Part II: Theory of Knowledge

Chapter 4: Reflection, Transformation and Production of Objects. The Epistemology of Activity Theory

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4. Reflection, Transformation and Production of Objects
The Epistemology of Activity Theory

As mentioned in chapter 3, the intended systematic hierarchy of definitions and assertions is flawed by the very nature of anthropological knowledge. This knowledge is necessarily reflexive[1], due to the symmetry in the relation between subject and object in the study of the anthropological object field. This fact, to which we shall often return, presents a serious dilemma for all humans thinking about human matters.

As will be discussed in more detail later, even knowledge about matters outside the anthropological field is involved in this calamity. Any philosophical or scientific investigation, whatever its primary objective, must necessarily be reflexive. That is, in addition to pursuing a clarification of focal, ontological problems concerning the object investigated, the knowledge seeker must maintain a supplementary concern for understanding the very process of investigating the primary objective of knowledge.

The possibility of a built-in bias in our thinking presents a basic problem for epistemology and even for the philosophy of language. In previous chapters, I have presupposed, somewhat carelessly, the existence of creatures possessing a knowledge as well as a language referring to the object fields. However, many scholars might claim that the problems in epistemology and philosophy of language must be prior to those of ontology, and that indeed the latter must be considered as metaphysical speculation, based on dubious epistemic presuppositions.

Another problem that has been ignored in the previous chapters is the specific problem of reflexivity in the anthropological object field. In this field in particular, there is a major problem regarding logic, as the very discourse about human matters must necessarily be *recursive*, forming a circle that certainly has some vicious qualities. I shall return to this *reflexivity problem* in the later chapters covering meaning and science.

In the chapter on the theory of science (chapter 6), I argue that there should be a decisive distinction between the problem of knowledge in the fields studied by the natural sciences and the anthropological field. In the latter, there is a direct *problem of reflexivity*, in the former only a *problem of meta-reflexivity*. Whatever the status of reflexivity, however, as scientists or scholars we must *reflect* about our own knowledge.

The dilemma in our *reflexion* on our own knowledge is seen most clearly when we examine the most obvious ways to tackle the problem. We can neglect the problems attached to the subject pole; that is, we can take for granted that there is a subject actively acquiring knowledge and reasoning about objects. We can also put the *individual subject* (the scholar) or the *collective subject* (the scientific institution) in a semi-divine position, assuring the possibility of reaching objective knowledge, and even the existence of evaluation criteria for having reached such knowledge. In the theory of knowledge, this position generally is called *objectivism*. Objectivism thus means a trust that human knowledge can reach or at least approximate a state at which our knowledge reflects the object rather than the subject.

An alternative position is to be so concerned about the problematic status of the subject that we abandon the object of study as an entity of any autonomous or objective existence. This position in the theory of knowledge generally is called *subjectivism*. According to subjectivism, the knowledge we present is entirely, or at least predominantly, a reflection of the subject and not, or at most to a limited and uncertain degree, a reflection of the intended object. The subjectivist position, of course, is different for the individualistic version that is generally psychological and the collectivist variation that is more likely to have the stamp of a sociological anthropology of some kind.

The former position, the psychological, is in its extreme solipsistic, which means that the individual subject of thinking can be assured of only his or her own existence (which, by the way, will make the distinction between *his* and *her* a little uninteresting). The latter position, the sociological, is represented by a number of versions. For example:

3 Versions of Relativism

1. **Hermeneutic Relativism** – we cannot really understand the perception of the world of people who were living in other historical epochs, or who are now living under quite different conditions. (Gadamer)

2. **Linguistic Relativism** – the specific syntax and semantics of our language present a barrier to the world, as well as to other linguistic groups.

3. **Ideology-critical Relativism** – knowledge is just an expression of the sociological bounds under which we are living, for instance it is just a reflection of the collective interest of the ruling class in the society.

These types of subjectivism, also called relativism, can be divided according to the status of the object. The most radical form, the *subjectivist theory of knowledge* or *epistemology*, denies the very existence of any object of knowledge. This version generally is called *idealism*, because all that we are talking about (or in the case of individualistic *idealism*, all that *I* am talking about) are our (my) own ideas. I denote this position as **ontological non-realism**.

A more moderate position of *non-realism* is *scepticism*, in which the *existence* of external objects (and in the case of existence, the objective knowledge of such objects) is not directly denied, but the opportunity for *answering* such questions is denied. Consequently, I refer to this position as **epistemological non-realism**.

Strongly influenced by British empiricism, the non-realistic positions very often have been of the *phenomenalistic* type. As such, the existence of any entity, the very philosopher, is denied or doubted, as the content of "knowledge" or rather of experience is just phenomena (i.e., sense impressions or ideas). In accordance with the distinction between an ontological non-realism or genuine idealism and an epistemological non-realism or scepticism, I distinguish between an ontological phenomenalism, as found in Berkeley and Mach (1900), and an epistemic version, as propagated by Hume and more recently by Russell.[2]

Mach's position was mentioned in the section on cosmology in chapter 2. Generally, he advances a radical or *ontological phenomenalism* by rejecting not only the existence of entities, but also the basic distinction between the subjective and objective poles of knowledge in reference to phenomena. Actually, this position can be characterised as a phenomenalistic monism, the entities of which are called *elements of the world*:

> The contradiction between I and the world, impression or phenomenon and object is thus eliminated, [by the introduction of the monistic element, Author's comment], and the concern is only the coherence of the elements. (Mach 1900,21)

Two alternatives to the subjectivistic positions are the metaphysical positions of *realism* and *objectivism*. In fact, realism can have, at the same time, an ontological and an epistemological meaning, and it often does have both meanings at the same time. Ontological realism asserts the independent existence of external objects, and epistemological realism claims our ability to obtain a true knowledge of such objects.

The very progress of science during the last four centuries has been the basis for objectivistic theories of knowledge. The radical objectivist's position typically has been a mechanical materialism (e.g., physicalism and materialistic positivism), combining a rejection of idealistic (or scepticistic) epistemologies, as well as creeds or ideologies of an idealistic nature (e.g., religion). Hobbes was the first modern representative of this position. In spite of repeated attacks by philosophers for being a naïve realism, it has been the most widespread conception of knowledge among scientists. In psychology, for instance, examples of mechanical materialism include behaviourism and later neo-cognitive psychology.

The purpose of mechanical materialism thus is to reduce the problem of knowledge by considering the subject of knowledge to be just a receiver of objective information about the surrounding world. This position is often fortified by a materialist version of the positivistic understanding of science, a game where objectivity can be secured by sticking to a certain methodology.[3]

The tradition behind Activity Theory does not belong to any of the dominant branches of metaphysics mentioned above. Activity Theory is a child of a metaphysics called *dialectical materialism* that has generally been neglected in the Western world, and been kept a miserable prisoner in the former Eastern

world. The major originator of this tradition is Marx, to whom I shall stick rather stubbornly, thus to a certain degree reducing, in my opinion, the rather problematic influence of Engels as well as Lenin.

I will try to sketch a dialectic materialistic epistemology in the following:

A Dialectic Materialistic Epistemology

1. The production of knowledge is a basic human endeavour

2. The knowledge that we obtain refers to external, material objects

3. The production of theoretical knowledge has the historical quality of converging on a true description of these objects

4. The reason and the ultimate criterion for this truth is not placed in theory (or science alone), but in the relation between theory and practice

Because,

The special activity of pursuing theoretical knowledge is an integral part of general human activity.

The dialectics of the activity of knowledge seeking thus has two aspects:

A. The dialectics of the object and subject poles of the knowledge *relation*

B. The dialectics of the theoretical and the practical forms of activity in the knowledge *process*

In my opinion, there are two burdensome items in the heritage of dialectical materialism. First is Engels' metaphysics of the dialectics of nature (Engels 1968), according to which three universal laws rule over all parts of the universe. Second is Lenin's reflection theory of knowledge (Lenin 1924), which is, at the same time, a theory of mind.

In the preceding chapters, I have criticised the dialectics of nature, so will here stick to a discussion of the Leninist theory of reflection. I suggest that this theory can be formulated in the following points that supplement the already mentioned general theses of Marx:

The Leninist Theory of Reflection

1. The Status of Matter and the Veridical Status of Perception:

> Matter is the philosophical category to denote the objective reality that is given to human beings in their sense impressions, that is copied, photographed and depictured, and existing independently of them (Lenin 1924,124).

2. The Veridical Status of Sense Impressions and Conceptions

> Our sense impressions and conceptions are depictures [of the objects existing outside ourselves. (ibid. 103)

3. The Immaterial Status of Ideas (sense impressions and thoughts)

being merely reflections (metaphorically speaking mirror depictures) of the objects.

> That thinking as well as matter are "real", that is exists, is correct. However, to describe thinking as material implies a blunder of confounding materialism and idealism. (ibid. 242)
>
> That you in the concept of matter encompass thoughts ... is a confusion, for in this way the epistemological opposition between matter and mind, between materialism and idealism loses its meaning. (ibid. 244)

4. Practice as the Criterion for the Truth of Ideas.

> The mastering of nature, as shown in the practice of Mankind, is the result of the objectively true reflection of the phenomena of nature in the head of human beings, thus being the proof of the objective, absolute and eternal truth of this reflection (within the frames of what practice shows us. (ibid. 187)

Earlier in this treatise, I demonstrated that I agree with the first, second and fourth points. The third point is, in my opinion, the problematic one. It is problematic because it makes the Leninist theory of meaning and consciousness an epiphenomenological doctrine, against which I will now argue.

Curiously enough, there are two opposing characteristics of the Leninist conception of ideas. Firstly, ideas are not really *real*, but only mirror or reflect reality. Secondly, ideas have the potential to reflect reality in a true way. Thus, ideas do possess *reality*, but in principle *truth*. They are not a primary part of reality, but only report about reality. Through these reports, we are able to find the truth about reality. The first feature of the theory of reflection I call *picturality*, and the second feature *veridicality*.

Through the epistemological and psychological work of Rubinstein (1957, 1977), the doctrine of reflection has influenced the theory of knowledge as well as the very understanding of the psyche in the theory of activity that has emerged in the Soviet.

Rubinstein, in particular, has been the leading figure in the theory of mind that arose based on Lenin's teaching. Just as Sartre criticised Engels for hyper-dialectics, I see a parallel hypostatisation in Rubinstein's founding of perceptual reflection on a principle of universal reflection:

> The attribute of reflection, found in anything existing, is shown when the external influences by which a thing is exposed, is expressed in that thing. External influences are decisive for the internal nature of phenomena and are, in this way, conserved in this nature. All the objects that are influenced by a phenomenon are "represented", reflected in the phenomenon, precisely by the influences on it. Every phenomenon is, in a certain sense, "the mirror and echo of the universe". (Rubinstein 1957, 16)

In this generalisation, there is an intriguing resemblance to the pan-psychism discussed in the previous chapter. Just as the pan-psychist solves the problem

of consciousness by the postulation of a cosmic universality of this attribute, the pan-reflectionist solves the problem of perception by tracing it back to an omnipresent principle of cosmic reflection.

I have been criticising this tradition for many years, as well as its influence on Leontiev. In Leontiev's work, there is a logical contradiction between *the reactive thesis of reflection* and *the proactive thesis of activity*.[4]

Being an ardent believer in dialectics and consequently even in the strategy of attempting to solve this contradiction through a dialectical sublation, I will avoid the urge to engage in a diatribe against the reflection theory, such as the one in which I was engaged in my earlier work.

Rather, I will follow a three-part strategy:

Strategy for a Dialectical Sublation of the Theory of Reflection

1. I will look for the *kernel of truth* in the theory of reflection
2. I will also look for the surrounding area of application, where this theory has *no validity*
3. Finally, I will look for *alternatives* to the category of reflection in these non-valid areas.

4.1 The Kernel of Truth and the Insufficiency in the Theory of Reflection

The theory of reflection evidently has its origin as a theory of perception, a theory influenced by the advances in the sense physiology of the 19th century. The two theses of picturality and veridicality can be seen as a crude, but quite sensible starting point for a theory of how we perceive the world. Visual perception seems to fit especially well with this description, and the optical metaphor appears to be relevant in this case. The most influential developments in cognitive perception have actually strengthened the thesis of reflec-

tion. Whereas the theory of perception in Lenin's time and the following decades was dominated by idealistic tendencies (e.g., Gestalt psychology), there has been a change in the second part of the twentieth century, and both Gibson and Marr[5] have presented realistic and veridicalistic theories about visual perception.

What is the content of this complex notion of picturality and veridicality? Let us stick to the optical metaphor of the reflection theory and study an example of a picture in a mirror. A baby perceives the mirrored object of an object and spontaneously reaches for it. However, the baby then has a second experience. The first experience was that there *was* something where the (as we shrewd grown-ups know) mirrored picture was situated. The second experience that the baby had was the contrasting lesson that *it is not* there after all.

Notice that within the concept of activity, all these operations and functions are constituents of a single action (or rather protoaction):

The Intentional Constituents of Action (or Protoaction)

1. The baby is *perceiving* something (that happens to be a picture in a mirror)

2. The baby is *reaching* for the assumed object

3. The baby is perceiving that the hand cannot get the apparent object that, in fact, *dis-appears* at the moment of reaching the goal.

The human child, just as a pongid one, eventually will learn the lesson that there are reflecting surfaces (of water and mirrors) presenting pictures *of* an immediate *imaginary* or *illusory* status. An orthodox believer in reflection theory could aptly use this imaginary or illusory status as an example of the basic picturality and veridicality of, for instance, consciousness. It is *picturality*, because the child has to learn to distinguish between the picture of the object and the real object. It is *veridicality*, because the same child will in due time also learn that there is a real object, the picture of which is appearing in the mirror.

All these lessons in sensory-motor development in children are governed by the activity of the child. The *afferent functions of perceiving* the mirrored picture, the *efferent operation of reaching* for the apparent object, *the afferent function of experiencing the vanishing* of the "object", *the afferent function of seeing the object in an opposite direction*, and the eventual *successful efferent operation of reaching* for this object are all constituents of the same action.

Actually, this very distinction between illusory and veridical appearances is an important part of the personality formation of the child. The general distinction, called *reality testing* by Freud (1971), is the process of determining whether the content of the mind has external veridicality. A parallel feature in this development of reality testing is the distinction between the memory of dream experiences and of actual episodes.

Our ability to discriminate between dreams and reality can be seen as a tribute to the veridicality of reflection theory. Even in this primary example, however, there is evidently a flaw in the metamorphics; we are struggling with not just one, but with two senses of the term "picture" and accordingly of the concept *reflection*. There is, on the one hand, the *optical reflection* of the object in the mirror, and there is, on the other hand, the *percept* of the object. For the sophisticated philosophical advocates of *reflection theory*, like Rubinstein, *reflection* is of course an abstract category covering both meanings. The very metaphor, however, conveys an image of some *picture* existing somewhere in the intricate structure of our sense-physiological and cortical interior, a picture that has not just a metaphorical, but a quite literal similarity with the pictures supplied by physical optics.

Here the contradictions of the metaphor, however, break through the internal antagonism of imagination, and reality in the metaphor of reflection appears with a vengeance. A "real" picture is an entity or a phenomenon standing in a homomorphic relation to some prior object. When we are looking at a picture, we therefore get at least a part of the same information about the object as we obtain by direct perception. We thus have a direct and a mediated perceptual knowledge of the object.

The perils of the indirect or the mediated perception are the background for the concept of picturality, and in such deceptive cases, we may mistake the *imaginarity* of what is just a picture, after all, for the reality of an object. The basic risk is, of course, to mistake a picture for its object, or even to think that all the qualities of pictures are identical with that of their objects.

The metaphor of an internal perceptual picture, actually, has a rather disturbing effect on the understanding of perception. Because, besides the primary observer perceiving the object, and the primary observer perceiving the picture, we also must consider how we see the internal perceptual "picture" or reflection. In this way, a homunculus is forced upon us, an agent reporting about the internal picture to the primary observer.

This treatise is not about perception, and humans are evidently bound to have problems whether they choose to operate with internal pictures, representations or reflections. However, my basic intention here is to demonstrate that the principle of reflection solves few problems already found in epistemology and theory of mind, whereas it creates quite a few that are rather unnecessary.

4.2 The Area of Non-validity in the Theory of Reflection

The theory of reflection is a rather *reactive* conception of *ideas*. It is also a rather crude theory; the the category of *reflection* covers a diversity of meanings such as:

The Content of the Category of Reflection

In the psychological area:
perceptions, memories, thinking and imagination.

And in the sociological area:
the total system of meaning, such as oral and written language, public knowledge, ideologies, religious creeds, and scientific disciplines.

All these phenomena or entities are forcefully deported from the realm of primary reality and put into an ontological Bantustan of "ideas". This is a consequence of what I call **picturality**.

I have two main objections to the conception of the picturality in reference to the category of human reflections called ideas: an *objection to the semi-dual-*

ism introduced into materialism by picturality and an *objection to the reactivity* of picturality.

4.2.1 The Semi-dualism of Picturality

First, it seems dualistic to dichotomise the world into a department of *reality* and a department of *picturality*. This is, in fact, a partial step backwards to a veritable dualism, where ideas are not reflections, but autonomous entities of a specific non-material substance, as found in Cartesian metaphysics.

The somewhat problematic flavour of the term used, "idea", is associated with its etymological origin in the philosophy of classic Greece, where it is derived from the word *idola*, which actually means picture. In fact, Lenin and his followers had a tendency to accuse people of idealism if they did not recognise the non-materiality of ideas. However, this is turning matters on their heads by incriminating monistic materialism as idealism.

Another objection to the semi-dualistic ontology hidden in the thesis of picturality is the problematical identification of what actually are quite different categories, such as *societal meaning* and *personal consciousness*. Thus, the dichotomous division made by the category of "ideas" has two types of drawbacks:

Two Types of Drawbacks of the Reflection Theory

1. It produces an ontological cut of a semi-dualistic nature.

2. It presents a false identity of "ideas" that certainly have something in common, but that should better be kept apart.

We already discussed the first problem of semi-dualism, and shall analyse the second in the next section:

4.3 The reactivity of picturality

The other objection to picturality in reflection theory is its conception of *reactivity* in regards to ideas or mental reflections. In the metaphorical origin of the word reflection, reactivity is certainly a correct assignment. The *object of the reflection* is the primary and causal predecessor, and the *reflection of the object* is a mere causal effect of a process in which the object is participating.

The denial of any genuine existence of the reflection, no doubt, is partly based on its intangibility and partly on the poor prospects of directly influencing a reflection. The philosophy of intervention in Leninist theory is never to waste time attacking the reflection, but always to intervene directly towards the object instead of its ghostlike depicture.[6]

Thus, this conception of reactivity is correct when considering the kernel of the theory of reflection. However, when we look at the psychological domain of consciousness, or the sociological domain of cultural meaning, the thesis of reactivity is severely flawed. In these areas of anthropogenesis, the very relation between object and idea is sometimes the reverse of the one postulated in the theory of reflection. That is, the "idea" can be *prior* to its implementation as a tangible object. In short, the category of *meaning* (of either the psychological or the sociological type) has often the quality of *pro-activity* and not *re-activity*. Rather than the reflection being *the effect of the object*, in many cases (and not the least important) the object is *the effect of a preceding conception*.

4.4 An Alternative Conception of Knowledge According to Activity Theory

After having first paid a tribute to the rational kernel in the theory of reflection, and then subsequently criticising it, I am now in the difficult position of owing the reader a constructive alternative. To do this, I will begin by dividing the original unitary category into 3 epistemologically quite different classes. My starting point is the model of human activity presented in the preceding chapter:

Human Activity

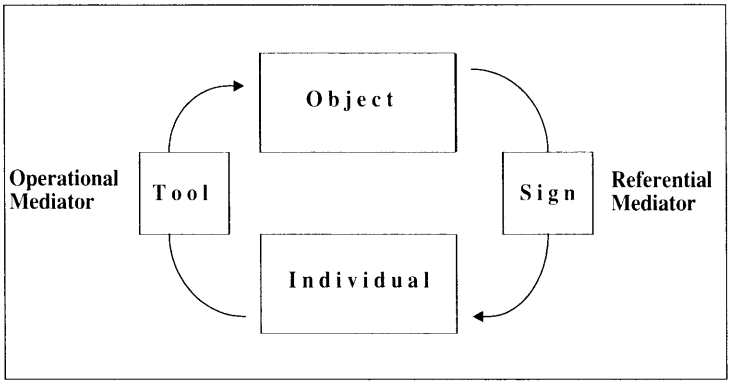

fig. 4.1

Here, the full context of activity in which the category of meaning ("ideas") is situated can be seen. In the feedback circle, there is an operational as well as a referential mediation. I call the referential side **meaning production.** The other side is the category of **object production,** where production is to be understood in a broad sense, including interventions that only *modifies* the object. If we now consider the relation between meaning and object production in human activity, there are 3 logical types:

3 Logical Types of Relations between Object and Meaning Production

1. The object-reflecting meaning production

2. The symmetric interplay of object and meaning production

3. The concept based object production

4.4.1 The Object-reflecting Meaning Production

This first type of relation can be considered the kernel of truth in the original theory of reflection. In this case, there is an initial object confronting us in our activity. As a referential mediator, we then get either a sensual or an abstract conception reflecting the object. As an example, let us consider the kind of model[8] that is formed when a map is used in driving. If you have a decent map representing the area in which you are driving, the map can be a referential mediator. The car is the operational mediator of the action of driving, which can be, for instance, a part of the activity of selling vacuum cleaners, or of visiting a foreign country with the noble motive of lecturing about an important subject such as Activity Theory.

In a situation like this, the map was created as a reflection of the landscape, although the process of reflection is certainly quite complicated. In fact, this process is in itself an independent activity. The particular object, that is the map, is however a referential mediator having a most pictorial and reactive relation to the landscape. For example, if there is a mistake on the map, a mistake to the effect that the highway on which we are driving is not leading to the city shown on the map, this will probably have some (in all likelihood adverse) consequences for our plans, but it will certainly not affect the object of our referential mediator. The map, in this case, will not have any influence on the geography of which it is a model. Any effect is supposed to go the other way. That is, changes in the road net should be reflected in changes of the map, not vice versa.

This reactive relation between the object and the referential mediator is not necessarily always the case, and this will be demonstrated in the third type of relation. We shall simply supplement this example with the neighbouring case of road construction. Here we refer to a map of construction before the road has been built, and the map, through the activity of road construction, will affect its future object. If the engineer has made a mistake, it can very well result in a fault in the constructed road.

We are, however, about to jump too far ahead. Instead, next we will examine the symmetric relation between object and meaning, that is, the type of action or activity in which the referential mediator is interacting with the object.

4.4.2 The Symmetric Interplay of Object and Meaning Production

Quite often, the referential and the operational aspect of activity go hand in hand. In this case, it is not the object that is prior to the conception of it, neither is it the conception that is anterior in relation to the object. Object and meaning production are collateral aspects of the same superordinate activity. As an example, let us look at the practical inventor. The ultimate objective for the inventor might be the solution of some technical problem. In this process, he or she can alternately draw some construction sketches or construct an experimental device to be tested for the desired function. However, neither the sketches nor the experimental constructions are primary to one another. They are rather parallel mediators in the activity of constructing.

Of course, one or the other, at a specific moment, can be prior to its counterpart. Thus, after having gotten a bright idea, the inventor might make a sketch to be implemented as an experimental construction. On the other hand, the inventor could also sometimes be impatient enough to skip the drawing phase and go directly to the construction, and, if indeed the idea was bright enough, fix it by drawing a construction diagram afterwards.

In psychological practice, examples of object-meaning symmetry are evident in most psychotherapy. Here, the psychotherapist, alone or in cooperation with the client, has the client as the object of the therapy and the analysis of the psychological problem or even of the entire personality of the client as a referential mediator (and to finish the picture, the techniques of therapeutic intervention as the tools or the operational mediator of the activity). Thus, there is a symmetric interplay between analysis and intervention, between the search for an understanding of the client and the attempts to facilitate the changes in conduct desired by the client. In the case of psychological practice, we have a full circle of therapeutic activity with the meaning construction of analysis and the object modification of intervention as symmetric and mutual presuppositions for one another.[9]

Actually, a simple non-interventive reflection of an object is, from an ecological point of view, a rather peculiar phenomenon. The ordinary type of activity is thus characterised by symmetry, mutuality, interdependence between objects and meaning modification.

4.4.3 The Concept-Based Object Production

We have already looked at one example of the third type of relation between object and meaning production, in which meaning is prior to the object. This example was road construction based on a construction plan, but of course, there are multitudes of other examples. What Aristotle called *causa formalis* is largely of this type. An example that will be discussed in some detail in this section is the potter having the idea of the pot before making it. This apparently idealistic conception of meaning-object relation is, in fact, the specificity of human work according to Marx, who observes that humans are the only animals for whom the resulting product is posterior to the idea of the product:

> A spider makes operations that resemble those of the weaver, the bee in the building of its wax cells makes shame of many master builder. What, however, distinguishes even the most rotten builder from the most perfect bee, is the fact that the builder has already built the cell in his head, before building it in bricks. At the end of the work process a result appears, that already at the beginning existed as a conception for the worker, that consequently was available in an ideal form.[10]

The very progression of sociogenesis, in our cultural history, thus presupposes human creativity, the anthropic ability to have *ideas*[11] of things not yet in existence.

However, there may be a way of broadening the very concept of reflection to encompass even human inventiveness. Allow me to take the position as *advocatus diaboli* in this discussion about reflection. To be fair to my client, I will even attempt to annihilate the most decisive phenomenon that I used in my refutation of the universality of the reflection principle for explaining human knowledge. I will therefore suggest an example of an invention that is in strong contrast to the reflection theory, such as the evolution of the pottery wheel.[12]

The invention of the wheel used for transportation is one of the most celebrated feats in the cultural history of our species. An invention of a comparable importance was, however, the much earlier creation of the wheel used in sophisticated pottery.[13] Here, the reflection theorist has a rather hard time pointing out exactly what object has been reflected through exactly what process of reflection. Actually, the wheel is *par excellence* a result of human production, there were no wheel-shaped objects in existence before such entities appeared as products fabricated by human beings.

For the time being, however, I have accepted the job as an advocate for reflection theory, so let us look for what possibly could have been present to be reflected in the pottery wheel. The circular shape itself was certainly around us before the invention of any type of wheels. We have the celestial bodies of the sun and the moon in the sky, and there is an abundance of biological organism with a morphogenesis of developing a round shape. Still, we do not have a wheel as the pre-anthropic starting point. No natural system exists that has the *quality of rotation*, thus we did not have a natural "preprint" for the *function of rotation.*

Nonetheless, from what do we know about the evolution of pottery from archaeological and anthropological evidence it is quite certain that in the first stage in the history of pottery, the earthenware was made entirely by hand, and not with the help of a pottery wheel. It is plausible that the invention of ceramics happened by accident. The first step leading to pottery must have been earthen utensils that were used directly to contain liquids – without being fired before their use. In this pre-ceramics stage, cooking must have been done by dropping a hot stone into the earthen container, a technique still found in certain cultures. The second stage in the sociogenesis of pottery probably started with the accidental burning of such a clay jar leading to the intentional use of burning to produce ceramic material. It should be noted that this invention aptly illustrates the fact that even human creativity can be reflective in relation to natural process.

The technique for creating pottery used in the second stage, in fact, is still widely employed. For instance, the so-called *Jutlandic pots* have been made in Denmark by peasants until quite recently.

However, the third stage, with the evolution of the pottery wheel, presupposes a sophisticated professionalisation in high cultures, as in Ancient Mesopotamia and Egypt. These cultures had a specific division of labour that included such distinct occupations as potters. For a professional potter, the techniques used in the second stage (i.e., making jars by hand) are quite unsatisfactory, because of problems with achieving a *rotational symmetric* shape (which is the most functional one) and with producing an adequate quantity of pottery. In the high cultures of the Middle East, there must have been pressure on potters to fulfil these qualitative and quantitative demands.

The most effective way of meeting these requirements is, of course, the pottery wheel, but how on earth (not to say earthenware) could this invention have

been brought about? As is the custom in speculative cultural history, we could imagine a middling stage between the totally handmade and the totally wheel-based technique. Such an intermediate stage could have been the use of a natural stone of an adequate shape, for example an approximate cylinder with a limited height. Stones like this are actually abundant on many beaches, and they are so well known they have obtained a specific name, *rolling stones*.

This could have been the natural prototype of the object that made the new technique of rotation of the clay possible, thus dramatically improving the quality and quantity of the potters' production. It is, however, still a natural object, not the artefact, not a genuine tool. The leap from natural object to tool, however, is not so much constituted by the operational modification of the original shape, but rather by the knowledge of the *way* of using it and the *functionality value* of applying the device.

How then did the cultural hero of pottery ever come up with the idea of rotating a rolling stone? The operation of rotation was, in fact, already present in the preceding stage of handmade jars. To make a jar by hand, the potter has to rotate the embryonic clay object, even if the rotation has to be performed manually.[14] A follower of the reflection theory could therefore conclude that the shape of the pottery wheel is a reflection of rolling stones, found and used in the intermediate stage, and the very function of rotating is a reflection of the hand-steered turning of the unfinished jars.[15]

4.4.4 The Dialectics of Anticipation and Reflection in Knowledge

So what can I now conclude after having performed the role of advocatus diaboli? I will attempt to dissolve the dispute about the concept of *reflection* that has been so central to Activity Theory. The dissolution, as already seen several times in the preceding chapters, will be brought about by means of *sublation* of the opposite theses in the contradiction.

I have criticised the concept of *reflection* in epistemological and cognitive theories for being too reactive, and I have instead emphasised the principle of *anticipation* rather polemically and possibly somewhat excessively. As I see it, not being in the position of an antagonist of the *reflection* concept nor obliged to perform as an advocatus diaboli, but in the position of a sincere seeker of knowledge, both of these positions are unbalanced. I have taken the time to go

into some detail, intending to use realistic examples (analysing such activities as road construction, psychotherapy, and finally the use and invention of the pottery wheel).

It is remarkable that in each of these examples there has been symmetry in and a striking interdependence between the dual processes of reflection and anticipation.[16]

We thus seem to have a circle, or rather a spiral, formed by the two aspects of activity, the first being the reflection of what is already *present* and *known*, and the second being the anticipation of what is not yet in existence and the anticipation of what we have no knowledge of beforehand.

Thus, one of the many dialectical relations attached to human activity is the interplay between reflection and anticipation. Neither principle is wrong, nor is either quite correct, for neither is sufficient for explaining the complex phenomena that are the deeds of human beings.

My tortuous analysis of the concept of reflection has thus reached a final position, where both of the initial positions, dogmatic reflection theory and radical refusal of the reflection principle, seem to be defective. Rather, I suggest replacing reflection theory's tendency of putting the object before the subject, as well as replacing the existential or humanistic principle of proactivity (as found in Sartre (1978) or Maslow (1954)) of putting the subject before the object. I suggest replacing both of these somewhat one-sided principles with the dialectical principle of *reflexivity*, that is, the interplay of reflection and anticipation, and consequently of the interdependency between meaning and object intervention.

One of Lenin's epistemological theses discussed above, for which I declared total agreement, was the Marxian principle of practice as a criterion of truth. Just as in the modification of the reflection theory of perception and meaning just made, I shall now progress to a corresponding adjustment of the Marxian way of understanding the dialectics between theory and practice. Thus, we shall now treat the special case of object-meaning interplay in the history of science.

4.5 The Dialectics of Theory and Practice in Human Knowledge

In the previous section, I tried carefully to avoid some of the common examples used in the theory of knowledge, like:

> "How do I know that the chair, at which I am looking, is really a chair,"

and

> "How do I know that 2 + 2 equals 4,"

and other deep problems like that.

My examples, on the other hand, were related to practical rather than to theoretical questions. This was of course not accidental. The very inspiration for knowledge theory in Activity Theory is the Marxian thesis about the practical basis of theory. The reader could complain that from a lofty epistemological perspective, these somewhat trivial problems of practical life do not in themselves provide an adequate foundation for a theory of *theoretical knowledge*, and it is after all theoretical and not practical knowledge that is the major concern of this treatise.

This objection is valid, and in this section I will present a theory of knowledge that not only includes theoretical knowledge, but that, at the same time, will connect these dual aspects of human knowledge. This inter-connection between theoretical and practical knowledge is furthermore required to involve the object fields that were presented in chapter 2.

The main idea is that theoretical knowledge should be understood as *based upon* or, as what it is most often the case, *originating in an interplay with practical knowledge*. Leaving aside bad Marxian habits of using this term as an assurance of the intention to abandon any academic arrogance and of proving solidarity with the hardworking people of practical life, what is the meaning of **practice**?

In my opinion, the meaning of practice is more or less co-extensive with the concept *activity*, about which I have already written many pages and around which the rest of this treatise will be predominantly centred. So, why on this (more and more anthropogenic) earth should we use two terms with more or less identical extensions? Furthermore, even if a distinction will have the effect of diminishing the fatigue of the reader a little, his or her confusion can be expected to be increased in return.

Actually, the very *distinction* between practice and theory has to be understood, not as an invariant anthropological actuality, but rather as a late product of sociogenesis. The institution of science did not exist before the first Ionic philosophers. Even if we stretch the concept to its utter limits, theory as public knowledge developed and guarded by a specific profession did not exist before the high cultures of the Middle East.

With the evolution of the high cultures of ancient Mesopotamia and Egypt, in which the invention of script was a deciding factor, there followed the formation of a certain societal layer of learned people.[17] With these learned people, something arose that was at least the beginning of a distinct sociological subcategory within the category of meaning, this subcategory being **theory**. Such a conceptual action, of course, should be considered carefully.

Thus, we have to distinguish between the generalised meaning of "theory" just suggested, and the traditional, narrow sense, referring to the historically mature form of institutionalised science. If we accept that the prototheoretical activity of the scribes and priests of the Mesopotamian and Pharaonic culture was segregated from the ordinary honest activity of the peasants, artisans, soldiers and sailors, then we could introduce the terminological convention of calling the latter kind of activity *manual* labour. The former activity (writing and reading and calculating and teaching) could be called *intellectual* labour.

The successors of the still somewhat dubious knowledge seeking in Babylon and Thebes are the real founders of philosophy and science, like Thales, Pythagoras and Heraclitus. Just as with today, there was a dichotomy between practical and theoretical activity.[18] The distinction is here reflected by the theorists themselves. Thus, Socrates in the dialogues of Plato expresses, on the one hand, a great respect for the practical knowledge of the practical people and, on the other hand, a comparable disrespect for their lack of sophistication in theoretical matters.[19]

It would be convenient for my theory of knowledge to raise this conceptual distinction between practical and theoretical kinds of activity to the status of a general anthropological invariant. Just like the conceptual liberty of precursor terms such as proto-action and proto-consciousness in the dimension of biogenetic psychogenesis, I personally find it handy to hyperstasise the category of theory and apply it to any human culture whatsoever.

In doing so, of course, I cannot use the dichotomy of practice/theory as an actualised division in the organisation of the activity of the total society. Not even as a division between manual and intellectual labour, for we do not have any fixed occupational partition between the individuals in the original cultures – without a division of labour. We will ignore the sexual division of activity that is without relevance for the question being discussed. An actualised division of labour with a dividing line corresponding to the modern concepts of theory and practice emerged at first, of course, with the division of labour in the high cultures.

Even if we do not have a dichotomy in the large structures of sociological organisation, we could still have an anthropological distinction between practical and theoretical activity as specific types of human endeavour. Consequently, I suggest that we really cannot help using such a general system of characterisation when we investigate the cognitive side of any culture.

Even if theoretical or intellectual activity is not segregated as fixed occupational roles or functions of specific individuals attached to closed institutions, there still is a reason, indeed a necessity, for categorising the search for knowledge as a special type of human activity.

Let us start by looking at some examples of meaning expression in the primordial cultures of foragers and in simple agricultural societies. After the hunt, when the tired hunters are sitting around the bonfire, enjoying the juicy meat and discussing their success or lack of success, are they at the time engaged in brute practice? Likewise, when the old people are preparing the adolescents for initiation rites by teaching them about the myth of creation, the epos of their tribe, and the spirits of ancestors and totem animals, are they just doing their daily business? When the peasants are discussing the changes of the seasons and the shifts of weather and the relation between these cyclical transitions and corresponding movements of the heavenly bodies, are they motivated only by increasing the harvest?

In all these situations, the objective is not simply to solve *practical* problems, or at least not practical problems alone, but also to understand. It is a desire to understand, that is, a reflection on the questions of existence. However, it is not a reflection isolated from daily practice, but it is a thinking that cannot be reduced to the objectives and motives of daily practice.

By hyperstasising theoretical activity as an anthropological invariant, I intentionally incorporate the category of *theory* as the search for understanding, an irreducible characteristic of the personality of human beings and of the culture of human societies. The disinterest in practice-abstracted theoretical *reflection* does not imply that *theory* is just a reflection of mundane activity. Even though human thinking can be an activity without an external motive, and even though thinking can be theoretical by being self-motivated and self-motivating, it is evidently one of the most important sources of practical change, of societal transition in cultural evolution and of psychological change in personality development.

In this chapter, I focus on the former, that is, the role of theory in sociogenetic changes. In chapter 5, the relation between individual and public knowledge is discussed.

The concept of knowledge, as here defined, is based on object-oriented human activity. That means that there is a double origin of knowledge. The dual epistemological midwives, on the one hand, are the objects of activity, and on the other hand, the primordial form of activity itself, that is practice. Both of them are the generators of thinking and cognisance. Theoretical activity and public knowledge thus have the double characteristics of objectivity and practical foundation.

By generally defining human activity as *mediated object-oriented activity*, theoretical thinking and public knowledge become the mediators of ordinary mundane *practice*. Mediation is, however, a most complicated phenomenon in the anthropological field, and in the model of knowledge to be presented below. According to this model, theory is a medium for practice, and at the same time, practice is a medium between an *object* and *the theory about this object*. This apparent contradiction is due to the very dialectics between object and meaning modification discussed above.

When *theory* is a medium for practice, theory is conceived of as a meaning produced to be an informational mediator for object-oriented activity. However, when we consider *practice* to be a medium between the object and a theo-

ry about it, on the other hand, we are transgressing the limits of ordinary science. Thus, we are entering into the discipline of philosophy of science, or meta-science. However, science is our object of analysis, and consequently we have to retrace our path of knowledge all the way back to its origin. This path, originating with the object and ending with theory, consequently has practice as a go-between. It is thus practice that is the medium of information, when considering the development of the meaning production of theory.

In the diagram below, a third axis is therefore added to the two-dimensional model of ontology that was introduced in chapter 2. With the succession of the cosmological, the biological and the anthropological object fields, and the genetic dimension defined for each of these object fields, an epistemic axis is appended to the ontic dimension.

This new axis, oriented toward knowledge, has its starting point in an object field, and then passes through a corresponding practice field that is functioning as a mediator for the terminal stage of the epistemo-genesis, this final stage being a theoretical field.

The total model thus has a 3 by 3 field:[20]

Model of Knowledge

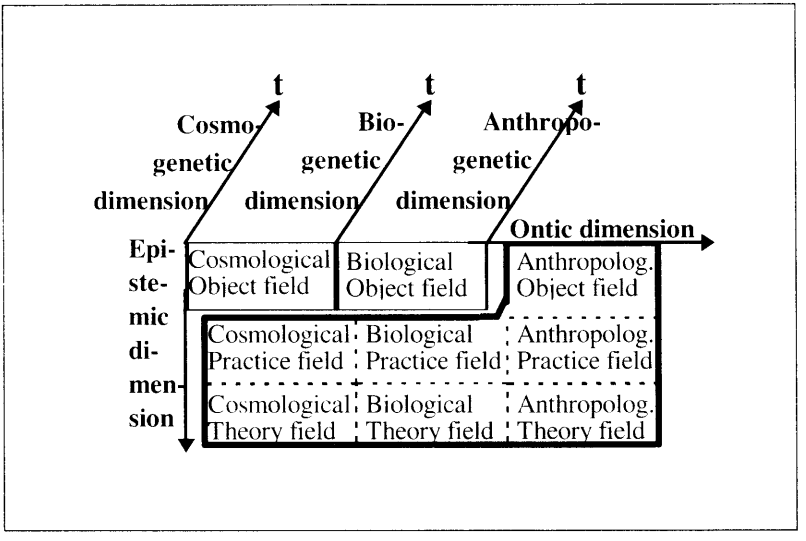

fig. 4.2

How is this model to be understand? To what phenomena in what object fields does it intend to refer? Basically, I have to admit that its referent is the totality of the universe. In this context, however, its main function is to point out several features of human knowledge; i.e., what this knowledge *is about*, how it is *organised*, and how it is *made*.

The first feature refers to the object or the ontic dimension, which according to the ontology suggested is related to the genealogical (genetic) dimensions. The third feature refers to the organisation of the theory field that is postulated to be homological to the ontological division. Finally, the middle feature is related to the mediational practice field.

I have already identified theory with knowledge, a point of view that seemingly ignores the fact that knowledge can be either practical or theoretical. The broad anthropological definition of theory implies, however, the assertion that practice in any human culture has an immanent tendency to produce its own semi-independent theory, as a generalisation of externalised meaning. This is then the vertical structure of the model.

The horizontal dimension is even further away from the practical organisation of activity and knowledge in most cultures, and you may argue that it is even miles apart from our contemporary Western culture, although the latter is so heavily influenced by science. In this respect, I will later present a combination of an ontological and an anthropological argument. The former is my dogmatic ontology postulating a certain objective evolutionary and consequently ontological organisation of this world. The latter is an argumentation about the cultural evolution and consequently the scientific organisation of human knowledge.

I have already burdened the innocent *!Kung* people with the category of theory. The puzzled reader is entitled to ask whether indigenous cultures should be encumbered further with the meta-scientific apparatus leading to the three disciplines to be postulated as the main branches of the institution of science. My rightfully nettled reader can point out that the evolution of the anthropological sciences did not start before the nineteenth century, which implies that a category not actualised for more than at most two centuries has been hypostasised to our entire species. Anybody familiar with the findings of anthropological fieldwork could even argue that most cultures operate with ontic categories entirely different to what might be en vogue among certain rather sectarian fringes of the establishment of western science.

Nevertheless, I will persevere in promoting my model of knowledge that is the basis of the meta-scientific discourse to be used in the rest of this treatise. My argument is simply that the model is a theoretical implication of the postulates already openly proposed:

The Premises of my Model of Knowledge

I. The ontological postulate of the 3 main object fields

II. The epistemological postulate of theory as being the product of object-oriented practical activity

If I stick to these assumptions, there is no way to escape the total model just presented. Conversely, if the model is to be rejected, then at least one of the premises must be rejected.

A curious aspect of the model is that the practice and theory fields in the first two columns, that is, the practice and theory fields attached to the *cosmological* and the *biological* object fields, are detached, moved to and absorbed under the Anthropological object field. This is an illustration of a fundamental presumption of my general theory of knowledge:

A Fundamental Presumption of my General Theory of Knowledge

No matter the origin of the *object* of knowledge, the *product* of knowledge will always belong to the anthropological object field.

The logical structure of the model has been briefly presented now, but how is the content of the model to be understood? I will try to answer this question for each of the three postulated fields of knowledge.

The description of these three fields of knowledge is still quite condensed, as the intention is to indicate the initial process of knowledge formation. A more detailed description of the evolution of the sciences corresponding to these knowledge fields is postponed until chapter 6.

4.5.1 The Evolution of Cosmological Knowledge

My proposed general theory of knowledge indicates that when we want to understand the evolution of cosmology, the starting point should be the kind of practical activity related to those objects and phenomena that were defined (in chapter 2) as *objects and phenomena from the cosmological object field*. Historically, the first entities encountered were objects and properties of a physical or astronomical kind, using current terminology. The production of tools is central in this cosmological practice: e.g., stone carving; principles of statics in erecting a house; the way to light a fire or boil water; the observation of the movements of the sky; and the regularity of the time of day and the seasons.

Evidently, these instances of practical knowledge were initially not conceived of as belonging to the same category (e.g., a conception is an ontological postulate of mine). All these elements of knowledge, however, are collected in any culture during practical activity. Additionally, material for reflection is deprived of a practical aim, but constitutes a theoretical activity in the sense defined above.

With all this practical knowledge given, how is the cosmological theory field to be understood? It is certainly neither a homogeneous nor a segregated category before, at the earliest, the ascent of the specific concept of natural philosophy around the 17th century. However, in any pre-scientific cultures there are mythological ideas about entities and phenomena of nature, although these are categorised in a very different way in the cognitive cultures of the pre-modern societies.

The segregation of a specific cosmological practice field (i.e., a practice field of the engineering profession) actually happened simultaneously to or even a little after the separation of cosmology[2] as a distinct theoretical field. The genuine fusion of the different sub-fields of cosmology was not on the

agenda before the integration of atomic theory with the astronomical disciplines of astrophysics and with the theory of the chemical bond.

4.5.2 The Evolution of Biological Knowledge

The practice associated with the biological object field is centred on the collection or growth of vegetables, the hunting or herding of animals and, finally, our own biological processes, such as birth, growth, illness and death. The first segregation of a specific profession was that of the doctor, a profession that was institutionalised by the school of Hippocrates in classical Greece. Biology was certainly one of the strongholds of Aristotle, the father of most, if not all, sciences. Aristotle's profession as a doctor is one example of the close relation between theory and practice in the history of science. The institution of a general discipline of biology, however, was not realised before the twentieth century. The fusion of diverse areas of practical and theoretical knowledge oriented toward the biological object field is still in process, and the very concept of a general biological discipline is the product of the twentieth century.

We do have, however, the parts of cognitive cultural systems called ethnobotanics, ethno-zoology and ethno-medicine. These accumulations of public knowledge have been shown to be of an extension and complexity comparable to the modern disciplines, even in societies on the original cultural level.[22]

4.5.3 The Evolution of Anthropological Knowledge

The anthropological practice field is constituted by the kind of human activity that is oriented toward human subjects themselves, toward the activity of these subjects, or toward the products of this activity. Thus, any society has a way of describing and understanding its own *organisation* (division of activity, kinship system), *norm system* and *history*. In addition, there are often speculations about differences in lifestyles between two neighbouring societies.

This is what we call *ethno-sociology*. Actually, many features of mythological or theological knowledge systems are concerned with the *structure of society*: features like, how and why it was made, and what are the reasons for its characteristics. Thus, the aboriginal people of Australia conceive their clan system as the result of the seeds sown by ancestors, and whose deeds are the themes of the songs honouring them. It should be noted, however, that these

aspects (in this treatise these are called *sociological*) are fused with the narratives about the creation of other organisms (in the present book referred to as *biological* objects).

In the high cultures of the Bronze Age, elaborate mythological narratives were created that were simultaneously *maps of the field of nature* (the cosmological and the biological object fields) and a *map of society*. Thus, what I have called *cosmogonies*, the great creation myths, even had an ideological function.[23]

This mixture of object knowledge and ideology is clearly seen in the struggle of modern natural science to free itself of this entanglement, a fight against the orthodoxy of the church that caused Bruno his life and Galilee his freedom.

In all cultures, there is also something called *ethno-psychology*, a way of talking about the *traits, the states and the processes of specific persons*. As practical knowledge, every human being needs a so-called "theory of mind", a working understanding of the way fellow human beings see the world, feel about it, and act toward it. This individual disposition of understanding is supported upon and externalised in concepts of ethno-psychological content. Ethno-psychology also deals with individual differences and situational changes in the mental state of a specific person.

This vocabulary certainly has no necessary metaphysical bonds to a dualism separating the psychical aspects from the physical. With descriptive terms of, for example, changes of mood and differences in temperament, all languages are dealing with a kind of ethno-psychology, however. This is not the place to discuss the evolution of scientific knowledge concerning the anthropological field. The idea of this short section has only been to introduce the relation between the ontological material and the knowledge produced.

Thus, anthropological field evidence proves that some of the so-called primitive cultures operated with at least 500 terms attached to what in contemporary developmental psychology is called a person's *Theory of Mind*. These ethnopsychologies certainly diverge from Western psychology, just as they diverge from one another. It is apparent, however, that they not only talk about the same phenomena, they even talk about it in ways that are translatable.[24]

4.5.4 The Transitions between the Practical and the Theoretical fields

The model of knowledge presented has possibly a built-in tendency to misrepresent the theoretical fields as a kind of secondary depicture of the object field, a depicture reflecting the practical reflection of the original object field. This relation of theory as secondary to practice is a true, but insufficient characterisation of the connection between the two activity forms. There is, besides this relation, a reverse relation, a feedback arrow from the theory field to the practical field. If we call the first relation the *reflection of practice in theory*, we could name the reverse relation the *practical consequences of the theory*.

The Dialectics of the Theory of Practice

The reflection of practice in theory

The practical consequences of the theory

The latter relation is just as important as the former. Actually, the very principle of practical necessity has the epistemological consequence that, at least, ontological questions cannot be solved without such theoretical problems having practical consequences. We shall see in the next section that this is also the case for questions of theoretical truth.

4.5.5 The Hidden Involvement of Practice in Questions of Theoretical Truth

In chapter 2, I asserted that ontological matters could only be settled by the criterion of practical necessity, if indeed they can be settled at all.[25] In terms of not just practical, but even epistemological problems, we must discuss, however, other problems of theoretical truth besides problems of existence.

What is the meaning of a proposition about something *being true*? First, we have to illuminate this *something* to which a given proposition is referring. This reference is not just a presumed entity, because in that case we have merely an

assertion of existence, and not an *assertion of truth.* Generally, even a simple proposition has a double reference; it has an *object* being ascribed and a *description* characterising the object.

Let us, for a moment, stay within a practical field. As a practical example, consider a murder case in which the State Advocate has charged an accused person, or most likely has accepted such a charge by the police. In the indictment, the assertion will be that the accused person is guilty of the murder committed. That is to say, that in this special proposition we have *as the object, the person accused* and *as the description, that he or she is guilty of having intentionally killed a certain person.*

The proposition suggested in the indictment is thus true if the object and description are in fact connected in the way asserted, that is, if the accused person did really commit the murder. We also have the reverse relation that the proposition put forward in the indictment is false, if the object and characterisation are not connected in the way asserted, that is, if the accused person did not commit the murder. Thus, it is actually a false indictment if the accused is *not guilty*. Perhaps, *somebody else* committed the murder; or the accused did not actually murder the victim, but performed the killing as an act of violence *without the intention of killing;* or the perpetrator is or was *insane*; or the death of the supposed victim was not a case of manslaughter at all, but an *accident or a suicide.*

Of course, we will not discuss the specific problems of deciding the truth in a murder case. For that purpose, we have the legal procedure and the discourse of jurisprudence, but it is, anyway, a relevant illustration of the question of practical truth. Thus, examining how we decide whether something is true is certainly a meaningful question. It has a most poignant practical importance, especially for the person accused, and we cannot help making a decision about the truth or falsity of the proposition.

We have discussed the problem of discerning the truth of a practical proposition. What then is the state of a theoretical proposition? Let us take the central assertion of the so-called *prototype theory of concepts* that perhaps could be expressed in the following way in a cognitive psychology textbook:

> A concept is a cognitive disposition that subsumes individual objects of phenomena as belonging to the concept. Further, the relation of belonging is fuzzy (not dichotomous as assumed in classical theory) and the content of the concept is neither the extension or the intension of a logical class, but rather a topological structure of more or less central, respectively, peripheral instances or sub-concepts.[26]

This proposition has as its object of reference[27] a certain class of cognitive phenomena, namely the category called *meaning* in this treatise. The characterisation postulate is then that these cognitive phenomena are organised in the manner described. Just like in the specific practical example, of course, there is a specific methodology for testing the truth of the proposition in prototype theory.

The central feature of the theory of knowledge asserted in this version of Activity Theory is, however, that the determination of the truth of prototype theory cannot just be an internal question decided exclusively by cognitive psychologists. After all, it is not sufficient for theorists to settle their own controversies about the truth or falsity of a certain theoretical proposition. Even if they did succeed in such a complicated consensus, it is not a certainty that they would be right about it.

My criterion for settling a theoretical question is then that *it shall ultimately have practical consequences that unequivocally force us to accept or to reject the proposition.* Thus, in the new evolution of cognitive science, the question of the status of concepts has actually been brought into the focus of a certain domain within the anthropological practice field, namely the disciplines of AI (Artificial Intelligence) and interface development, which are in an intimate relation with information technology.

This does not mean that we are now able to decide whether the prototype theory is true or false, or rather, what is true and what is not true in the theory.

There is no doubt that a third truth value exists, namely that a part of the theory is *still* so imprecise that it is neither true nor false. The basic postulate of truth according to Activity Theory can then be expressed as follows.

When the time arrives that we are able to acknowledge the falsity of a certain theoretical proposition, and eventually even *what part* of the proposition is false, the criterion for this theoretical maturity is that the practical implications

of the theoretical proposition in question demonstrate a *practical* falsity. We are forced to accept this acknowledgment of practical falsity, as far as the carrying out of our practical activity is a necessity.

This matter is closely examined in the discussion on the theory of science in chapter 6.

4.5.5.1 Decidability of Theoretical Truth

In his theory of knowledge, Popper (1963 & 1972) defines the famous demarcation principle of science as the testability of theoretical propositions. The testability is the condition for falsifying the propositions. The epistemology of Activity Theory ultimately moves this criterion outside the field of theory. According to the epistemology used in this treatise, the area of theoretical decision is ultimately the field of the practice area connected to the theory in question. What if the theory has no practical consequences that can function as a criterion for its testability?

If we follow the rigor of logical positivism, but replace the relation between theoretical proposition and empirical observation with the relation between the theoretical and the practical fields, we would simply reject a proposition without any possibility of being confronted in practice as meaningless. That would however be a harmful attitude, because the relation between the neighbouring fields is not static, but dynamically interactive.

Therefore, even if there are currently no corresponding practical implications to be tested in the practical field, or no practical implications whatsoever, we should still be cautious when rejecting a theory we think is meaningless. This is similar to avoiding the misuse of the operational criterion of methodology when rejecting a theory for which we do not (for the moment) have empirical testing procedures.

Instead of calling such a theory void of meaning, we could use an expression from mathematical logic and characterise it as *undecidable*, which in this context means for the time being it is not possible to test the theory. Here we could distinguish between internal and external decidability (thus taking a perspective that is sciento-centric). The internal type of decidability includes empirical testing procedures, and the external type, which we are discussing here, includes the practical consequences of the theory, consequences of such an importance that practical necessity forces us to make a decision about the truth of the theory.

4.5.6 The Relation between Knowledge and the Object field

Having just examined the relation between the practical and the theoretical epistemic stages, it seems apparent that the intimate relationship between practical and theoretical forms of activity justifies the use of the pompous term dialectics. What can we infer about the relation between the first epistemological stage and its successors? Is this also a symmetrical relation, a feedback process or even a case of dialectics? This question will be addressed in the present section.

Earlier in this chapter, three types of relations between object and meaning were defined in reference to the concept of reflection. According to this analysis, these three types exist even for the relation between an object and the knowledge about this object, no matter whether the knowledge is practical or theoretical. The division of this question is, however, a purely logical one. It defines all the possibilities that can be conceived.

How then can we characterise the actual relations in the three basic ontological areas? Here I suggest a warning: *It very much depends.* That is, it depends on the ontological area. The picture is quite different in the anthropological area than in the cosmological and the biological areas. In the first two, we have a principle of *strict reflection and no reflexivity*, in the last it is reversed; we have a principle of *reflexivity and no reflection in the strict sense*.

4.5.6.1 Reflection and Reflexivity

Earlier in this chapter, *reflection* was defined as the reactive picture of the object. In particular, when we talk about knowledge, the depicture of the object falls in the category meaning.

The etymological and phonetically close term "*reflexivity*" has a quite distinct meaning in this treatise:

Reflexivity

Reflexivity is a symmetric relation between an object and a piece of meaning having this object as its referent.

The symmetry of the relation implies that its characteristics are opposite to those found in reflection, that is, *mutual interaction instead of reactivity* and *dual objectivity instead of picturality*.

The reader is certainly entitled to a little clarification or at least exemplification of the new concept.

Let us return to the example of psychotherapy. Here the object of knowledge is the client in relation to the psychotherapist as the subject of knowledge, the knowledge pursuit is an understanding of the psychological problem from which the client wants to be freed. Thus, we are situated inside the anthropological area in the model of knowledge, and the activity is in this case a special type of anthropological practice, the psychological practice.

This epistemic relation (i.e., the relation between the object and the subject of knowledge) does not fulfil the requirements of reflection, that of picturality and reactivity. The knowledge of the psychotherapist is not a pure depicture, unable to affect its object. If this were the case, the client would be justified in suing the psychoanalyst as a cynical crook getting the fee for no good reason. The objective of the knowledge seeking is to affect the object (although possibly in an indirect and catalytic way), and the attempt to do so is at the same time a way of getting knowledge. Furthermore, it should be noted that it is not just some superficial qualities of the object that have to be changed (and that are actually changed in successful psychotherapy), but most likely some essential traits of the person; it is the very essence of the person, the personality that is to be affected.

This is exactly what is meant by a dialectical knowledge relation, but it is not yet quite reflexive. To earn that characterisation, one more condition needs to be fulfilled. The subject and the object of the knowledge should be the same or belong in the same category, and the field of the object and the field of knowledge should coincide.

This is the case here; the subject and the object are both persons, belonging to the psychological sub-field of the anthropological object field. Knowledge about persons is also a part of the anthropological field, just like the persons themselves.

The very meta-theory and methodology of psychology (and also of other anthropological disciplines) are determined by these characteristics of *reflexivity*, just as the characteristics of *reflection* determine the meta-theory and methodology of the natural sciences.

4.5.6.2 The Relation between Object, Activity and Knowledge in the Areas of Nature – Strict Reflection and no Reflexivity

If we now examine the first two components of the knowledge model, those originating in the cosmological and the biological object fields, I assert that the principle of strict reflection is fulfilled, and at the same time, there is no trace of reflexivity.

The principle of strict reflection implies that our knowledge is a mere picture of its object, and that this picture cannot affect the object at all. To save the assertion just stated from being accused of circularity, not to say utter absurdity, of course I have to define exactly what is meant by a cosmological object:

> A **cosmological entity** is *an inanimate phenomenon, object or essentiality* that is outside the reach of human activity.

Thus, according to the theory of Special Relativity, the major part of space-time is placed in this cosmological object field, as the speed of light defines a quite modest cone of human influence.

Cone of Potential Influence According to the Theory of Special Relativity

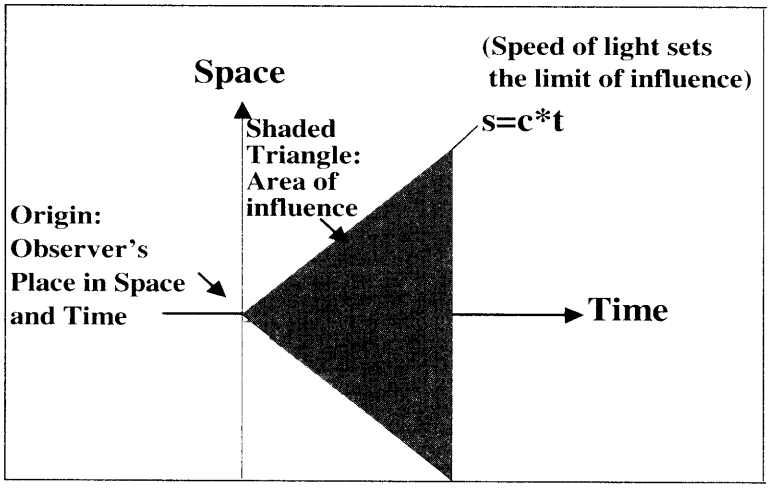

fig. 4.3

There are, however, also physical structures and principles that imply that even objects and phenomena placed within this cone are beyond the range of possible intervention by human beings. Indeed, most of the essential features of matter are, at least according to not only contemporary technology, but also even contemporary theory, impossible to change. *We* cannot change the workings of the fundamental forces nor can we rearrange the structure of the fundamental particles. It may be possible for our successors to go beyond these limits, but the crucial point is not the historical limits, as they exist at a specific time, but the proposition that at any time there are such limits.[28]

How can I now set such limits for the technological triumphs of man, after the crunching of atoms, and the transformation of one element into another?

Risking being accused of circularity, I will maintain that these objects created by human intervention were not cosmological any more. In the nuclear plant, they are changed to anthropological objects; the uranium transformed to lead is at the same time transformed into a human tool.

Note that, after all, we are not changing the basic structures of matter. We may create some elements that have not been in existence before, but these newborn objects are still following the essential rules of atomic physics. The protons and neutrons have to be placed on certain nuclear shells, and the electrons are bound to occupy places on specific electron shells.

Even the biological object field is in agreement with the principle of reflection, in accordance with the definition of this field, as its very definition places it beyond the scope of human interference. Looking, however, on the ecological mess produced by our species, how can anyone earnestly assert that this object field is unaffected by humankind, now that the whole working of the biosphere is increasingly characterised by anthropogenic phenomena.

I will now use the procedure presented in the case of the cosmological object field once more.

A **biological object** or **phenomenon**, especially a **biological essentiality,** is by definition *an animate entity, process or quality that is outside the meddling of human activity.*

What is the content of this biological object field that is defined as beyond human influence, in this era of genetic engineering? It is my assertion that there is not that much that can be transformed from pure biology into human biotechnology. It is my postulate that the essential features of life are luckily not within the scope of human activity.

We shall now proceed to the postulate of non-reflexivity in the area of nature. The logic of reflection blocks the possibility of reflexivity that first demands the interaction between the *object and the subject*, and between the *object and the meaning* referring to it.

In the natural sciences, the categorical identity of the relatants, of course, is not fulfilled. The biotechnologist or biologist is not a biological object, and the biological practice field as well as the biological theory field are really parts of the anthropological object field. The corresponding asymmetries concern the epistemic stages of the cosmological area.

The diagram below covers this reflection principle in the theory of knowledge:

The Reflection of Nature in the Model of Knowledge

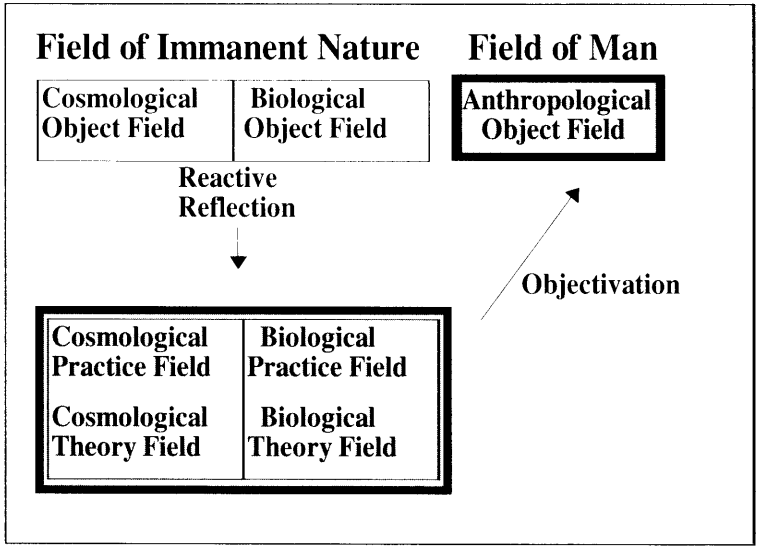

fig. 4.4

Any human activity, no matter whether it is practical or theoretical, that has its starting point in the cosmological object field, is thus placed outside the very field of which it is a derivation or reflection. In fact, the reactivity principle of the reflection theory is correct regarding knowledge about the natural object fields.

The picturality principle is, however, only partly correct. The principle is correct in placing meaning produced by human beings in a category other than the one reflected. It is, on the other hand, misleading to define this category as less material than the category of which it is a reflection. The object fields reflected by human beings are parts of immanent nature, and thus ontologically beyond the scope of human activity, whereas the fields produced by human activity exist outside immanent nature, of which they are reflections.

The fields produced by human beings are reflections of the cosmological object field, but they are reflected by a process taking place outside the cosmological object field itself, because this process of reflection is nothing other than human activity. The result of reflection, the meaning produced by human activity, is thus *outside the field of its object* and *inside the anthropological object field.*

The relation of reference attached to our knowledge about the cosmological object field is thus of the logical type called *heterological*[29], which means that the sign referring is of a categorical type different from that of its referent.

In matters concerning the cosmological object field, we are passive observers, not interveners. Quite the contrary case occurs in matters concerning humans.

4.5.6.3 The Relation between Object, Activity and Knowledge in the Areas of Humanity – Reflexivity and no Strict Reflection

Vico was one of the first scholars who realised the paradoxical fact that in spite of all the triumphs of natural science, our study of nature is oriented towards a field foreign to ourselves.[30] According to Vico, the only field where we could be trusted as experts was not nature, but human matters, such as culture and history, fields where we are acting on our own playing field. I do not agree with Vico's sceptical conclusion concerning the epistemology of natural science. This point is treated in a following chapter on the theory of science. I do share, however, in Vico's hopefulness about the prospect of what he in a flourishing optimism called *Scienza Nuova*, the New Science, a field of science I call the anthropological theory field.

In the diagram below, I have sketched two internal relations between the three epistemological stages in the anthropological part of the model of knowledge.

The Reflexivity of the Anthropological Field in the Model of Knowledge

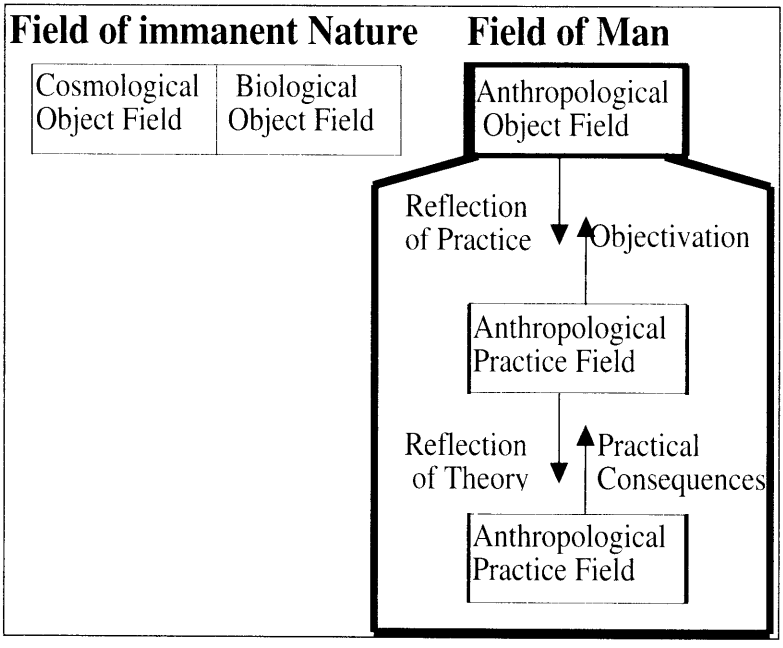

fig. 4.5

Here the situation is the reverse of the field of immanent nature. In the anthropological field, that is in human actuality[31], the process of knowledge seeking is *not reactive*, but *dialectical*, having a two-way relation with feedback from the knowledge produced back to the object intended to be known. Furthermore, the category of the subject and the object, of the meaning referring and the referent referred to, coincide; they all fall into the anthropological object field, that is, the field of *human beings*, of their *activity* and of their *products*.

Our knowledge of ourselves is thus not reflective in the reactive sense, but reflexive, a term that could be defined as the *reflexive* relation of an entity reflecting on itself. In terms of logic, the reflexive knowledge that our species has of itself is of the autological type, mentioned above, which means that the sign referring is of the same type as its referent. Anthropological knowledge is thus in *logical* contrast to knowledge concerning the fields of natural science.

The epistemology in matters of nature is reflective or heterological, whereas the epistemology in matters of human actuality is reflexive or autological.

These last two sections have been sketchy and rather postulating, but they are only meant as an epistemological introduction that will be deepened and discussed in the chapter about the theory of science.

4.6 The Subject of Epistemology – Personal and Public Knowledge

In this chapter, we have been preoccupied up until now with the *object of knowledge*, the relation between the object acknowledged and the knowledge obtained, and with the creation of knowledge. However, we have not talked very much about the *subject of knowledge*.

This issue divides the theory of knowledge just as much as the other issues. Is the subject of knowledge to be understood as the *individual person* pondering in solitude about the deep problem of life? Is it instead a *social entity*, such as the cognitive culture of anthropology, or the scientific paradigms referred to in the sociology of science? Or, is it *something transcendental*, as postulated by the great German philosophers: Kant, Fichte, Schelling and Hegel.[32]

The first position is called *decontexualised individualism*, the second is *depersonalised collectivism*, and the third is *epistemic transcendentalism*. These positions will be discussed before concluding with my own activity theoretical conception of the epistemic subject, which I call *cooperative individualism*.

4.6.1 Epistemic Individualism – the Decontexualised Person as Epistemic Subject

The classic perspective of epistemology as it emerged in full scale in the Greek antiquities is the problem of knowledge raised by an isolated and passively contemplating individual. What can I know, abandoned to myself and

unable to intervene in the world? This perspective has defined classic Western epistemology. The very content of classic epistemology, however, is hidden in these two preconditions of *isolation from fellow human beings* and *contemplative passivity*. The conclusions of our philosophy of knowledge seem to be instead the premises of the question. The two preconditions are namely the opposite of the very requirements of knowledge according to Activity Theory, that is, the two characteristics of activity, *cooperation* and *object-oriented intervention*.

With the two paradoxical preconditions of knowledge, the conclusion is actually doomed to be a scepticism (the very possibility of knowledge is renounced) or an idealism (the object of knowledge is waived in order to save, at least, the existence of the poor isolated and idle subject).

The question of knowledge is:

What can I know, being isolated and idle?

The answer is:

Nothing at all!

Traced back to Descartes' famous reflections, this position suggests that our epistemological basis is I-am-*thinking*, a *cogito*, from which we can infer an *existing I* that is thinking, a *sum*. All the rest of Descartes philosophy are pure attempts of dubious deductions on this basis. I will accept the first part, but reject the deduction. The epistemic individualist has to be content with only knowing the existence of this specific person, that is the epistemologist her- or himself. Even the characteristic isolation from other subjects and from any external object (logically including the subject's own body), as far as I see it, is merely the logical consequence of the awkward epistemic restraints the epistemologist is imposing.

This criticism is stated in a way that can be rightly judged polemical and dogmatic. In fact, the paradoxical self-restraints of classical epistemology are

not that absurd or destructive. They are created by the tendency of autonomous human knowledge, of the anthropological invariant[33] of theoretical autonomy, and therefore associated with the origin of our decontextualised epistemology, to the conception that knowledge is confined to the asking individual.

This dubious conception of knowledge is also the origin of Western science.

The evolution toward theoretical autonomy is a simultaneous process of liberation and confinement for human thought. By separating theoretical knowledge from its society and thus from collectivity and activity (practice), the classical epistemology is not only mystifying our way of obtaining knowledge, but also setting the conditions of freeing knowledge from the bounds of its immediate practical bondage. The decontextualisation of classical epistemology is a self-destructive way to state the question of knowledge, but is in itself a necessary condition for a category of autonomic knowledge to be *created* and *criticised*.

4.6.2 Epistemic Collectivism – the Depersonalised Collective as Subject

The frugality of epistemic individualism has naturally tempted its critics to turn to a simple negation of this position. If the individual person can not get very far as an isolated epistemic subject, perhaps it is worthwhile to drop this unpromising candidate for knowledge development and turn to another type of entity that is not a human individual, not a psychological object, but a collective entity, a sociological object. This has been the course of positivism and scientism during the last two centuries. In the terminology of Hegel, (that is on the verge of passing from collectivism to transcendentalism) the *subjective* spirit of the individual is replaced by the *objective* spirit of society and the *absolute* spirit materialised in the course of history as arts, religion and philosophy.

In the position of epistemic collectivism, the subject of knowledge is still an anthropological entity, this entity, however, is not a human individual, but a sociological object. For the sake of simplicity, I have characterised the epistemic subject in this position as *collective*. However, it also can be a social collective, that is an organised social body. It can also be somewhat more abstract, that is, the totality or a part of what I have called the *societal meaning system*.

In the philosophy of science developed by Comte (1975), the subject of knowledge is the very process of epistemic progress through the consecutive historical stages of religion, metaphysics and science.

In the sociology of knowledge founded by Durkheim (1972), the basic concept is *conscience collective*, which is negatively defined as being non-psychological, not referring to the individual subject, and positively defined by having some sort of supra-individual bearer. The choice of a metaphorical derivation of the concept from a psychological source, however, has always made the content of this basic term cloudy and problematic.

From my point of view, Durkheim seems to be anticipating the category of **societal meaning**. His anticipation, however, is still characterised by an incomplete separation of the psychological from the sociological object field. This separation will be discussed from an epistemological point of view in the last sub-section, and later taken up in the chapters dedicated to psychology and sociology.

The positivism of the twentieth century, from Russell to the logical empiricism that bloomed between World War I and II, with exponents such as Wittgenstein (1961) and Carnap (1936), has actually retreated from the epistemic collectivism of Durkheim into a scepticist or phenomenalist position. The same is true for the dominating trend in the modern theory of science, the sociology of science, developed by Kuhn (1970) and Feyerabend (1975).

Thus, even the collectivist perspective of the security and progress of science most often ends with a sceptical answer to the question of knowledge. This scepticism is enhanced by the perspective of the philosophy of language, according to which the questions of epistemology are founded in the language of discourse. This position can lead to a cultural or linguistic relativism as represented in the Sapir-Whorf hypothesis. According to this hypothesis, our ontological and epistemological categories are specific reflections of the linguistic categories that, for instance, are built into the syntax of our language system. This linguistic relativism is to be discussed in the next chapter.

A sociological version of this epistemic relativity is expressed in the archaeology of knowledge developed by Foucault (1970), who claims that our discourse is an inseparable part of the social system that also consists of other means of social control. A modern version of epistemic relativity is found in the social constructivism of modern sociology of science, as described in chapter 6.

Thus, epistemic collectivity seems to be bound for a landing place just as distressing to the project of knowledge as the epistemic individuality it is negating. This lamentable fate is really the result of the preconditions of the episte-

mological direction taken, just as it was the case for its adversary. What then is the starting point determining the end point of epistemic collectivity?

The fatal aspect of this direction is an antagonism of true subjectivity and true supra-individuality. You can choose the individual subject, that is, the person, or the supra-individual non-subject of the human collective, but you cannot combine them, you cannot have a collective subject. Thus, there cannot be a collective or supra-individual subject of activity and, consequently, nor can there be such a subject of knowledge.

Groups, societies, cultures or whatever suggested as epistemic subjects are all entities totally incapable of engaging in an intentional act, and they have therefore no potential to intentionally set up epistemological questions, nor can they ever be in a position to accept epistemological answers to these questions. We shall discuss the question of the intentional act in the chapters on psychology and sociology in more detail, and shall here restrict ourselves to the intentionality of thinking, no matter whether it is attached to asking, to pondering or to answering. I believe that it is incorrect to conceive a sociological object as the subject of such cognitive activity. A group or a societal meaning system is not thinking about anything, just the context of individual thinking. That is why even the route of epistemic epistemology is not the way to understand human knowledge.

If the subject of knowledge is neither the individual *cogito* nor a social collective, what can we eventually hope for as a suitable candidate for obtaining true knowledge? The famous philosophy of Kant (1976) rejected epistemic individualism and defined the subject of knowledge in a way that was neither psychological nor sociological in the terms of this treatise. He defined the subject as transcendental and thus founded a third epistemic position, *epistemic transcendentalism*.

4.6.3 Epistemic Transcendentalism – the Thought-in-itself as Epistemic Subject

Through an analysis of the contradictions of metaphysics, epistemology as well as ontology, Kant had a double objective: a *negative objective of finding the limits of pure reason*, that is, the area of scepticism of cognitive undecidability, and a *positive objective of finding the minimal categorical prerequisites for the possibility of knowledge*. These prerequisites were associated with

the process of thinking itself. The subject of the thinking was the individual, the Ego, but in his theory of knowledge, Kant was not focussing on the peculiarities of the specific person, with the individuality or subjectivity of the Ego, just as he was not focussed on the object in itself, *Das Ding an sich*.

He was trying to determine the transcendental categories of thought that any subject has to use in thinking. The transcendental ego is thus the supra-individual condition of thinking, a condition that is aprioristic[34] to both the specific subject and object in the epistemic relation.

This epistemological analysis of what is a priori to knowledge and what is a posteriori is an everlasting contribution. The drawback of Kant's analysis is, however, his static, non-dialectical style of thinking. All of the synthetic aprioriisms that Kant postulated to be necessary and a priori to any kind of knowledge for any kind of subject, have actually been shown in the historical course of science not to be necessary, but merely incomplete expressions of more general categories. Thus, Newtonian space, which Kant conceived to be a precondition before all geometric and physical investigations, has been shown to be just one of many possible geometries, and from Einstein we know that it is not even a correct expression of the shape of our universe. Likewise, the number system, which Kant thought was the only possible one, as a precondition a priori to mathematics, has since been revised by the theory of transfinites and of subtleties of mathematical logic since Gödel.[35] Finally, the Aristotelian logic that the master logician Kant meant to have proven aprioristic has been replaced by a contrasting quantum logic.

Instead, I propose that there are **historical apriorisms**, which are, in fact, categorical apriorisms like the ones of Kant, but not absolute, immutable categories that have a transcendental presence before any kind of empirical study. They are only methodological preconditions that are aprioristic to investigation, as long as we are not forced to change them. Examples of such *historical apriorisms* include our basic concepts of time, space, quantity and logic, concepts that are not only basic to our empirical data, but also even to our scientific theories. They are, however, only basic to the point that *when* serious problems appear in attempts to reconcile our empirical findings with established methods and theories, the point where a major scientific crisis emerges, we may have to go to the scientific extreme of changing a historical apriorism.[36]

Fichte, Kant's successor, interpreted the transcendental ego in a more classical idealistic way, that is, more akin to an epistemic individual. Schelling tried

to escape the dangers of such subjectivist tendencies by retreating to theism. Finally, Hegel developed Kant's transcendental ego into his absolute spirit, as the elevation of the contradiction between epistemic individualism and collectivism. Hegel (1969b) calls the individual subject *subjective spirit* and the collective relatant of knowledge is the *objective spirit*. The final subject of knowledge however is called *absolute spirit*, an entity that comes to expression in religion and philosophy, in which the highest reflexive knowledge is obtained. This final stage of knowledge is the self-consciousness of the absolute spirit.

In this German tradition, there are strong idealistic elements. However, Hegel's position is interesting in being an example of absolute idealism that abandons the subjective idealism attached to the position of epistemic individualism.[37]

I find Hegel's position unacceptable for two reasons:

2 Unacceptable Features of Hegel's Position

1. The absolute spirit is only acceptable if you agree with an idealistic ontology, in fact an objective idealism

2. The process of obtaining self-consciousness of the absolute spirit is teleological in a way that implies not only a historical predetermination, but also a historicistic theory of value.

I must admit that the Marxian creed that has been, and to a large extent still is, my frame of reference, inherited most of the second thesis and even a part of the first, as I tried to demonstrate in the section about the reflection theory.

This criticism of Hegel is thus a way of executing my Hegelian heritage, to conserve what I find of great and irreplaceable value, and at the same time to discard a system of metaphysics that has proven not only wrong, but also utterly harmful.

4.6.4 Epistemic Activity – the Contextualised Person as Subject

In the conception of activity proposed in chapter 3, any human activity is seen as having two relatants, a human individual and the society to which he or she belongs. Human activity involves at the same time the individual intentionality of a specific person and a social setting, a context of objects, tools, meaning and organisation.

The process of producing knowledge is certainly a human activity, and as such, a phenomenon that is **anthropological** and thus neither restricted to a **psychological** nor to a **sociological** bearer. The position of the two parts involved in the pursuit of knowledge is, however, quite different. The nature of human activity implies the paradox that activity is realised by a supra-individually organised collective and fixed to extra-individual societal meaning, but the quality of being a subject of intentional action still is restricted to the human individual, to the single person.

Thus, I suggest that the epistemological position of activity theory concerning the question of the subject of knowledge should be called *the position of the contextualised person*. That is, epistemic individuality is accepted as far as knowledge is bound to the acts and the cognitive processes of the individual, but the decontextualisation of this epistemic position is rejected. From epistemic collectivity, the supra-individuality is accepted, but the hypostasised collective as a subject is rejected. Finally, from the transcendental idealism of Kant and Hegel the idea of knowledge as an activity with a character that transcends both the individual subject and the societal collective is accepted, but the aprioristic categories of Kant as well as the historicism of Hegel are rejected.

4.6.5 The Relation between Personal and Public Knowledge

I have just rejected the idea of a collective subject of knowledge and have reserved the predicate of being an epistemic subject exclusively for the individual person, but a person contextualised in a societally organised supra-individual activity. Thus, the process of obtaining knowledge is anthropological or even anthropogenic, and can be divided only through abstraction into a psychological and a sociological process. The psychological process could be *thinking*, problem solving or some other concept of *cognitive psychology*. For the

sociological process, the store of relevant concepts from the sociology of knowledge, such as *societal knowledge production*, are used.

When we turn to the knowledge produced rather than the process of production, we again have to consider both anthropological object fields, the psychological as well as the sociological. I call the first object field **personal knowledge** and the second object field **public knowledge.** By making this distinction, I can follow Karl Popper to a certain extent in his ontology containing the three realms.

Popper's starting point is actually a rather traditional ontological dualism, expressed in his first two ontological fields, or as he calls them, realms. The first realm includes the material objects and the second mental phenomena. The two realms are thus the material world and the world of the mind. There is hardly anything surprising in this part of the Popperian ontology. However, the grand old philosopher demonstrated his legendary obstinacy by adding a third world, the realm of objective knowledge.

This ontological category, as he rightfully argues, has been made invisible and forcefully pressed into an ontological Procrustean bed, either into the double bed of standard dualism or into the even narrower single beds of the monistic varieties, that is materialism or idealism.

Objective knowledge is indeed a curious category that has some qualities resembling the first, and some aspects more akin to the second of Popper's realms. Objective knowledge is as elusive as mental phenomena, but as objective and public as material objects.

From the viewpoint of the history of ideas, Popper expands traditional dualism into a turbo version of his own making by supplementing the classic material and ideal substance with a category that was conceptualised by the Stoic direction in classic Greek philosophy. The Greek philosophers already stated that public knowledge, as with the thoughts of philosophy of science, had to be conceived of as something distinct from material objects as well as from individual thinking.

They called this category of objective thought *lekton*, a word derived from the Greek word "lego" that primarily means talking, saying (even in the written form), but also calling, asserting.

Lekton is a category with a somewhat different meaning than the Platonic *idea*, which was the first clear expression of objective idealism. Instead, it is more the product of human thought than a transcendental reality existing above

the world of phenomena that can merely reflect it in an impoverished way.

The idea of objective thought was discussed by some of the great logicians more recently, especially Leibniz (1969) and Frege (1976). They found in logic and mathematics a world that was as objective as the physical world, but without the materiality of the physical objects. Thus, the ontology that Frege developed as a foundation for his semantics included mathematical entities (the numbers) and logical entities, the truth-values of true and false.

In Popper's third realm of objective knowledge, even the creations of science and other cultural institutions are included, thus scientific concepts and theories belong to the third realm.

I receive lasting inspiration from Popper's notion of objective ideas, and there is a descendant of it in my anthropological theory, namely the meaning system. There are, however, some major differences in the status of Popper's objective knowledge and the meaning system of my theory. Actually, I cannot accept any of the three Popperian realms, not their internal content or their external demarcations, and even less their mutual relations.[38]

To start with the material world, I cannot accept the physicalism of fusing the an-organic (cosmological) field with the biological. Additionally, Popper is rather inconsistent about human products. Artefacts like tools are difficult to place. Sometimes they seem to belong to the first and sometimes to the third realm.

The second realm is of course a most distasteful category to me. As will be discussed more fully in the chapter on psychology, Popper seems to be forced into the modified idealism of the second realm, because he rejects the materialism that is in my opinion more adequate to his firm realism. His reasons for rejecting materialism are flawed, however, for he identifies all materialism with a certainly unpromising mechanical materialism.

What is the status of the most interesting part of Popper's ontology, the third realm? Well, I have, even here, some major objections to his concept of *objective knowledge*. I can agree that for instance physical concepts should not be confused either with the physical object or with the cognition of the individual physicist. In my ontology, the physical object belongs to the cosmological object field, the individual cognition of the physicist to the psychological object field, and the physical concepts to the sociological object field. In this way, I agree with Popper's trichotomous sorting of these epistemological relatants of natural science. I find, however, Popper's third category to be incor-

rectly furnished, because of his problems with the material products of human activity. Popper's ontology may be helpful in epistemology, but it is hopelessly insufficient as a foundation for a real anthropology, and especially for the social sciences, which consistently are placed in a rather low position in his meta-theory.

We are now on the brink of leaving the specific problems of epistemology. We have embarked on general questions of that devious creation of human activity that in the theory of this treatise is called *the meaning system*. This anthropological subcategory is the subject of the next chapter.

Notes

1 It should be noted that I distinguish between the adjectival terms "reflective" and "reflexive", and correspondingly between the substantival terms "reflection" and "reflexion". The former in the pairs signifies a simple relation of similarity between an object and its picture; it is etymologically derived from the use of the word *reflection* in optics. The latter in the pairs signifies a logical more complex relation, where the distinction between an object and its picture is blurred or rather fused. Here "reflexive" means directed back to itself, as in the grammatical use of the word reflexive verb, or in the noun *self-reflection*, that in my orthographic clarification would be spelled *self-reflexion*.

2 See (Whitehead & Russell 1973).

3 The dominant philosophical version of positivism is not this materialistic type, but *logical*, that is scepticistic, with representatives such as Russell (1977) or Carnap (1968).

4 A polemic against the reflection theory was formulated in (Karpatschof 1980).

5 See (Gibson 1956, 1966, 1979) and (Marr 1982).

6 In this connection, it could be seen as a self-contradiction that Lenin is actually attacking the epiphenomenal reflection of petty bourgeois intelligenzia in the reactionary philosophy of empirio-criticism.

7 The direction of the referential arrow is here oriented from the object toward the subject, as the meaning is a mediator representing the object for the subject. If we, however, consider the *act* of meaning production, the arrow between the subject and the meaning produced must be reversed, the subject being the initiator and the meaning the outcome of the act.

8 The model is not formally defined in this chapter. A rigorous introduction of the concept can be found in chapter 6.

9 This description, no doubt, will be evaluated by many clinical psychologists as rather gross, as it is quite cognitivistic and instrumentalistic in its perspective. I consider the account basically correct even if we modify the perspective to be that of a non-directive therapist (e.g., a Rogerian or systems type), in which it is the client that is the decision maker. It will not invalidate this as an example of symmetry in respect to knowledge development and object intervention if we consider the therapist-client relation to be a much more symmetric relation. Here, the knowledge process has to include not only the personality of the client, but also of the therapist, and has to consider not only the transference of the client toward the therapist, but also the counter-transference of the therapist toward the client.

10 (MEW Vol. 23, 192ff).

11 In the title of this subsection, I sharpened the term *idea* to *concept*, a technical term that will be discussed in great length in the next chapter. Its loose meaning will be sufficient in this context, a *concept*, a meaning bearing sign, generally of a verbal kind.

12 I am indebted to Dr. Jens Mammen, Univ. of Aarhus, with whom I discussed this example some years ago.

13 The pottery wheel is found in the late Ubaid period of Sumer, app. 5000 B.C., according to Clark (1969, p. 103). A monograph on this subject is (Leeuw & Pritchard 1984).

14 According to (Loebert 1984, 208). The potter's wheel originated in Mesopotamia in the 4th millennium.

15 I am obliged to my good colleague Dr. Jens Mammen, Dep. of Psychology, Univ. of Aarhus, for a long clarifying analysis of production and reflection in the evolution of pottery.

16 By the term *anti-cipation*, I go back to the etymological roots that are *ante* and *capere*, thus referring to a human activity, the object of which is not the point of *departure*, but the *goal* of the activity.

17 A discussion of the evolution of precursors of science in Mesopotamia is found in (Høyrup 1991, 1993 and 1994). A discussion of the effect of script on cultural evolution is given in (Goody 1986).

18 Popper makes a distinction between theoretical and practical problems.

19 See for instance *the Apology*.

20 The tripartition principle can be seen as a Hegelian obsession, but it is, in this case, rather accidental. Actually, the anthropological field is to be divided into a psychological and a sociological one.

21 As usual, the cosmology is to be understood in its idiosyncratically broad sense of all the natural sciences not dealing with life.

22 Levi-Strauss remarks (1970) that whereas the specific kinds in the systematics of ethno-botanics and zoology are vastly different from the scientific system in our

culture, the number of different kinds has an order of magnitude corresponding to our own.

23 See (Brown 1991).

24 (White & Kirkpatrick 1985).

25 A consistent definition of meaningfulness is that an assertion is made such that this criterion of practical necessity can be applied.

26 (Rosch & Lloyd 1978).

27 The very term "concept" is, of course, itself a concept and should therefore be analysed according the theory.

28 In fact, a crucial characteristic of natural science seems to be that such limits exist, often expressed in the form of natural constants. In relativity theory, the limit is the speed of light, in quantum mechanics, it is Planck's constant, and in thermodynamics, it is the non-decreasing nature of entropy within a closed system. Thus, it is precisely by battering against an unmoving wall that we acknowledge its existence. I can compare my position concerning the unchangeability of the cosmological object field to Lenin's concept of matter. Lenin did not postulate a specific definition of matter in cosmological (physical) terms, but introduced an epistemological definition, according to which matter is what is existing independent of human consciousness. Likewise, I shall not propose some amateur forecast about the specific nature of the limits of human endeavour, but only propose the principal existence of such limits.

29 (Valpola 1953, Hofstädter 1980, Karpatschof 1982).

30 Being a pious catholic, Vico was on the other hand reassured that nature was thoroughly understood by God, who as the designer of it all was of course the first to know about it.

31 I will use the term actuality as a translation of the German word *Wirklichkeit*, or the Danish word *Virkelighed*. In my native language, activity is called *virksomhed*, a word derived from the same root as *virkelighed*, namely from the verb *virke* that means something like *getting things done, being effective* (and is in fact directly related to), *work*.

32 See the exposition in chapter 1.

33 Anthropological invariants will later be defined as characteristics of anthropology, that is, as part of the differentia specifica of homo sapiens.

34 Synthetically aprioristic in contrast to the analytically aprioristic conditions that are simply the definitorial consequences of concepts.

35 (Rogers 1971).

36 I shall return to the question of synthetic apriorisms in the chapter about theory of science (chapter 6).

37 These figures of classical German idealism were briefly introduced in chapter 1.

38 I will return to these relations in the chapter on psychology.