environmental conditions).

We have proposed to conceive the genotype as Organic Accumulation of Placetime (OAP) and *a priori knowledge*. As stated before, the genotype is the (organic) accumulation of all ancestral adaptations of a particular evolutionary being, which is the organic accumulation of the on-going mechanic interaction between NS and Fitness. This is in turn expressed by the on-going interaction of the evolutionary being between its genotype and its Environment. As this interaction is the execution of a particular strategy of reproduction, it follows that the evolutionary being (the phenotype), from the moment it comes into existence, has data stored in its genotype to enter into functional interaction with its Environment, expedient to reproduction. This is why we call it Organic Accumulation of Placetime, which is *a priori knowledge*. From now on we will call the genotype OAP.

We have proposed to conceive the phenotype as the Reflexive Capacity (RC). It is clear by now why we call it reflexive: DE is intrinsically reflexive upon itself. The Reflexive part of the concept of RC is now clear. We call the Reflexive Capacity a capacity, because it is the phenotype. Let us clarify. Because the phenotype are the tools developed over a lifespan by the functional interaction between Environment and OAP, it depends on this interaction how expedient to reproduction a particular set of tools can actually be. So the “success” a phenotype (an evolutionary being) has in spreading its genotype onto following generations, depends on the environmental conditions it is confronted with during its lifespan. In these conditions the evolutionary being can be more *or* less adequate in its expediency. This defines the phenotype as a capacity.

### **Social Realm**

We claim that some evolutionary beings (species) are social evolutionary beings. We shall see that the social evolutionary being presupposes Projection.

We have learned so far that the intrinsic connection between DE and the Habitat from which it came is, through the transposition of Adaptation, manifested in the IR. We have seen that this manifestation is the possibility of the RC, the quality of the IR. This quality is manifested in the SR, so in the SR, constraint and possibility are intertwined once again. We shall see that the SR is

the possibility of its quality, the Social Accumulation of Placetime (SAP). Just like with DE and in the IR, the SR entails a dialectic movement. We will conceive the SAP as expedient to time, because SAP is a method of conveyance of points in place and time. As we will see, this expediency, SR's quality, is made possible by the catalytic interaction between the Intersubjective Reality (IsR) and the Institutional Reality (ItR). We will explain this third interaction of the continuum below, but first we will have to clarify the catalytic character of this interaction.

The manifestation of expediency towards reproduction (the RC) in the SR is the intersubjective reality, where all similar but discretely different RC's are accumulated and confronted with each other. Here we see that the individual creates its own social environment, which coalesces with the Habitat. But because this social environment is the possibility of the self-created method of conveyance for points in place and time, the social evolutionary being becomes intrinsically connected not only with its Habitat, but also with the Time it is situated in during its lifespan. Both the intrinsic connection of the social evolutionary being with its Habitat and with its lifespan (Time) are expressed in the IsR. By means of the IsR, in which the phenotype is confronted with itself as similar and discretely different, a "self-made" environment (interaction) is created that is more *or* less capable of expediency towards time.

We can see that the functional interaction of the Environment with the OAP is transposed through the RC onto the SR. Here, the interaction is of the quality with itself, and can therefore be imagined as a self-enhancing mechanism of IR's quality, expediency towards reproduction. This is the possibility of the social interaction between the IsR and the ItR, in which the RC creates its own reflexive environment (Projection). Because Adaptation, through the RC, is the root possibility of this reflexive environment, and is in itself not affected by the social interaction between the IsR and the ItR, we call this interaction catalytic<sup>2</sup>.

We can now pose the IsR and the ItR as mutually inclusive. As stated before, the interaction between the both is the self-made social environment. The catalytic character of this interaction makes clear that without a social evolutionary being there can be no institutional reality, and without institutional reality there cannot be a *social* evolutionary being. Here again, the continuum is expressed by the mutual inclusiveness of their catalytic interaction, in which they are both one and distinct. We have seen in the previous realms that the individual presupposes its environment. But here, the accumulation of individuals makes for their own environment, which lasts over lifespans and even generations. So we see here that the social evolutionary being, through its intrinsic constraints from the Habitat it came from and resides in, becomes the constraining factor on its own creation.

Here in the SR, considered as coalescent with the environmental conditions (Habitat), the intrinsic connection of the social evolutionary being with its Habitat is manifested by the catalytic interaction between the IsR and the ItR. Because the social evolutionary being creates its social environment as an integral part of its environmental conditions, the constraints of Time and Habitat are transposed through the RC. As the social environment is self-created and entails a method of conveyance for points of place and time, Time and

---

<sup>2</sup> We borrowed this term from chemistry, where it is defined as "acceleration of a chemical reaction induced by the presence of material that is chemically unchanged at the end of the reaction" (WordNet, Princeton, consulted on 26 July 2011)



Habitat now constrain both the individual itself and the environment it creates. Time and Habitat have the form of death and decay, where death limits the lifespan of an individual and thus its capacity to contribute to (direct) the catalytic interaction, and where decay limits the materialized elements of the societal logic (SAP) (CR3). It follows that the catalytic interaction between the IsR and the ItR is both constrained *by* itself as it is a possibility *in* itself (CR10 & PR7). Perceived from out of its origin, we can distinguish the IsR as the individual factor, which is the moment of possibility, from the ItR as the environmental factor, which is the moment of constraint. As we will see however, with the occurrence of Meta-reflexivity, the individual factor becomes the environmental factor and hence the moment of constraint because the individual creates its own environment.

In the accumulation of lifespans of social evolutionary beings, the on-going catalytic interaction between their IsR and ItR is the possibility of the quality of the SR, the SAP (PR8). Inversely, as the IsR and the ItR are also constrained by each other, the SAP is therefore constrained by its very own interaction (CR11). It follows that the SR is constrained by itself (CR12) and a possibility in itself.

As we have stated in the introduction, the (possibility of) SR is the possibility of its quality, and by means of this quality partly creates (is the possibility of) Meta-reflexivity (Projection) (PR9). This is made possible together with the quality of the IR, and will be explained in the next section. Because of the mutually inclusive character of the IsR with the ItR (CR10 & PR7), which is the occurrence of a quality, the SAP (CR11 & PR8), which is the possibility of another 'super-quality', the Projection (PR9), we can state that through its concepts and their relations, the SR entails a dialectic movement. This means that its quality is transposed onto the Projection.

We conclude that the SR entails a dialectic movement, initiated by the catalytic interaction that results in its quality the SAP: expediency towards time. The expediency of the SAP follows from the catalytic character of the interaction between the IsR and the ItR, because in this interaction the social evolutionary being is more *or* less capable of materializing its SAP and conveying its logic over lifespans or generations. We see that this means that this self-created interaction is more *or* less expedient to time. We can distinguish that the interaction of the IsR with its ItR is catalytic, which means conveying points of time and place over the constraints of lifespan and generations, while the SAP is expedient to time.

The SAP is an intrinsic part of the possibility of Projection. The transposed quality of the SR into the Projection forms a part of this Projection and as we will see, will create a feedback loop through this Projection with which the social evolutionary being is able to direct its own catalytic interaction. Here in the SR, we start to see the occurrence of the second reflexive shift. Because the IsR is the accumulation of phenotypes, and hence a self-created environment, the individual factor becomes the environmental factor towards Projection. It follows that the moment of possibility (individual factor) switches to the moment of constraint (environmental factor). How this will lead to the possibility of Projection and the consequences of this super-quality, will be explained below.

## Projection

We have arrived at the final stage of our exercise with the human capability of Projection and its relational capacity to direct. As it directs, we will see that the Projection is the tool that enables us to bridge time. Directing is the second reflexive shift in action. It is nonetheless impossible for individuals to use the projection (i.e., to direct) without a logic to interpret the world and its workings. Projection can only be through the possibility of the social phenotype and hence through the possibility of SAP. With this capacity of direction we will see that by directing, social evolutionary beings (and especially humans) are capable of creating *feedback loops* in the very continuum they exist. These feedback loops are a direct consequence of the self-created social environment that, through SAP, transcends the environment it came from, the Habitat.

One can speak of feedback loops because of the quality of pragmatic direction, which is Projection. We can state that by creating the possibility of SAP, the social phenotype is capable of internalizing a certain logic on how his individuality fits in the environment it encounters (recognition of similarity in discretely different objects), i.e. on how the world around him works. Hence, we can state that the social phenotype is capable of Projection, as to figure out workings of anything one has to imagine and predict. We call the quality of the SR, SAP, expedient towards time, as the expediency towards reproduction of social phenotypes results in a catalytic interaction with itself in the social environment allowing for the creation of new possibilities in time.

This quality is also empirically observable in our social Habitat and its history. We can firmly state that our social strategy has led to a manifold of conveyance methods throughout our known history and that these methods transcend the boundaries of lifespan and generations, i.e. of time<sup>3</sup>. Furthermore we can observe that some logics are more comprehensive than others in incorporating observable or measurable objects and phenomena. Therefore we can also state that the logic that is formed through the interaction between the ItR and its IsR (SAP) is dependent on the individual's Projection, capable of deriving, inferring and predicting through available means.

So from out the individual quality of pragmatic direction; i.e. the capacity of forming a logic utilizing SAP and the capacity to direct the SAP more *or* less through one's own logic (Projection), we can see that this Projection is partly dependent on (constrained by) the ruling logic (SAP), partly on what the social evolutionary being can make of it. In the catalytic interaction that constitutes SAP, the individual (IsR) is now the constraining moment as it is now its own environment and thus the environmental factor. Likewise, the environment (ItR) is from out the Projection the moment of possibility as it is now the individual factor persists over time. We can see clearly now how the moments of constraint and the moment of possibility change with the second reflexive shift.

From the above it follows that the second reflexive shift is a delicate web of interconnections between the respective qualities and their interactions.

---

<sup>3</sup> One has to distinguish between mechanically developed methods of conveyance that constitute the social phenotype and the methods of conveyance created within the social environment. The first is constrained by lifespan and environmental conditions (the form of the constraints of Time and Habitat in the IR, CR2), the latter is constrained by death and decay (the form of the constraints of Time and Habitat in the SR, CR3). The most clear-cut example is language versus typography.

Although immediate, the second reflexive shift is constituted by a *ménage a trois* of the (social) Phenotype, SAP and Projection. Its possibility is created by expediency towards reproduction, transposed onto the SR in expediency towards time. But its reflexivity is expressed only by the Projection, which is pragmatism of evolutionary beings, as it is able to internalize, judge and predict. The second reflexive shift is thus expressed by the individual use of SAP hereby directing the very interactions that constitute the social evolutionary being.

We now grasp the logical relations that both constitute the Projection as the whole new relation of pragmatic direction that it brings to fore. One must realize that the constraints imposed on the IR, through the interaction of the genotype and its Environment which is the phenotype, constrain the Projection in its pragmatism. Social evolutionary beings have wants, needs, intelligence, sympathy, empathy, anger, envy etc. etc., which are all represented in the Projection. Thus, one can imagine that the Projection has its own phenotype, or, to be more precise, that the Projection is a very complicated part of the phenotype and hence a categorization of a specific combination of tools, like language, deduction, induction, memory, etc.). As this phenotype represents itself through the social evolutionary being's Projection, it is constrained in the capacity to pragmatically direct. CR 13 represents this constraining relation.

On the other hand, one can only learn *from* the available information and *by* the logic that is used to interpret this information. Every social evolutionary being is confronted with a certain state of SAP. One can imagine the mythical world view of what is often referred to as barbarian culture, the teleological world view of the Greeks, the theological world view of the dark ages, the contingent world view of post-modernism etc. These views all have a logic on how to make sense of the Habitat it exists in and this logic is constituted by the accumulation of individual Projections. If a logic is coherent and compelling, meaning it "satisfies" or "explains" the curiosity of the individuals that constitute it, this logic is internalized by the individuals themselves. It is hard, difficult and sometimes even very inexpedient towards reproduction to break away from the dominant SAP by which the world is made sense of. Only the very smart, very brave and very foolish have tried to alter existing SAP. We see here how the Projection is constrained by the very catalytic interaction of the social evolutionary beings with themselves, hence of all Projections with themselves, where (parts) of the SAP are internalized and hardly ever questioned. This is how the SR constrains the Projection, and this relation is represented by CR 14.

As stated before, the second reflexive shift is constituted by the *ménage a trois* of respectively the qualities phenotype, SAP and Projection. This three-way is interconnected through three different kinds of relations. One has just been discussed: from the previous two paragraphs we can conclude that the IR and the SR independently constrain the Projection (CR 13 & CR 14).

We have also argued that the possibility of Projection is created by expediency towards reproduction, transposed onto the SR in expediency towards time. This means that social phenotype through the possibility of SAP, creates the possibility of the Projection. It is only in conjunction with a SAP that the social phenotype is able to form a Projection. Hence the possibility of Projection is created by the combination of the phenotype through its self-created quality SAP. PR 9 represents this relation and is the second kind of relation that constitutes the Projection.

We can see that with the second reflexive shift, and thus with the possibility of Projection, new relations emerge. Not only direction on which we will elaborate below, but for the first time in the continuum of placetime, realms themselves independently constrain something, namely the Projection. Inversely, we see that for the first time in the placetime continuum, two realms together, by means of their respective qualities, make something possible, again the Projection. Here the second reflexive shift is further expressed, as the Projection is now constrained in itself and simultaneously a possibility by itself.

We have now arrived at a unique relation in the placetime continuum, namely direction and the feedback loops it creates. We state that every Projection is more *or* less capable of directing the catalytic interaction between the ItR and its IsR and thus is more *or* less capable of directing the SAP, i.e. every evolutionary being is able to direct the SAP by influencing the catalytic interaction it takes part of. DR 1 represents this directive relation. One can imagine SAP as the accumulation of all the Projections of all social evolutionary beings involved in a catalytic interaction<sup>4</sup>.

Here the first feedback loop is revealed. As argued before, the prevailing SAP works constraining on the Projection. Because SAP is a catalytic interaction, i.e. a self-enhancing mechanism, prevailing SAP's are internalized resulting in a normative frame from which it is often hard and even discouraged to break away. So although every Projection is capable of more *or* less directing this logic, it very rarely happens that one social evolutionary being, one Projection, is capable of changing the logic radically. However, this is not impossible and the more an individual can align its Projection with others, the more direction it can give to the prevailing SAP. This is what we call the *catalytic feedback loop*.

The next two feedback loops are a consequence of the catalytic feedback loop in the SR. We mean by this that these directive relations (DR2 & DR3) are only possible through SAP. We can observe that social evolutionary beings are able to direct their phenotype by directing their interaction between their genotype and its Environment. We can also distinguish which factor is being directed, the environmental or the individual. One can think of agriculture versus medicine, where the phenotype is directed either by influencing the environmental factor or by influencing the individual factor. DR 2 represents this relation and creates the *functional feedback loop*. Note that it is not the Environment itself nor the genotype itself that is being directed, it is the interaction between the two that is being directed, thus the phenotype.

The direction of Adaptation is more problematic. On some levels we only grasping upon the surface of how our agency is effecting the mechanic interaction of Natural Selection and Fitness, both for ourselves and for other species. However, there are some clear-cut examples on how we pragmatically direct this interaction. One example is domestication of animals through breeding programs. Another example is the knowledge we gain about the

---

<sup>4</sup> The catalytic interaction of the SR is part of Environment, as it is part of the Habitat. This is how one can distinguish social groups. By determining where the logic of a Projection takes shape, i.e. where the catalytic interaction is geographically (or nowadays virtually) located. Relative differences between individual logics among individual indicate belonging to a social group. Top down one can distinguish a SAP constituted by relatively similar Projections and thus a social group and determine belonging by the resonance or dissonance of individual logics (Projection) with this SAP.

balance within ecosystems and the possibilities of altering them. CRF 3 Represents this relation and makes for the *mechanic feedback loop*.

We must finally note that Projection through SAP has also unintentional effects on the interaction described above. As chemical factories do not set out to destroy an ecosystem within a 20 mile radius, or that car drivers in cities don't intent to increase particulates in the air making for unhealthier conditions and dirty buildings. We still call this direction, as the actions undertaken (planting a factory, driving a car) are pragmatic. We are realizing more and more that the timespan of our actions and their consequences is increasing, which is not surprising given the complex interactions described above that over hundreds of millions of years of evolution resulted (among others) into humans.

We call the quality of the Projection pragmatism because it is the combination of the quality of the IR with the quality of the SR. This means that it is the combination of expediency towards reproduction and expediency towards time. Because the second reflexive shift means that the social evolutionary being is reflexive upon time by creating new conveyance methods of points in place and time (experience), a curious thing occurs. In social species, expediency towards reproduction is not (only) a priori anymore but (also) a posteriori, and as a consequence requires (causal) prediction. But as predictions cannot factor in "everything that could possibly happen" and thus need to be done on the basis of the principle of *ceteris paribus* (i.e. it is a prediction considering all other things being equal), uncertainty comes in. Human beings are capable of taking a more *or* less calculated risk. The future is per definition unintelligible, but it determined in our genotype and made probabilistically intelligible. We can state that, generally speaking, social evolutionary beings form a community in which investment into the community is sooner *or* later rewarded considering all other things being equal. The reliability (the accuracy) of these predictions determines how more *or* less expedient one can be towards reproduction and respectively time. Humans are in this sense, relatively to other species, extremely capable. Here comes to fore the importance of SAP. Over our known history we have created logics with an enormous capacity to interpret all kinds of other logics and its objects. By means of libraries, architecture, book, scriptures, fossils, (wall) paintings, archaeological artefacts etc., we are able to interpret previous points of place and time and make more accurate predictions. This has resulted in a social complexity that is dazzling and where it is not always clear-cut why agency is expedient to reproduction. However, it is often much more clear how agency is expedient to time. The puzzle that lies on our path is how expediency towards time can be related into investments for expediency towards reproduction. It is straightforward that this does not have to relate to individual gain in expediency towards reproduction, but is much more focused on the expediency of the collective.