Some Main Features of Wittgenstein´s Philosophy

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Chapter One
Action, Language, Mathematics and Psychology

Introduction

One should of course be cautious in ascribing general points and claims to the later Wittgenstein. He obviously warns against "the craving for generality" as well as against the wish of certain philosophers to explain things in accordance with scientific or deductive notions of explanation. Also, one can hardly say that Wittgenstein uses his key terms "systematically" or "consistently" in the standard sense. Philosophical terms simply cannot answer to determinate criteria, or better; there are no such thing as a proper or pure philosophical notion. However, one can easily point to certain "thick" notions that Wittgenstein uses, so to speak, *throughout.* Take the notion of a "language game". Where and when the invocation of that notion becomes irrelevant, so does the general drift of Wittgenstein´s remarks. Similar considerations relate to the notion of a "move".

In a language game there need be no predetermined set of possible moves, and any move in any language game may in certain ways be seen to be contingently related to certain concrete situations. Now, as I understand Wittgenstein, it is precisely in order to be able to express such open ended features and such variety that one does well in introducing the "thick", long-reaching notions such as a "language game" or a "move" within a such. In doing this Wittgenstein introduces, as it were, a coordinate system, without which certain kinds of comparison and contrast could not be expressed and examined. Here, the philosopher does not aim at fixing or determining anything. There is no general method of philosophical discovery or revelation. However, being aware of variation involves a certain awareness

concerning that about which one can remain open and flexible in a meaningful way.

I am going to examine a twofold distinction I find to be more or less systematically contained in the later Wittgenstein´s writings, not the least in his manuscripts on the foundation of mathematics. In fact I think that the reception of Wittgenstein has generally (con)fused three different aspects of linguistic meaning referring to them all by the vague term “use” (although some of the English translations do to some extent distinguish between “use”, “employment”, and “application”). To me at least it is clear that Wittgenstein consistently uses three different German expressions, namely those of *Gebrauch, Verwendung,* and *Anwendung*, in order that one can learn to distinguish between three different aspects or dimensions of the phenomenon of linguistic meaning.

The general terminology

A first, very rough, account of the distinctions is this: A piece (a word, an action, the appearance of a phenomenon etc.) might have a *Gebrauch* within a particular language game. Let us translate this into “use”. Here, “making use of“ means something like knowing what to *do* with a certain piece. Say, I can calculate or count or ascribe something by my making use of the expression “5". Or I can sort or identify something by my making use of the term “yellow”. It is a matter of being able to make use *of* something *in doing* something, like being able to score a goal by kicking the ball. There are certain things you simply cannot *do* if it was not the case that balls might be kicked; and similarly, scoring a goal is a function or a “use” for footballs to have. Indeed, this is the straightforward aspect of meaning as use.

If it has a general point it is this: “Uses” are to be understood as embedded within particular language games. There is no general or neutral standpoint from outside the game of football from which the possibility of using a ball to score a goal, *as such*, can be characterized. That meaning corresponds to use is not a general pragmatic point, and there is no way in which the very “uses” can be characterized externally or neutrally. There *are* no “uses” (responses, applications, utilizations, or actualizations) of the pieces of a language game but making the respective moves, as such. Moves in a language game do not consist in or take place through some *other* kind of event. Moves do not correspond to any external or general ontology.

Making sense is, and is only, a matter of knowing how to go on. It is another matter that one can only explain and describe the possibility of making sense by pointing to the manner in which certain elements of our language may be utilized. This is the issue to which we now turn, but it must be underscored that this point does not imply that one can *reduce* the phenomenon of meaning to the features

entering into the account of the possibility of meaning something by means of utilizing certain procedures.

Now, one can say that there are certain “techniques”, such as following procedures, applying certain tables, making certain kinds of considerations, performing certain kinds of measurement - in short - following certain kinds of rules which, in a sense, can be said to be *of use* within a variety of *different* language games. This is the sense I take Wittgenstein to attribute to the notion of *Verwendung*. Certain techniques may have different *Verwendungen* in different games. Let us translate this as “utilization”.

Here one must be cautious because one cannot follow the same rules, in a strict sense, within different games. Take addition; it is one thing to add real numbers and another to add complex numbers; but still, addition is a certain operation that can be utilized, can be of use, not the least with respect to introducing and elaborating new forms of calculus. Again, by saying that a technique may have different utilizations is to acquire a means for expressing the differences and similarities between different language games. It is *not* to ascribe a certain basic quality or determinateness to such techniques. Language games have no foundation and do not hinge on the utilization of specified and determined operations, as such. The kind of certainty associated with the utilization of a given technique is relative to the kind of language game in question.

Finally, in the sense explained according to which different language games may be compared in certain ways, one may wish to describe certain ways in which such games can be “positioned” and applied relative to, as well as within, each other. That is the sense of *Anwendung*. I can *apply* a language game, such as counting real numbers, within the game of numbering my stock of CD´s. To apply a language game is first of all a means for clarifying and configuring *other* language games. For instance, by applying the language game that consists in the production of a ruler or a meter, it is possible to clarify and circumscribe various methods of measurement. However, language games need not develop within a series, but can also be transformed and interrelated in a variety of patterns and connections. An example would be the application of certain colour concepts (as given within particular language games) to the effect that new possible pieces and new possible moves are available within a vast number of, by then, new games to be introduced.

The notion of application seems to be important to Wittgenstein not least because it has to do with the notion of *aspects*: We can say (with Wittgenstein) that certain utilizations of given concepts; rules, techniques etc. are “special” (*Besonderes*) to the effect that we can clearly distinguish between them. “Now we utilize the concept like *this*, now like *that*”. And so, different language games may

deal with the same procedures. For example, I one day play chess as part of a competition whereas - the next day - I play a different kind of chess game with my child. Chess can both relate to power struggles, financial struggles, intellectual competition, or simply having fun and not following the rules strictly because the well being of the child is what matters and what determines the course of the game ("don't make that move or I will take your queen!").

The change and the dawning of an aspect are the change and dawning of new possible applications of a given set of instruments. For instance, given certain methods of proof in mathematics, these methods - these definite utilizations of certain mathematical items - may have different applications in mathematics. There may be different implications associated with the possibility of proof. Indeed, Wittgenstein takes this to be at the heart of mathematics (II, § 43).

What is more, it is the series of possible applications of a given set of techniques that may be said to form a *family* (IV § 7-8). Family resemblances are among language games. Here, Wittgenstein brings in the notion of "concepts" (PU I, § 383)(PU II, vi, remark no. 15). When language games change the concepts change (OC, § 65), [and consequently the application of certain procedures change "since a language game is something that consists in the recurrent procedures (*Spielhandlungen*) of the game in time", OC, §519]. This is the sense in which there are family resemblances among concepts. Wittgenstein also brings in the notion of "meaning" (*Bedeutung*): What might be called *the* meaning of a word is a fixed kind of utilization thereof (OC, § 61), "for that is what we learn when the word is incorporated into our language", ibid.). Meanings corresponds to "*eine ständig geübten Gebrauch*", to a continuous form of training (RFM I, § 14).

However, any real enacting of a language game, any application, and thus any concept, transcends the bounds set by the recurrent, acquired techniques. Understanding transcends making sense by means of following certain rules, as such. But still, there is no understanding that can ignore the possibility of our making sense by trying to see how a given course of action is, or is not, in accordance with certain (expressions of) following a rule.

Taken together, the three notions of use, utilization, and application provide us with a means for describing and characterizing possible language games *without recourse* to either pre-given ontological concepts of "events", "doings", "practices" etc. or quasi-empirical ideas about regularities of conduct, patterns of experience, linguistic responses and dispositions etc. Language games can *only* be characterized relative to one another and there is no *one* general or basic way in which they interrelate. Also, the notion of language games is not *merely* a tool of description. There is nothing called "imposing" or "applying" the notion, as such, to a given realm

of speech acts, doings, or going on. There is nothing called the material to which the notion of a language game can be applied.

Here, I will allow myself to introduce two formal linguistic notions. If you trace the way in which a certain technique can be of use, perhaps with interesting differences, within a variety of different language games, we can call this a matter of tracing the *enmeshment* of these language games. However, if you trace the way in which certain language games can be used within more complex games, including how the joint performance of certain games may be excluded, we can call this an account of the *mutual entanglement* of language games.

The verificationist turn

I the next many sections I will try to give an outline of some of the major themes and problems that, on my view, led Wittgenstein to analyze psychological concepts and phenomena. We are going to reconstruct some of the elements in the route Wittgenstein travelled from his early Tractarian position to his later anthropological framework. These elements are the dissolution of the idea of elementary sentences, the invocation of intentionality and temporality, and finally the changes in his understanding of mathematics. I will mention two other philosophers which to some extent were companions on this journey; Goethe who was, I will try to convince the reader, an important source of inspiration (and challenge), and Freidrich Waissmann who was, of course, the closest collaborater Wittgenstein ever had. Waissmann did not inspire Wittgenstein, but he worked hard to articulate and exemplify Wittgensteinian ideas in a variety of ways. He also tried, convincingly, to bring Wittgenstein´s views in contact with some ideas of some of the greater new mathematicians.

Any short presentation of the content of Wittgenstein´s TLP will be too short, and will be contested by some readers, since there are, to this day, a number of totally different interpretations of that work. But for our purposes I think that the following will suffice: The text of TLP is, in a certain sense, structured in two parts; one part that explains the character and status of so called "elementary sentences" and where the idea that these sentences are, in a certain sense, *pictures* of possible states of affairs and *models* of possible segments of Reality, is crucial. The next part explains how all meaningful sentences can be analyzed as a result of a *special kind of operation* on elementary sentences, namely "truth operations", each of which can be expressed by a so-called "truth-table" that displays the possible combinations of truth possibilities of elementary sentences.

Two formal notions will be crucial in what follows: First, there is the idea that

a set of elementary sentences constitute a so-called "logical space". Wittgenstein probably took this idea from Hertz and Boltzmann, but that is not important here. What is important is to note that the different elementary sentences in a sense are *internally related* to one another. Because the second idea of the TLP that we shall stress is the idea that the operations on elementary sentences enable one to construct what we call a *series* of forms (*Formenreihe*). The construction of the series of natural numbers is presented as a paradigm for such construction. Now, the important thing to note is, that the various elements of such a series of forms are internally related in a *different sense* than are the elementary sentences relative to one another. This will be our first theme below.

The construction of the series of natural numbers is also the paradigm for a certain understanding of Mathematics. Mathematics is seen as an acitivty that generates a series of forms. As such it is seen not as application of language, but instead as the construction of a growing number of logical syntactic stipulations. Mathematics is a "method of logic" that proceeeds by means of constructing "proofs" in a certain way. We will come back to that shortly. Here we shall first note that mathematics, according to TLP, is but a means to and end: The constructions of mathematics led to the construction of those "nets" that the natural sciences are said to be able to apply to physical Reality.

There is a lot to say about such a view on scientific theories and models; and I will discuss the issue thoroughly in a seperate chapter below; but for our purposes here, it suffices to make a simple analogy to a *tipskupon*. The construction of a TP enables one to allocate a set of possible happenings. I can survey that *this* team beat *that* team, while another team lost to a fourth, and so on. A TP informs us about possibilities for combining a series of happenings. The TP indicates *that* so and so can happen "jointly". It sais nothing about *how or why* it happens. Maybe Arsenal beat Leeds 10 to 0, our TP only sais *that* they won, while, say Bolton and Birmingman got a draw.

Constructing a TP is analogous to constructing a model of Reality to be used in the natural sciences as a framework for pursuing real phenomena and their possible "relations". As I will explain later in the chapter on the semantic notion of scientific theories, the Hamiltonian method of constructing a phase-space representation of certain kinds of physical system may well be seen as the paradigm which, I think, Wittgenstein had in mind, given his knowledge of the tradition to which Hertz and Boltmann belonged.

Now, recall that both main parts of TLP centers on a certain notion of "internal relation". But there is a crucial difference between the two kinds of "internal relation". The internal relations between successive members of a sequence of forms

(*Formel Reihe*), corresponding to Wittgenstein´s idea of the result of a truth operation, are per definition, exposed and expressed, whereas the internal relations between a range of elementary sentential signs are implicit rather than explicitly formal. To be sure, both kinds of internal relations cannot be described, but only "shown", but showing an internal relation between, say, two natural numbers, has a definite formal expression (the sequence of natural numbers) by contrast to, say, the series of colors. The logical position of any number has an objective *index*; we can express that it is *this* position in the series, but there is no such index concerning, say, the logical space of colors or the logical space of Hertzian distribution of physical forces in space and time. This was the problem which Wittgenstein dealt with in his paper "Some Remarks on logical Form" from 1929.

Now, if we say that there must also be certain objective *expressions* of the logical structures of elementary sentential signs, it follows that the "elementary" character is not merely a matter of "reaching out to Reality". The fixed "place" of the elementary element, does no longer correspond to a logical position *as such*, but expresses a logical position in relation to a given manner in which to *assess* the position. That is why, I conjecture, that Wittgenstein came to believe that the idea, that the elementary sentential sign points to a certain logical possibility, is relative to a form of *verification*. Indeed, the notion of verification played an important part in Wittgenstein´s works from 1929 to 1933. Importantly, this notion was never understood by Wittgenstein as a purely "cognitive" concept.

It is clear that from *The Philosophical Remarks* of 1930 and on, the notion of verification is associated with a certain conception of *intentionality*, and I think that this link was part of the reason why Wittgenstein, gradually, payed more and more attention to our tripartion between use, utilization, and application. Recall, the tripartion was already part of the Tractarian views. In TLP, a sentence is seen as a *use* of a sentential sign; the method of truth operation is *utilized*; and the whole of language is *applied* to Reality. Consequently, the new reflection of the two kinds of internal relation leads directly to a reflection of the relation between

(a)the "use" of elementary sentential signs, now that this use is not given a priori by the logical form of the elementary sign, as such (for instance our ability to make use of color terms).

(b)the intended utilization of a certain kind of operation, prior to the kinds of truth operation on elementary signs, on the condition that we have a formal expression of such "prior operations" (for instance our ability to make sense of the possibility that different colors can be more or less "dark" or that they in certain ways can be *arranged* in a series or pattern).

We shall also recall that the very definition of "an operation", as stated in TLP,

namely that it is an "expression of a relation", is maintained. So making sense of, say, color terms is an ability to express *how* the attribution of the term to something involves *placing* that something in relation to a certain, objective, background. Now, I think that it is such considerations that lead Wittgenstein to the idea of a *grammatical* operation. Indeed, one can say that the Tractarian idea of a "logical syntax" evolves into the idea of a new kind of grammar. In relation to the former, we made an analogy to a TP; but now we can deal with a more complicated set of possibilities. Say, we not only look at the result of specific matches, we distinguish between the result of first and second half of the matches, or we make the number of goals that are scored matter, or we exclude all matches where players are send off or injured. In short, we no longer have an a priori scheme for what counts as a *unit* (a match) on our cupon; we are able to construct "all sorts" of cupons.

Here, intentionality is involved in so far as it is a matter of knowing what one has *set oneself* to do. And this is why mathematics is still a paradigm case of construction. I will say more on Wittgenstein´s notion of arithmetic later, but to put it short: The mathematician is no longer seen as, merely, having the ability to construct sequences of signs (formula) by means of proof of certain equations, which, Tractarian wise means, formulating rules for introducing formula that subsequently can substitute sentential signs that are already introduced in a given series of forms). Here, the mathematician is generating what we can call "ready made forms", forms that are *directly applicable* to Reality; and thus the constructions can be characterized by the metaphor of a "ruler" that is "laid against Reality". On the new conception, there is no longer any "ruler" to be laid against Reality; there is *our* ongoing ability to *apply* whatever has been constructed *by way of a certain utilization* of certain formal expressions.

An important part of this change, is a change concerning the Tractarian idea of "identity". Identity no longer merely expresses a (neutral, mechanical) rule for the substitution of one sign with another. This comes out, not the least, in Wittgenstein´s remarks on ostensive teaching. The substitution of one expression by another, like when we declare "*this* can be called X", is a matter of *already* knowing what is at stake. Consequently, in relation to mathematics, the notion of proof is changed also: Proving, in mathematics, is no lo longer merely an ability to point out how given formula can be seen as part of a given succession (like being able to go criss cross on our TP). So the "method of proof" is no longer merely a matter of being able to *continue* a given sequence, as such. It is a matter of making sense of *a* particular continuation on a certain background. We no longer have "it follows". We have "*these* circumstances can be followed up *like this*".

So Wittgenstein was forced to reconsider his original ideas of both generality

and the concept "all". As should be known, it was already a major point of the Tractatus that the latter was not a form of generality. Frege´s quantifier in relation to "all" was seen as a kind of *conjunction* associated with a given sequence of forms, whereas the notion of generality was purely formal and was expressed by the very fact of there being formal concepts, to the effect that there was no need for a *special* sign for generality. After the verificationist turn,

(a)there can be no formal concepts in the Tractarian sense and thus we *do* need a variety of expressions, each in their way expressing an "idea of generality"

(b)both concerning "all" and "in general" there is no pre-given form that will settle in advance if a given series of symbols corresponds to *that* particular formal expression. There are no proto expressions of logical syntax.

So in both cases, the question arises of *what* can function as a background for a continuing effort to be proceed systematically within the continuing generation of expressions.

Now, in the *Tractatus* mathematics was seen as a kind of "logic of discovery"; you need (the practice of) mathematics in order to launch the idea of a "form of causal law". Mathematics brings you the rules for constructing a variety of "nets" to throw at the World. Now, we focus instead on a set of abilities to be able to "throw". We focus on the ability of *anwenden* the various parts that constitute such nets; and we stress that people establish such applications if they can, in some rule governed way, coordinate a number of different kinds of *Gebrauch* of certain features with which they are already, in some way, acquianted. This is in fact the core of the idea of a "method of verification". These methods, importantly, are not routes to our making any judgement. They are conditions for the possibility of *applying* certain objective features in the intended search for a certain range of real phenomena.

It is probably so that Wittgenstein takes the term "phenomenon" from the context of physics (Boltzmann, Hertz), which again points to Kant´s original introduction of the term. Kantian "phenomena" corresponds to *facts* in the sense of TLP by contrast to possible states of affairs. These "facts" also corresponds to *modality* in the Kantian tables; they express a modal character between *different kinds of facts*. Say, the Moon has a given orbit, and it *must* have this if so and so, but it *can* change its orbit if so and so, even if it *really* only have had this particular orbit the last tens of millions of years. So phenomena of physics are analyzable, in modal terms, relative to one another. They are far from something immediately given and assessable. They do not correspond to atomic judgements or empirical units. They are *units of modality*. Given the fact that there are colors, so and so, it is also given that things can change, *like this* and not *like that*. The idea is that there are certain *forms of change* that are characteristic of a certain set of items. And we know from

Kant that the possibility of such "dynamical principles" hinges on the possibility of a certain *mathematical operation*, the schematization, by means of which a variety of "pictures" or in general structures can be generated. So the Wittgensteinian, verificationist, story is perhaps old. Behind the motto that elementary sentences can be analyzed lies the motto that dynamical principles hinges on schematization of things in space and time.

On Wittgenstein´s new grammatical view, mathematics is still important and it is still associated with the notion of a *logical syntax*. But the difference is that the Tractarian view simply saw mathematics as an *example* of "logical syntax", whereas mathematics is now associated with the notion of "*rules* of logical syntax". Mathematics becomes a special kind of "rule operation" (my term). It is these "rules of logical syntax", that is said to constitute a *calculus*. Mathematics is calculus, not construction.

We are still talking about methods or procedures for generating a series of symbols. But the new thing is that any generated symbol count as an *expression of a rule*. The constructed form is a signpost, it indicates "how to go on". On this view, mathematics is still a variety of methods for the generation of formula, but each formula so constructed have a clear cut *verwendung*. For instance, if my attention have for some reason been drawn to the fact that there are two cows on the field and two cows in the stable, thanks to mathematics, I now have the possibility of expressing a possible fact towards which the attention of others, including myself, may now be drawn; the possible fact that there are four cows within a radius of 1 kilometer from this farmhouse, or the possible fact that there are less cows in the fields than yesterday. Mathematics provides us so to speak with clear cut *pieces to be moved* within certain activities.

Now, it is at this point that a new "psychological" dimension of Wittgenstein´s philosophy comes to the fore. For the idea of a calculus is, I conjecture, characterized by involving *specific forms of attention*. So mathematics is no longer merely an excellent example of logical construction, it becomes the paradigm of establishing "ways of searching"; a paradigm for the formulation of *hypothesis* in the light of which we can search the world in new ways. Mathematics becomes a set of frameworks for orientation.

Mathematics is no longer seen as establishing a kind of logic of discovery, it is rather seen as fascilitating the ability to operate on a group of *varying features* in order to establish a unifying kind of application of these features. A variety of elements can be numbered, be grouped together or separated, be multiplied or associated with other elements. I conjecture that this is what Wittgenstein would later see as the piecing together of a variety of features within a single language game.

Somehow, a variety of things can become features of the *same* game and thus be subject to a *series of* rules. So Mathematics is no longer seen as the construction of *one* ruler that can be "laid agaist Reality". Instead, mathematics fascilitates the process of *calibrating* such Tractarian rulers relative to one another, combining a variety of features, in the construction of a new method of comparison.

Consequently, it is not the possibility of laying a single proposition "against Reality" but the possibility of applying a *system of propositions* that becomes the issue (PB, # 82-4). Mathematics establishes the *rules* for the combined use of a series of different kinds of "Tractarian" kinds of logical syntax, each constituted by way of certain intentional perspectives.

A preliminary summary

We have seen that Wittgenstein, in the paper "Some Remarks on Logical Form", gave up the idea that the various elementary sentences are logically independent of each other. By reference to colors, he mentions for example the possibility that one can speak of certain kinds of "degrees" in relation to the way in which a given group of elementary forms are internally related. So the possibility of distinguishing clearly between different colors *is in fact* a way to express, in a general "formal" manner, how elementary sentences are internally related to each other. Consequently, Wittgenstein expresses this by talking about a possible form of "analysis" of elementary sentences. This kind of analysis (of elementary forms) thus hinges on a form of manifest difference between these forms, and that is why Wittgenstein begins to refer to the *phenomena* by reference to which we can express the internal order between the elementary forms.

It is crucial that the reference to phenomena is public, in that they can be expressed by so-called *Aussagen*. Given a certain set of such phenomenal *Aussagen*, the performance of a truth operation on elementary sentences corresponds to a *method of verification*. This explains why Wittgenstein introduces the term "hypothesis" for the sentences thus constructed. We noted that a method of verification does not lead to our making empirical judgements, it only secures a clarity concerning what a judgement involves; namely a certain bundle of *Aussagen* expressing a certain bundle of phenomena (analogous to the bundle of facts that determine how one kind of TP is constructed).

In *Philosophical Remarks* Wittgenstein introduced the notion of "manners of searching and finding" as internally related to the idea of putting a *question* to something. This is the point of the idea of verification: The idea is not that something we may postulate can later be accepted as true; the idea is that the ability to direct

ones *attention* towards something presupposes an ability to express, formally, *how* to direct ones attention. Directing ones attention requires a rule or a method. It must be clear that whatever is involved in the case (*das was entscheidet wird*) can be presented or exhibited in a clear way; one must know how what is involved in the judgement is *herbeigeführt* (PR # 43).

The basic assertions have, as yet, no special status. They are simply where the analysis stops. Each assertion is like a certain parameter in a conjoined characterization of a given state of affairs. Colors may be involved, heat may be involved, voltage may be involved, hardness may be involved and so on. Now, I called it "bundle" in order to stress that we have not to do with a strict logical order between whatever makes up the phenomenal background for a given hypotheses. But recall, since each kind of parameter is *analyzable* within its own "field" or dimension, and since we are talking about features of phenomena that form the base of *rules for the construction of expressions*, we can say - according to Wittgenstein - that we are able to perform *operations on the group of parameters*.

So the construction of hypotheses is not merely a matter of performing *truth*-operations on elementary sentences. It is also, and primarily, a matter of performing *phenomenological operations* on the features that enter *into* the various kinds of elementary sentences. Consequently, the idea of a phenomenological *Lehre*, becomes important.

Now, I conjecture that in composing the *Big Typescript* of 1933-4, the continuing considerations of the themes of PB led to a series of new points of interest. First, the idea that a system of sentences corresponds to a method of verification led to the idea of different *forms of* application (*anwendung*). The main example, I would say, concerns the illusion that there must be only *one* form of *Gleichzahlichkeit*. Here, we are not saying that what seemed to be one is in fact a variety, we are saying that a variety of methods might be presupposed concerning what was wrongly seen as a single "essential" matter. There are different methods which might lead to a kind of comparison between different "collections" (better, "presentations"). When we say, "there are many kinds of establishing *gleichzahlichkeit*", we are expressing a family likeness between a series of rule governed practices (*verwendungen*). Similarly, we may have a certain method for comparing the "length" of a rod, and now we also have another method for comparing the hight of a number of houses by means of some geometrical apparatus. Whether we have any reason to combine the possible results of these different methods of comparison is a contingent, practical-normative issue.

Second: I have already described how the original notion of "rules of logical syntax" that was associated with the idea of mathemathics as a calculus, becomes

the broader notion "rules of grammar". But it is first in *The Big Typescript* that the program (that Wittgenstein more or less explicit considered between late 1929 and early 1930) of trying to elaborate a kind of "phenomenology" becomes the program of elaborating a *philosophical grammar*. Much of the views on philosophy that we find in *Philosophical Investigations* appears in the typescript of 1933. I will say more on the later Wittgenstein´s view of philosophy below. At this point I will merely stress that the very fact that Wittgenstein presents his writings as a piece of philosophy. I think that the *main* feature of his view of philosophy is the (as we shall see, Goethean) notion of *eine Übersichtliche Darstellung*. The core is the interest in, and ability to, provide a kind of survey of a variety of features that in all sorts of ways can be enmeshed and which, still, lay the ground for a series of integrated doings; doings that make sense and which also involve thoughts and experiences.

Third, from the Big Typescript and on, Wittgenstein always associated the questions concerning the possibility that certain symbols makes sense with questions concerning *the explanation and instruction* of how to learn to express such sense. We get a universe of teachers and pupils, not only in the classroom but also in the laboratory and a variety of *Werkstellen*.

Finally, the first systematical discussion of what it is to *introduce* a rule emerges (for *that* is the issue, not what it is to "follow" a rule. Indeed the point is not that someone is able "to follow" certain rules, the point is that there *is* something called "following a rule", and that is given by the fact that something can be "introduced" in such a manner that, actually, *something* follows accordingly).

Now, obviously, the problem concerning the criteria that must be presupposed if ostension can function as a means to introduce new terms in the language, is a main example. But it is also clear *why* this is a main example; namely the fact that the very act of ostension (pointing at "the" thing which is declared to be atached to a certain symbol) is a main example of an *expression of* a rule. Again, mathematics becomes crucial, for mathematics is so to speak the very practice of generating expressions which are, any of them, expressions of a rule. Again, this does not mean that mathematical formula are the products of rule following, but means instead that whatever mathematics generates is generated *as* something to be "followed up" (to be succeeded, to be transformed, to be an argument in a certain kind of function etc.).

It is important to note that Wittgenstein focus on the notion of "an expression of a rule" in order to stress that *no* (meaningful) doubt can arise that *this* is an expression of *this* rule. There is no question such as "so this is an expression of a rule, but which?" There can be no *hypothesis* concerning expressions of rules. The formula ½ = 0,5 expresses a fixed link to 5/10 = ½, it expresses a fixed link between

the practice of writing decimals and the algebra concerning fractions.

No foundations of mathematics

Wittgenstein - and Waismann´s - assessment of the so-called foundational crisis in mathematics was that it was a mistake, in the first place, to believe that mathematics was in need of some sort of foundation. They did not try to give a fouth alternative answer to the the suggestions, logicism (Frege, Russell, Ramsey), intuitionism (Brouwer, Weyl, Heyting), and formalism (Hilbert). They tried to convince philosophers, and mathematicians, to dismiss the issue. So in the following, when we say "the critique of position p", what we mean is the reason for *ignoring* the position, not a genuin argument against the position *as* a position in relation the the foundationalist issue.

<u>The critique of intuitionism</u>

This critique seems very straightforward and simple. The critique sems to be that intuitionism hinges on the idea that certain basic mental acts, so to speak, keep the practice of mathematics going. The critical target is thus the view that the construction and operation on formulas hinges on a definite *way* to interpret these as if there is kind of proto way of operating on symbols that associates any specific mathematical operation. As Marion and others have argued, this is a very crude and inadequate picture of the intuitionists. However, since Gerntsen it has been a mark of intuitionism that the notions of "introduction rule" and "elimination rule" plays a basic role in the account. So maybe we have to do, not so much with a certain way of introducing formula, but a general account of *what is at stake* in such introductions. We get the idea of there being *canonical forms of introduction*. And this is in effect to argue that there are certain basic forms of schemata that provides the mathematical practice to follow with a sure footing. However, the critique stands that intuitionism wants to make a *general* claim where Wittgenstein and Waismann thinks there are none to be made. But acknowledging this is not to block the philosophical strategy of, say, Dummett: For if the stipulation of a general form of term introduction is made for an explicit, methodological purpose, not pretending to cover "all cases", but merely as characterizing an interesting *kind of* cases, Wittgenstein and Waismann would have no cause for concern.

<u>The critique of formalism</u>

This critique is based on a premiss, namely the well known view that any language game, any practice, must have certain points, a rationale or significance. So the idea

that there can be a "purely formal" method of describing a certain symbolic practice is bound to fail. The meta-level can never be "neutral" in respect to the practice it sanctions. If the practice characterized by the meta-formula is called P, what the latter settle is not the *very* practice (*Verwendung*) of certain symbols, but a specific *Anwendung* of the described *Verwendungen*. It is the formalist notion of *Verwendung* which is an illusion. There can be no P merely in the sense of utilization, only in terms of application.

The critique of formalism, based on the premiss, refers to Skolem´s demonstration of the indeterminacy concerning the formalist idea of its explanandum. If the set of axioms or principles A-P is supposed to give a formal account of what belongs to the mathematical practice (system) P, there will be a variety of possible mathematical structures that "corresponds" to the given stipulations. At best, the formalist account introduces a group of practices. Which means both it must be settled *in advance* which of the structures is in question (certain criteria of identity must be presupposed) and it must be decided in advance *which application* the structure to be introduced is supposed to have. Again, this is not to deny the value of *formalization*. To formalize a practice, to associate it with clear analytical principles, is a very important method of clarification. But the point is that you seek clarification *for a reason*. So the formalist account is a method for *reconstructing* a practice, not a method of establishing a practice, and the practice reconstructed changes many of its features due to the reconstruction.

<u>The critique of the logicist program</u>

This critique is more subtle. TLP embodied such a critique, in the first place, and the shifts after TLP entails a critique of the Tractarian critique of logicism. The association between the verificationist turn and Frege´s idea of the link between sense and reference is obvious. It now makes (syntactical sense) to ask if a given word is taken as part of *this* or *that Satzsystem*. So the "sense" of a word is a matter of seeing things in a certain context. Now, recall that it was part of Frege´s account in *Grundlagen* to argue that in so far as we can make sense of a set of items belonging to a certain context (say, lines), we can introduce a new way of making sense of a new range of items (directions). This is the famous and ill fated idea of logical abstraction. The heart of the matter is the notion of an equivalence class. It is by noting that the set of parallel lines forms an equivalence class that we can associate a certain *operator* "Direction of l" for any line representing any such class.

Now, what I want to recall is the fact that the method fails simply because we make use of the notion of a "class". The method does *not* fail because we engage in a certain kind of reasoning. For the logicist idea that mathematics is based on "logic"

does not involve the claim that we first establish a certain kind of "logic" (first oder predicate logic) and then try if we can establish a certain mathematical practice on that foundation:

Frege thought that the foundation of Arithmetic hinged on the possibility of making specific reference to determinate, formally constructed, objects. For instance, one should be able to determine the sense of an expression like "*the* solution to the equation x + 3 = 8 ", or "*the* square root of 6". This brought Frege to formulate the principle that mathematical objects should be associated with certain criteria of identity, in the sense that the meaning (*Sinn*) of statements of identity concerning a given domain of objects would be determinate. It was this requirement that led to the method of logical abstraction, as a method for introducing new domains of objects into mathematical thought. The semantic issue whether this method actually works is much debated.

It should be noted that the possibility of teaching a possible utilization of a certain mathematical operation, for instance of drawing a common perpendicular line segment to two others, thereby demonstrating their being parallel to one another, lies at the heart of Frege´s idea of introducing a new set of items in thought. This involves recognizing that the series of such common perpendiculars is associated with a certain order; the elements of *this series* can be clearly distinguished; we know when two such perpenduculars are identical or not. In this sense, we are taught that the item to be given a use, the notion of a direction of a line segment, can in a way be be posited in relation to certain procedures or instruments. The introduction into our language of a meaningful use of expressions that refer to mathematical items presupposes the utilization of certain mathematical operations in relation to *other*, in the particular context, *older* features and elements of mathematical thought.

Wittgenstein´s original Tractarian critique is simply that Frege failed in providing a logical syntax (the sign for "all" is without sense and is misleadingly seen as en expression of generality, and the sign of identity is superfluous). So there is a problem in stating that *all* of the lines that are parallel to a given line l forms an equivalence class. The problem is that we both characterize the "class" intensively and extensively. The problem is that it is implicitly thought that any stipulation of the form "the group of objects for which it is true that..." leads not only to a circumscription of a given group of things but also leads to the identification of *nothing but* the "logical group" of such things. It is as if "being a group" of objects is a *basic logical feature* and that this feature is somehow realized, turned into reality, by expressing the formula, intensively. There is no *basic* and *uniform* (logical) notion of "groups".

So the important question to ask is the one formulated by Cora Diamond

"what does a concept script do?", and not "can logic be a foundation for mathematics". Mathematics *is* a method of logic *for Frege* as well as for Wittgenstein, early and later. Now, since arithmetic is *clearly* such a method, what people usually call the logicist program is in effect the idea that arithmetic is a foundation for any *other* mathematical practice, and we know the TLP did not really dispute *that*. But *this is indeed* what the later Wittgenstein and Waismann disputes. They both acknowledge that a lot of mathematics *can* be based on arithmetical principles; but a lot of mathematics need not be so founded. More importantly, the agument is that Aritmetic does in a sense involve *geometry*. This is the heart of the new critique of the logicist program. The critique hinges on the very idea of introducing the series of "natural" numbers. There can be no such thing as *the* number series, simply because the enumeration of things can mean so many different things.

So it is the variety of ways in which things can be *Gleichzalich* which is at issue. It is here that Wittgenstein points to the importance of geometry. It is the spatial distribution of items which is important. It makes a difference if one is able to *survey* a given range of items or if one so to speak have to isolate them one by one. It is the very idea of basic forms of *logical positions* we criticise. There are no basic ways in which to be a successor or adjoint. So the idea that two groups of items "correspond" in number (in logical structure) is an illusion. It makes a given relation seem as if it was a true *connection* that is rigidly fixed by drawing the relation. Two chairs may correspond to two apples because we play the game of putting one apple on each chair. But here the "two" in "two apples" is *not* the same logical object as the "two" in "two chairs". "Two apples" admittedly does not say something about *apples*, but about operating on apples. But what it says about this (the kind of utilization in question) is not the same kind of utilization associated with "two chairs". There are different criteria of identity for apples and chairs and the expression "one" cannot in general substitute what it means to be *a* chair or *an* apple. Numerical identity is not a proto form of identity, nor is there any basic link between numerical and qualitative identity. There are identit*ies*, and that is expressed by the very fact that we have different terms for apples (those very pieces to be moved in *these* games....) and chairs.

A logistic of action

I will now try to explain why there is a point in adopting the three notions of use, utilization, and application, in general. There is a general problem about how to picture human agency without invoking certain kinds of dualism. By talking about human agency we both want to see it as something that really takes place and

something that expressess some kind of deliberation. Distinctions like empirical/logical, analytic/synthetic, nature/reason, reality/appearance, or fact/norm lurk behind most notions of agency. There may seem to be a general remedy for overcoming such dualisms, or for seeing them right, if one introduces a basic or prior notion of "practice" or "work". One might think that the norms and concepts of a thinking person are infused in "practices" or that the reality of things are maintained within human constructs. It might seem as if the very idea of a *human* agency is the idea of a kind of synthesis or unity between Mind and World, to use the expression of McDowell.

The point of the considerations above is, not the least, that one avoids postulating a supposedly basic notion of practice or work. We have to do with a *minimalist* and distinctively *philosophical* notion of agency that still is rich enough to be associated with any significant aspect of human agency. This is not how any agent or participant, as such, may understand himself or herself. It is the philosopher that imposes a coordinate system in order to impress a set of perspectives on agency. It is a philosopher's frame that is incidental, contingent, and perhaps naive. The only claim is that it is consistent and has some sort of universal application; in the sense that it doesn't carry a particular blindness or ignorance.

Consequently: all the considerations above - so says the philosopher - are part of the kind of *understanding of language games*, which any potential participant possesses. We have to do with three perspectives, among many others, in accordance with which a participant may inquire into a certain situation. We have to do with three perspectives within the grammar of being situated. The first perspective, that of use, points to the way in which people may act in a given situation by his making use of certain items. Hereby, one simply expresses the course of action, expresses the meaningful course of a particular language game. The second perspective, that of utilization, expresses rather the kind of attention with which people might employ certain instruments or techniques. This is the reflective perspective of someone who wants to make use of something he or she has learned or is trying to teach himself or herself. The third perspective, that of application, has the focus mainly on the temporal and historical conditions and prospects that are associated with the performance of certain language games. Within the third perspective one in a sense takes stock of a certain situation.

Now, the distinction between these three perspectives may not be of utmost importance to particular agents. Instead, they form a kind of coordinate system relative to which people with special concerns are able to describe, compare, and contrast a series of (possible) language games to the effect that one characterizes a number of specific "lines" or "transformations" within the patterns of agency of certain

people. In short, the three perspectives form a suitable background for elaborating various forms of logistic of action.

This logistic of action in no way establishes something like transcendental conditions for the kinds of action under scrutiny. The logistic may help promote, or provoke, some forms of action. But the logistic in no way provides a foundation, nor explanation, nor a basic form of clarification. There are no crucial forms of rationality, or forms of aim-structure which the logistic reveals, nor any form of progress. The logistic is neutral and “leaves everything as it is”. However, this also means that the enmeshment and entanglement of a variety of situations have been accentuated and have become more telling. The invocation of the logistic brings whatever forms of urgency and frustration there can be in relation to certain situations to the fore.

Understanding mathematics

If our focus on agency is supposed to be what might be called trivial descriptive journalism, we should not disregard the fact that, to Wittgenstein, the question of what it is that you study when you study a given language was a main issue. In this study, you do not merely study a series of linguistic operations, or a form of calculus, or a set of rules of syntax. You also study a form of life. You study the possible actions, efforts, and works within a form of (active, willing, reflective, and free) form of existence. And you do it in order to inquire what it means and what it involves to be active, willing, reflective, and free.

For instance, if you study the principles of mathematics you study forms of human agency; you study forms of following rules, and study forms of linguistic-formal institutions. This view of mathematics was very important to Wittgenstein. There are two sides to this; it says something about the special character of mathematics, and it says something about the significance of mathematics for philosophy in general.

Now, recall our concern of overcoming the dualisms in our general account of agency. Here, the notion of a mathematical operation will be helpful. By this we say *all* there is to say about, say, addition, and yet we have avoided worrying questions whether mathematical operations are physical, biological, logical, or self-conscious? They are what they are and *that* is what makes them physical, biological, logical, and conscious in this or that respect. No doubt, this is a crucial insight; perhaps an age-old insight of Plato, or of Kant; but certainly of Frege as well as of the early Wittgenstein. Originally, in antique Greece, mathe-matics was characterized as in contrast to dog-matics. Mathematics corresponds to what is rationally *learnable* in contrast to what is merely postulated. In mathematics one per definition knows one´s

way about and knows what one is doing; or one isn't doing anything at all. Its not a matter of producing certain results or not (like being able to prove or demonstrate this or that); its simply a matter of playing particular games. Even your failures have to conform to certain operations or procedures. Also, there is no beginning of mathematics, as such. There are only manners in which to continue doing something you have set yourself to do. The "foundation" of mathematics is the ability to carry on doing something. There is no foundation which, as such, constitutes the conditions for the possibility of something *else*, called mathematics.

On this view, the heart of mathematics consists of two things. First, mathematics utilizes a variety of habits of instruction such as forms of demonstration, forms of identification, and forms of proof. These are what I have in general called "operations" or "techniques". These techniques together form a skeleton for performing what we can call specific mathematical actions (not merely in thought but concretely arriving at certain mathematical items as if you were moving in a certain landscape). These techniques do however not, by themselves, constitute any real mathematical issue. They do so only in so far as one might make use of the techniques in order to solve certain specific mathematical questions.

The second part of the heart of mathematics is our trying to make new sense of something, say make new sense of the continuous, the infinite, or the countable features of something. Here, a form of generalization or a form of abstraction is often the issue. On this view, one ought to examine carefully how Wittgenstein´s remarks on the foundations of mathematics have some affinity with those of his one time collaborator Friederich Waismann whose great book from 1936 *Einführung in das mathematische Denken* bears a great influence from Felix Klein and his Erlanger Program. The point of that program was that the development of new forms of arithmetic seemed to be conditioned by the possibility of associating the "transformation" from any one form of arithmetic to another with a certain algebraic structure. The development of the new forms of arithmetic could consequently be seen as being conservative with respect to some "deep" structures within all of mathematics.

Translated into Waismannian and Wittgensteinian language this means that there are certain formal features of, say, the varieties of techniques of addition (adding reals, adding vectors, adding functions) that are preserved within the development of new forms of general mathematics. Both Waismann and Wittgenstein wanted to downplay the notion of "deep" structures. To them both, the formal features of the variety of techniques were not part of a platonic revelation, but meant rather that mathematicians for certain pragmatic reasons insisted that *this* is the way we will have our way in mathematics. It is a tradition without any deeper justification

or explanation.

To Waismann it was all a matter of making clear sense, to be on a well-trodden path. Wittgenstein reacted to that. Waismann did not get the distinction between utilization and application right. Waismann in a way hypostatises applications and sees them as some paradigmatic kinds of *use*, of making sense. Waismann thus fails to see how the application of techniques involves an accentuation of certain specific perspectives within our general use of language. Waismann thinks he can demonstrate *how* we can make sense of certain forms of mathematics. Wittgenstein denies that. He thinks rather that it is possible, in philosophy, to exemplify what one might be doing (the interests and problems one might be pursuing) *within* our making sense of certain mathematical operations, and thus *within* our employing specific mathematical concepts in certain extra-mathematical contexts.

Waismann would have a problem in accounting properly for Gödels theorem, which set a limit to the sense in which we might speak of a complete or autonomous mathematical system. To Wittgenstein, Gödel had precisely pointed to the extra-mathematical feature of any circumscribed part of mathematics. Again, the idea is not that mathematics is parasitic on social or normative issues. Its rather that the very idea of a “landscape” of mathematical issues cannot itself be systematically exposed but is rather to be seen as the inexhaustible set of possibilities of going criss-cross in the labyrinth of possible mathematical items. The wholeness and growth of mathematics is like the growth of a city where new suburbans are added all the time while parts of the inner city is reconstructed. To summarize, the point was not to relate mathematics to something *else*, even if - as we shall see - it is important that any kind of mathematics is *applicable*. The point was to describe the way in which the whole of mathematics is not to be seen as a “system”, or as a “discipline” or as a definite set of topics. The ongoing transformations of mathematics, however, have much in common with whatever it is to transform our practices in any other context. *That*, and that alone, is the point of a linguistic approach to the basic questions of mathematics.

RFM

In the collection of typescripts that was published as *Remarks on the Foundation of Mathematics* Wittgenstein seems to be careful in underscoring the dimension application in mathematics. Any part of mathematics must have certain *aussermathematische* applications (RFM IV, § 4), and Russell is criticized all the way through precisely for having disregarded this dimension of mathematics. According to Wittgenstein, Russell instructs us about certain utilizations of techniques for

introducing symbols into the language. But he does not associate these techniques with ways of *understanding what it means* to employ them to any object of discourse, at all (RFM II, § 30 - 43). His is a formal system of rules that are freewheeling in relation to our form of life (in relation to the manifold of language games we perform as a matter of course).

Wittgenstein wants to show us what it is to *apply* a system of symbols. Such application is not like raising a building from the ground up (its not a foundationalist issue). It is a matter of modifying a pre-given form of using symbols in the interest of clarifying or circumscribing something special (and not seek clarity and precision as such). The possibility of mathematics is neither a pre-given platonic issue nor a pre-given issue of epistemic foundations. It is solely a question concerning the possibility of applying, say, sums and multiples to certain definite objects to which we are already able to apply certain numbers (say, count them in various ways). The autonomy of mathematics is a matter of installing a certain uniformity, among many others, in our experience of the world. Consequently, our point that the application of a formal semantics relates to certain non-formal features of our form of life is not merely a matter of associating the formal operations of a given language with certain normative aspects of our situation; it is rather a matter of learning to see how both logic and mathematics does indeed form a *real* section within our entire use of language and our form of life. The point here is not about downgrading logic or mathematics, but rather a matter of lifting them up in order that one can see clearly their distinctive formal features *qua* being characterized by distinctive, real, operational methods. Again, this does not settle any philosophical issue, it only narrows and makes more precise, which problems might be of special interest to someone who already knows about, say classical geometry.

Goethe´s philosophy and the analogy with themes in Wittgenstein

Goethe´s philosophical remarks are spread in many different and different kinds of texts. Obviously, his major works within natural philosophy, the *Farbenlehre* and the *Morphologie* are important examples of his philosophy of science, as is his early paper on "the Experiment as mediating Subject and Object". And then there is the interesting collection of remarks *Maximen und Reflexionen*, including the excerpt from the *Nachlass* "On Nature and Natural Science". The ultimate edition of Goethe´s natural philosophy is the *Hamburger Ausgabe* of his writings in natural philosophy. The most impressive interpretation of Goethe´s philosophy is that of Ernst Cassirer, so much so that it is tempting to draw the parallel between Cassirer and Goethe very closely. However, I find that the parallel to the later Wittgenstein is even closer. My

aim in the following is not so much to settle the issue which modern philosophical camp Goethe should be associated. Instead, my aim is to draw a general picture of Goethe´s philosophy such that one has a sufficient basis for raising the further question if, and how, Wittgenstein´s later philosophy might be compared with that of Goethe.

The very first thing to note concerning Goethe´s philosophy is the view that human knowledge should focus not on the character of things, as such. Instead, one shall focus on the telling *differences and relations* between things. The heart of human understanding is a special kind of attention, *eine ruhige* (stable) form of attention. This kind of attention is characterized by the way in which people manage to *apply* given experiences and are able to *pursue* new phenomena within the experience.

Two features of this enterprise are significant. First, individual experiences are only significant to the extent in which they can be *publicly communicated* to others. Second, our pursuing certain new phenomena must also be publicly described in relation to a certain *plan* and in relation to a given concrete *material*. This is why the scientific experiment is the paradigm for pursuing new phenomena. Such an experiment can be repeated and everyone sufficiently informed and trained will be able to acquire a certain kind of *certainty* and *trustworthyness* in respect to the given field of inquiry.

The important thing is not merely that fellow scientist can trust each other, but is that the individual scientist has acquired a "deep" understanding of a given matter. (S)he can then maintain a connection to the real *ground* to the effect that a further empirical inquiry is not merely guided by whatever formal-analytical implications of certain theories we may happen to have. Instead, one must stick to a *Mittelbar Anwendung*, where a "living nature" is drawn into a "living attention". In practice, this means that the experiences to search for should be seen as having a certain place within a *series of experiences*. This series is not in itself a logical-mathematical construct. But it takes a kind of mathematical configuration to establish the possibility of reaching a new place, of taking a further step, within a given series. According to Goethe, this is exactly what is achieved when the natural sciences establishes a *series of experiements* that are each associated with a mathematical description of the phenomena that one can pursue by the individual experiments.

Mathematics becomes a part of scientific methodology and ensures that the experiences of the experimental sciences are "higher" than individual experiences as such. Goethe stresses that the heart of mathematics is not its use within *arguments*, but is its use within various forms of demonstration (*Darlegung*).

"Ich habe in den zwei ersten Stücken meiner optischen Beiträge eine ... Reihe von Versuchen aufzustellen gesucht, die zunächst aneinander grenzen und sich unmittelbar berühren, ja wenn man sie alle genau kennt und übersieht, gleichsam nur einen Versuch ausmachen, nur Eine Erfahrung unter den mannigfaltigsten Ansichten darstellen.

Eine solche Erfahrung, die aus mehreren andern besteht, ist offenbar von einer höheren Art. Sie stellt den Formel vor unter welcher unzählige einzelne Rechnungsexempel ausgedrückt werden ... die Bedächtlichkeit nur das Nächste ans Nächste zu reihen, oder vielmehr das Nächste aus dem Nächsten zu folgern, haben wir von den Mathematikern zu lernen, und selbst da wo wir uns an keine Rechnung wagen, müssen wir immerso zu Werke gehen als wenn wir dem strengsten Geometer Rechenschaft zu geben schuldig wären.

Denn eigentlich ist es die mathematische Methode, welche wegen ihrer Bedächtlichkeit und Reinheit gleich jeden Sprung in der Assertation offenbart, und ihre Beweise sind eigentlich nur umständliche Ausführungen, dass dasjenige, was in Verbindung vorgebracht wird, schon in seinen einfachen Teile und in seiner ganzen Folge dagewesen, in seinem ganzen Unfange übersehen und unter alle Bedingungen richtig und unumstösslich erfunden worden. Und so sind ihre Demonstrationen immer mehr Darlegungen, Rekapitulationen als Argumente ... Man sieht den grossen Unterschied zwischen einer Mathematischen Demonstration, welche die ersten Elemente durch so viele Verbindungen durchführt, und zwischen dem Beweis, den ein kluger Redner aus Argumenten führen könnte." (Goethe 1981, p.18-9)

This leads to the general idea of a "higher" kind of understanding, to the idea of *Eine Lehre*, such as for instance *Eine Farbenlehre*. The aim of such a higher understanding is to "piece together" different kinds of experiences, such that each and every experience can be repeated and shared among people and such that the multiplicity and manifold of experiences can be surveyed. The requirement is thus *eine übersichtliche Darstellung*. Such a survey does not merely express past experience, it points to a number of further applications of these. The person who can make the survey is likened to a cratfsman having a certain toolbox. He not only knows about things, but knows why and how it is *worth knowing* these things. He is not only a hunter but is also a cook, Goethe says, that can elaborate on what we have caugth on the hunt. He thus gives even the well known past experiences a "new face" and a new kind of application in our further pursue of phenomena. However, Men are tempted to make *false applications* of given experiences. This is when we apply theory and mathematics in abstraction from the real *Gebrauch* we have made, with certainty and trust, and which has led to the experiences in the first place. That is when we leave the rough ground and aspire for *Systematische Verwendungen* in ignorance of the manner in which such systematic forms are of use *are only significant because they mediate* the established "use" and the vision of a

higher and further "application".

Our surveying a range of different kinds of experiences makes it possible to recognize certain *formal features*, for instance certain kinds of constancy and regularity among phenomena that are not visible in the individual phenomena themselves. Goethe mentions the polarity of electric and magnetic phenomena as an example, and mentions the concepts of attraction and repulsion. The established series of experiments thus reveals certain deeper structural characteristics of Nature. The aim of human understanding consequently becomes that of *Ideen in der Erfahrung Anerkennen*, to recognize ideas within our experience. The famous example is the idea of a plant (*Urplanze*). The ability to recognize a series of objects as "plants" is not a matter of classifying objects within a general scheme, not a matter of subsuming the individual under the general, not a matter of recognizing *Merkmale*. Instead, it is a matter of directing ones *Auf-merk-samkeit* towards those aspects of a given object on the basis of which it makes sense to *add* the object to a given *family of like* objects we have found in Nature. The idea of associating the object with a given kind of *morphological series* makes sense. And so, our judging that a given object belongs to the family of plants involves a special kind of "view" (*An-schauung*). This is the notorious notion of *Anschauende Urteilskraft*. The point is that it is not a matter of judging how the object is placed, in space and time, by means of possessing certain qualities. *We* associate a certain temporal and spatial structure to the item; for instance when we conceive that the item can "grow" and that this growth involves the appearence of leaves and branches. It is our conception of the object as entering into a *living development* that is the matter. The ability to *see* this requires that we *relate to* the object in a certain manner. We must treat the object as depending on water, light, nutrition and so on. It is only in relation to this that any further experience of the object as a "plant" makes sense.

Wittgenstein on Goethe and the mathematics of color

As I stated, I think the influence from Goethe on Wittgenstein is enormous. Picking at random, for example, from the section “Nature and Natural Science” from the *Reflections and Maxims*, we get the idea of family resemblance, the idea of language as a toolbox, the idea of being constantly engaged in a struggle against received conceptions, and the importance of the phenomena of trust and certainty.

Wittgenstein focuses in *Remarks on Colours* on Goethe´s idea of a mathematics of colour [by contrast to an empirical notion thereof (BF, III, § 3,10)], and he discusses Goethe´s association between certain experiences of colour and certain schemes of

thought (BF, III, § 125). Also, Wittgenstein considers the idea of a kind of phenomenology of colour (BF, II, § 16). The general line of discussion is that Goethe has hit on a valuable insight concerning the formal structure of colours. However, according to Wittgenstein, Goethe goes wrong in providing a metaphysical elucidation of the character and necessity of the various formal structures that might be inhered in our experience of colours.

We have seen how Wittgenstein in his notes on mathematics focus especially on the feature of application. By contrast, In *Remarks on Colour* Wittgenstein seem to lay particular stress on the notion of utilization. There are three major themes in relation to this. First, we are reminded that certain concepts at one moment have a "logical" utilization at another moment an empirical ("blue is darker than yellow" may exemplify both) (I, § 32). That is how Goethe´s notion of a mathematics of colour enters Wittgenstein´s presentation. The interesting thing here is not just that the formal-technical use of an item presupposes there being possible non-technical applications, it is also that the *introduction of the techniques* presupposes the latter applications. Indeed, the so-called rule-following considerations (to be considered below) are mainly about what it is to *introduce* a rule and not so much about what the very "following" of the rule may consist in. Secondly, we are reminded that people who have been instructed differently in the use of certain techniques thereby have different concepts [the colour blind person has to learn a lot in different fashion from how "normal" people might learn things, to the effect that the colour-blind person does in principle utilize the colour words different from "normal" people (I, § 75)]. Different introductions lead to different concepts. Finally, we are told that *observation* involves the utilization of certain means in order to be able to "see" certain things. To see something is a move within a particular game, a move that is first made possible by the utilization of some method of observation (including "I just looked to see"!) (III § 318-9).

I think that the main point in Wittgenstein´s remarks on colour is to show what it takes for colour words to have a *real use* (III § 36), to show first of all what it is for colour words to be associated with a *real* introduction of a method of observation. Some questions asked by philosophers disregard this issue. Some attempts to imagine a certain use of a colour word are impossible; for example, I introduce the word "cobalt blue" and think that I have circumscribed a definite "colour". Here, "everything depends on the method of comparison", that is, it depends on a certain technique suitable for, say, the comparing of sheets of paper or of beams of light (III, § 259). But the meanings of colour words are not determined merely at the level of utilization (III, § 336). The formally instructed features of the games that we learn to play may have all sorts of application. Consequently, the experimental techniques of

the sciences do not determine the sense of ascriptions of colour, nor does any method of illustration. There is no such thing as “colours” in the sense of corresponding to schemata. What we have is a family of games, some of which makes use of a variety of techniques of observation, and makes use of a variety of paradigms such as colour-sheets, surfaces of certain objects, or products of certain methods of production (say of paint). “Colours” are a bit like the score of a game; colours are what you have and what you get when you play a game like *this.*
In a sense there is no such thing as the Wittgensteinian understanding of colours in abstraction from Goethe´s. Wittgenstein does in my view not so much erect a philosophy of colours but does rather comment upon various attempts to launch a such. The interesting thing about Goethe was that he realized that there can be no philosophy of colours in abstraction from both a physical account of colours, an aesthetic account, and a historical account. These accounts must be interrelated. Now, in accordance with my discussion of Wittgenstein´s remarks on colours, Goethe thought that it is first when we become aware of such an overall interrelation that one can recognize the significant ways of applying colour words. I think that Wittgenstein adopted this view of Goethe; but I acknowledge that Goethe´s philosophy is metaphysical in a sense of which Wittgenstein was critical; even if this critique did not prevent him from truly and fully adopting some of the elements of Goethean thought.[1] For Goethe, the development of a series of experiences in relation to a certain subject matter was also a way in which a given subject transformed itself and acquired a certain "culture of knowledge". For instance, young people are criticized for acquiring certain experiences without wondering if it is *worth* having these. In contrast, the mature person is able to see connections (*Verbindungen*) between various forms of experience; not in the sense of being able to make a range of specific judgments that cover a variety of things, but by means of possessing a certain *trust* in the way in which the person is able to change the perspective on a certain matter.

Now for Goethe, with the development of the sciences, the arts, and the awareness of the historical background of things, there are certain crucial forms of subject-object relation that comes to the fore within this ability of *perspektiven Wechsel*. Our being able to go criss cross in our dealing with certain things symbolizes something profound or deep about those things. Ultimately, in the arts (1)

[1]Here, I can mention an interesting account (Theda Rebook....) of the way in which Wittgenstein can be read as a successor of Goethe - or better, how Wittgenstein´s idea of a philosophical grammar is inspired by, what the author Theda Rebook calls, a "grammar of phenomenology. I will also mention a particular exiting account of Goethe´s concept of experience (Jost Schieren.....) But I shall not pursue these valuable studies and my own misgivings of them further, at this place.

Nature reveals itself through the natural and free act of the artist; and in the sciences (2)it is Man that reveals himself. Because, in the sciences, it is Man - *as* a certain form of life - that proves his ability to actively engage in the reality of things. Science is a demonstration of the unity of being and life. Finally, in philosophy (3), we give a holistic account of *all* the many forms in which we are actually able to experience a range of things, and how, by being aware of certain possible *verbindungen*, manage to "maintain" these things in our continuous activity. The German term is *borgen*, which means "borrowing". Philosophy, like all intellectual traditions can however imply that instead of contributing to the *borgen* of things, it contributes to our *Verborgen* (hiding, distorting) the deep aspects of Nature (The term has two senses: *Our verborgen* is hiding what *Nature* has generously lend [*verborgen*] us). This double *Verborgen* happens when philosophy dissociates itself from the other forms of experience; when philosophy forgets that it is only a corollar to somehting else and not the Queen of Thought. But still, philosophy is in principle the kind of afterthought where what is revealed in our experience is secured and preserved (*Geborgen*).
The ideal of a philosophical holistic understanding of things is where we have integrated the *content* of a given experience with the *method* that conditions the possibility for our experiencing that content; and where the experience thus reflected also integrates the *form* and the *matter* of the subject-object relation. That is all in all what a *Lehre* - such as a *Farbenlehre* - shall provide. So philosophy must make use of the idea of "metamorphosis":

This famous idea of Goehe can be called a holistic, regulative idea about the possibility of developing a series of different "forms". Importantly, the idea of metamorphosis is related to idea of a unity between ideas and experiences. The experience of a given plant is at the same a particular concrete experience, and is also a manifestation of a certain idea, the idea of an *Ur-Planze*. This is an idea of how such a thing as a plant can be *pursued* within the experience of such creatures as us. Metamorphosis is thus neither a kind of ontological development within the plant itself nor is it merely a transformation of the possible experience of the plant. It is the set of possible transformations in the very *relation* between object and subject. As such, we are referring to a series of forms that each symbolize a crucial *unity* between Nature and empirically mediated reflexive Thought.
I think that Wittgenstein´s critical assessment of his philosophical views in the *Tractatus* colored his refusal to adopt this part of Goethe´s philosophy. Wittgenstein could not accept the idea of a kind of *Anschauende Urteilskraft* where our judgment is seen as embodying a kind of *Wesenschau*. But I am quite sure that his ideas of family likeness, change of aspect, and language as a toolbox including a set of patterns, rules, and proto- examples for the application of certain concepts, were all

inspired by Goethe. It is thus what some have called the ability to entertain *eine Blicklenkende* observation which was Goethe´s main inspiration for Wittgenstein.[2] Wittgenstein surely follows Goethe in one general direction. Wittgenstein points out that our use of colour words answer to a variety of *phenomena* and that these, in general, are not merely candidates for certain kinds of classification (into “colours”) but are also associated with various notions of “transparency”, “brightness” and “clarity”. Colours have spell, colours are phenomena in space and time, and colours kind of “hang on to” things and to situations (in that the movement and use of my *eyes* is always involved). The describing and naming of colours comes late in “the natural history of colours”. The established language games of colour words are to a large extent parasitic on the development of other language games. All this, I think, Wittgenstein adapts from Goethe.

To summarize, Wittgenstein´s remarks on colours aim not only at analysing the various concepts of colour but aim also, as was the case with Goethe, to cast a critical light on the way in which any “philosophy of colour” could be seen to exemplify certain philosophical and scientific ideals. Such a *Farbenlehre* consequently set a challenge to, and provide a new example for, any idea of a general form of, and ideal for, philosophy. But whereas Goethe could not refrain from associating this challenge with an overall historic, and quasi-platonic, revelation; Wittgenstein merely wanted to illustrate how different a significant philosophy that is concerned with our - real - concepts of colour might be from any previously known “philosophy of colour”.

In line with Cassirer´s excellent discussion of Goethe´s view of the mathematical sciences we thus reach both a tribute to and a critique of these sciences. Our tribute is that the historical development of the natural experimental sciences have been mathematical in character, in that one has successively elaborated new forms of experiments according to "a plan". This plan is no longer the plan of the french rationalists within natural science, but is the Hamiltonian Method of associating a phase-space description of physical systems with the design of given experimental arrangements. Even if, late in his career and by reference to new forms of biology and physiology, Hermann von Helmholtz could declare *Goethes Vorahnungen kommender Naturwissenschaften*. In particular Niels Bohr´s understanding of theoretical physics is very close to Goethean considerations. The important thing here, however, is merely to note, that Goethe´s idea of the mathematical character of the development of theoretical physics still makes sense and cast some light on the

[2] "Blick" is Sight, "lenken" is connecting; so it means an ability to connect different kinds of Sight one may have in relation to a certain matter.

actual development of the experimental sciences. Goethe insisted that we do not seek to explain what lies *behind* the individual phenomenon, but that we instead learn to be able to trace and pursue all sorts of particular phenonema to the effect that a special *totality* comes into sight.

Our critique of the experimental sciences is this: The given state of mathematics will narrow the kinds of logical-mathematical structures to be employed. There will be certain kinds of mathematical structures available, and there is no a priori necessity that the varying forms and developments of Nature must conform to the given mathematical schemes. In his text of 1921 Cassirer put the critique as if it is the very idea of associating Nature with "numbers", and thus the very idea of quantitative *messures* that is put in question. Actually this is place where Cassirer introduces his list of different "symbolic forms". For he wants to express the *symbolic* character of the sciences and stress that although this is in a sense to juxtapose the sciences with the arts, religions and the other "symbolic forms", there are crucial differences between these "forms". Now, there is something about this critique which is important, *also in our Wittgensteinian context*. But before I come to that, I want to remark that Cassirer later modified his earlier account of Goethe´s critique of the experiemntal sciences. For the development of quantum physics gave a new significance to the idea of describing physical Reality in terms of *numbers*. Now, what interested Cassirer in 1921 was the Goethean idea of *Blick-richtungen*. It was the considerations about the variety of ways in which we can direct our attention that interested Cassirer. There is no single and simpel list of forms of "seeing" or "observing". We have all sorts of *Betrachtungen* and *Untersuchungen*. The very idea of a *Lehre* is indeed that we be able to survey and control our shifting (*Wechsel*) between a variety of forms of attention. But it is implicit in this idea that there is something *in which it consists* to cast ones attention in a particular direction. This leads us to the famous notion of *eine Urphenomen*. Cassirer rightly describes such a phenomenon as "a rule", in the sense of a paradigm, that leads to a never ending series of examples that falls under the rule. Cassirer´s account of basic phenomena, in 1921, corresponds to Wittgenstein´s later idea of *expressions of rules*. What interests Cassirer in relation to this is not the epistemic question; how is it possible to judge what is in accordance with the rule? No, he is interested in the question *what it takes* to follow the rule, namely a special way of "seing" the phenomena that one pursues. He is interested in the fact that many forms of observation do not, simply, try to place objects in space and time according to Kantian schemata. He is interested in the way in which other, non-Kantian, forms of *Anschauung* lead to meaningful and stable forms of judgement. He is trying to elaborate an alternative "transcendental aesthetic" that will go with a new form of "transcendental analytic".

He is trying to generalize the characteristics of Kant´s analysis of the Understanding (theoretical Reason) in order to relate it to other forms of Judgement. Recall, Cassirer had just been rewriting his interpretation of Kant. In his *Kant´s Leben und Lehre* from 1918, he had tried to combine the interpretation of the *First Critique* with the program of the *Third Critique*.

Our interest in this, now, is that Cassirer makes use of Goethe in order to explain this re-interpretation of Kant. Thus, we shall maintain that mathematics is crucial in respect to the possibility of objective *content* in our experience (in the sense of the *First Critique*), but we shall also stress that mathematics is important in respect to the *constructive process* that constitutes the historical development of a given science. For this historical develoment is not a matter of placing objective realities within a conceptual scheme; it is a matter of assessing the significance of certain lines of investigation. It is a matter of enriching our human attention to the reality of things. It is a matter of transforming and conjoining a variety of spatio-temporal structures that is integrated in our manifold of different forms of attention. As such, it is a matter of transforming what is ultimately the authentic manifestation of our form of life, its interests and abilities.

Wittgenstein would not talk about "transcendental aesthetics" and so on. But I think it is right to say that *his* interest in phenomenological question and their relation to features of mathematics points in the same direction as Cassirer´s interest in Goethe. The kind of phenomenology that Wittgenstein never endorsed is a neo-Kantian fundamentalist version in the sense that it is claimed that (a) there is a fundamental kind of logical structure grounding the possibility of any kind of conceptual understanding, and (b) there is a fundamental manner (spatially and temporarily) in which this structure is applicable to Reality. The Tractarian view is already more plastic in that it only says that *some* logical structure and *some* kind of operation is a necessary precondition for the possibility of describing possible facts. From PB and on, Wittgenstein now adds that *some* kind of immediate attention is a necessary precondition *relative* to the possibility of applying certain kinds of concepts. Because, for instance, the immediate attention to differences in color (in a given sense in a given context) is part and parcel of the possibility to *operate* upon this kind of attention to the effect that the in this way generated, schematic, forms of expression of color-concepts become applicable in a further context.

It is the very Kantian idea of a *table* that is modified in this way. The truth-*tables* of TLP were supposed to correspond to a definite kind of logical totality. Now, if being red excludes being green, the combination of truth-possibilities expresssing the supposition that a certain object is both red and green is ruled out. So there is a "logical hole" or singularity in relation to the totality of combinations of truth

possibilities. This is the idea that is put aside: The possible combinations of truth possibilities for a given set of statements are *not* constituted by, nor relative to, a certain logical totality. The idea of *logical positions* is rejected and we are left with the more plastic concept of "internal relations".
The shift in Wittgenstein´s philosophy also concerns *what it is* that can stand in an internal relation to other things. In TLP it was the so-called "projectice connection" of a given symbol on to the world that could be internally related to other such projections. This idea of a basic kind of applying symbols "on to the world" is rejected. That is how the notion of intentionality enters Wittgenstein´s philosophy: Making sense of what is given in experience is no longer merely part of a kind of modelling (answering to the idea that there are ways in which Reality can put *itself* on display, the idea that a model shows (part of) *der Gerüst der Welt*). The idea of the World, presented as a model of itself, now becomes the idea of *a kind of action*, presented as a model of itself.
So it is not the dynamics of things represented by the model that could and should be put on display. It is the dynamics of a kind of action. *That* is how and why the notion of spatio-temporal features becomes crucial for the possibility of making sense of certain concepts. I do not merely "see" that this is red and thus not green. I *treat* what I see as corresponding to only one color. "This is red" does not describe what I see, but *how* I see it. It describes a way of distinguishing something.

Remarks on the Philosophy of Psychology (RPP)

So far I have tried to explain that the association with linguistic meaning and what english writings on Wittgenstein calls "use" has a quite complicated structure in that it one shall not only distinguish the three levels of use, utilization, and application, One shall also be able to survey a variety of ways in which different language games can be entangled and enmeshed. Now I will suggest that this description and understanding of our use of language is not part of a semantic analysis, as such, but is an integrated feature of a broader philosophical analysis (*Untersuchung*) of the way in which human *thought* is enmeshed with a variety of features. I will later discuss, directly, the integration of thought and action, but before we come to that; it is on my view an important part of Wittgenstein´s later philosophy that the use of language is associated with, what he calls, psychological concepts, models, and phenomena.
Indeed, I think that the manuscript published as *Remarks on the Philosophy of*

Psychology in many ways is the major work in the later Wittgenstein´s *Nachlass*. As I see it, it is the fruit of 15 years hard work in the light of a certain background, which Wittgenstein elaborated in his so-called *Big Typescript* of 1933. I am aware that RPP is composed from two different typescipts (229, 232). I also know that RFP was succeeded by a number of manuscripts and typescripts, especially the manuscripts (237-8) published as *Last Writings on the Philosophy of Psychology* and the typescript (containing a selection from these last writings) which was published as Part Two of *Philosophical Investigations*. I also know that some of these texts were cut into a collection of strips that entensively became part of what was later published as *Zettel* and *Culture and Value*. Knowing all this, I still think it is very misleading to consider the content of either RPP or LWPP as "preliminary studies for Part two of PI". Obviously, the manuscripts contain a certain set of themes that Wittgenstein elaborates and discusses quite systematically (in his flexible sense of the term). It seems to me that regarding the final typescript - which is in my view merely a summary of a sequel to RPP - as "Part Two" of something that was written 12 years earlier in a very early phase of the process that culminated in RPP, will prevent most readers from realizing what is actually going on in RPP.

Now, since I have already tried to describe, very carefully, how, and how not, to read Wittgenstein "systematically", I think that I have earned the right to present the distinctions, the problems, and the points formulated in RPP in a quite literal fashion. I have already warned against the possible failures which such a literal reading might commit, and I have also stressed how it is important not to associate Wittgenstein´s terms with an ontolocical exposition in any strict sense. *Still*, and obviously, Wittgenstein provides his reader with a quite explicit and systematic *philosophical anthropology*; a systematic account of basic features of human forms of awareness. Wittgenstein´s remarks on the philosophy of psychology are both critical and constructive. He thought that certain established forms of psychology builds on illusory and meaningless attempts to copy, or make an analogy to, other forms of explanatory science. Wittgenstein wanted to show that such attempts fail because they presuppose a kind of metaphysics of the human mind, which, rightly seen, is without warrent. However, Wittgenstein never denies that various scientific forms of psychology may someday be developed and that these new forms have explanatory features. He is only arguing that such sciences presuppose a certain background. This background is not supposed to be a kind of transcendental presupposition in a strong sense. The set of Wittgensteinian reminders is not a finished set of a priori judgements but is first of all a list of questions that should enable whooever may someday want to assess the new psychological sciences to evaluate their hypothesis critically. Wittgenstein wants to make sure that the critical assessment of the

psychological sciences is performed, so to speak, on behalf of the human form of life. Authenticity is in question. The basic criteria is that any portrait of human abilities and possibilities does not, for some odd metaphysical reason, transcend what *as a matter of historical fact* is a meaningful form of *self-description*. However, Wittgenstein´s critical account has its positive constructive sides. He suggests that he (we) should attempt to construct a kind of "symbolism of psychological phenomena" and that we construct "psychological models". The criteria governing such constructions should be the attempt to catch on to so called "primitive forms of behaviour" (*Benehmen*) and then try to build (*Ausbauen*) certain forms of language games that somehow involves these primitive forms. The construction of psychological models does not aim at erecting an ontology. What we model is not the psychological phenomena, *as such*, but is the *methods for analysing* them. We so to speak construct a co ordinate system relative to which we can position a variety of phenomena. We try to erect *some* system of "contrast" relative to which we can compare and trace phenomena. Wittgenstein´s focus on "phenomena" is obviously inspired by Goethe (§). We cannot transcend given phenomena but should concentrate on a survey of their multiplicity and similarities. But what is a "psychological phenomenon" to Wittgenstein? I think that he means a set of actions (and thought and recollections and imaginations..) within certain kinds of *situation*. For instance, "awaiting NN" is a phenomenon, as is "I just saw this as a picture of a rabbit, now I see it as a duck". So phenomena involves language games. They are not events, they are not conditions (*Zustände*) nor are they *just* "actions" or "doings". They involve behaviour but are not *just* so characterized. In our context, the important thing is that phenomena can be *analyzed as operations*.

So it is important that phenomena can be seen *in a series*. We can describe phenomena by pointing to various forms of internal, and external, relations. I am occupied by certain features of the furniture in this room. But what counts as a piece of furniture in my room? When seen (*aufffassen*) in a certain way, chairs and tables and lamps are included, but not the box I carried from the grocer yesterday. The cleaning lady has a different perception, she has to remove the box as well when cleaning the floor, so to her the box is a part of my room just as much as the chairs and tables. My cleaning lady and I can thus have different *fields* within which to arrange and position my furniture. The allocation of psychological phenomena to a variety of different "fields" is a major theme in RPP.

It is part of this view that it (as a matter of historical fact) matters to people that they describe psychological phenomena *rightly*. I can clearly distinguish his beeing in pain from his having grief. These two things mean something entirely different. Maybe he is crying or his facial expression is anything but happy. He may be play acting or

trying to fool me, but this only means that *he*, and thus we, in general can distinguish and play *at* producing the expression of this or that phenomenon, and we do so by means of allocating a variety of features to a certain *field* of manifestations. It is a whole scheme of possible internal and external relations that is at stake. So the description of psychological phenomena requires a special kind of *action*; namely the action of *interpretation* defined as "action with practical implications". Interpretation is both an attempt to produce a *hypothesis* (I see this as so and so) and an ability to operate with certain features of the situation. Describing somebody in pain involves more than caharacterizing the pain as an occuring event (whatever that means). It involves describing a whole background of circumstance and possible *future* actions, emotions, thoughts and verbal expressions (help, relief, being a neighbour, thank you).

Consequently, the general background and prospect for the description of psychological phenomena has many "direct" parallels to the way in which mathematical operations makes physical research possible. The crucial thing when drawing this parallel is, surely, the fact that (for Wittgenstein) psychological phenomena have distinct and characteristic *expressions*. Better, what *we* call "psychologocal phenomena" are those which are associated with such expressions. People may always surprise us. But *what* surprises us is always, also, how psychological phenomena involve expressions (he is seemingly sad, and yet he moves and speaks rather quickly, he seemes to have hurt his foot and now he wants to play football).

In this way certain features of a situation may seem to be at odds with others. So we may want to produce a more adequate description; he is not strictly speaking "sad", but rather saddened having been told of the death of his former high school teacher. In this way there is a special element of "searching and finding" when describing psychological phenomena. Wittgenstein here draws a parallel to music and the case where you are aware of the many *variations of a theme*. Psychologial descriptions are often given in the awarenss that you underscore certain features while slightly ignoring others, knowing that the priority could have been different and still count as an example of *this* phenomenon. So external and internal relations are both significant. I may be in pain without crying out load. However pains interests Wittgenstein because they are the only kind of sensations (*Empfindungen*) whose manifestations *must be* associated with certain facial expressions. It may not come to it, but *if* it comes to my examining if indeed you are in pain, you cannot look entirely happy when I press the point of your body where you say it hurts.

I guess there are many reasons why Wittgenstein was interested in the (supposed) phenomenon of "meaning blindness" (later narrowed to "aspect blindness"). One

reason is his wish to show that such blindness is not a matter of not being able to experience something. Not being able to grasp the "meaning" of things is a matter of not being able to *do* something (*Vorführen*). Meanings must be exhibited in your activities. The meaning-blind person lacks the ability to *operate* with certain features and elements of things. Be this as it may; it merely circumscribes what Wittgenstein calls "meaning blindness" and does not settle any grande epistemological question concerning semantics. Wittgenstein only wants to make us ignore the idea that not knowing the meaning of some expression consists in there *being* or *happening* something that a certain person, for some reason, is prevented from knowing about. The sceptical worry "but do we really know..?" is irrelevant here. Our focus should be *why it interests us* that something actually happens or is the case. Does there being blood count when calling this an accident? Does the fact that my wedding ring is made of gold matter? So the meaning-blind person not only lacks a certain intellectual or cognitive ability. He lacks the ability to consider why certain features and elements count. He is blind to the *criteria* that others may point to, if explanations and instructions are called for. The meaning-blind cannot possibly *teach* others as we usually can.

The catalogue of mental functions and the philosophical agenda

There is an important series of paragraphs that begins with RPP § 836. We find a similar, slightly revised, survey of psychological concepts in LWPP § 148ff. But we also get remarks like:

> "Ich strebe mit allen diesen Beispielen nicht irgend einer Volständigkeit an. Nicht eine Klassifikation aller psychologischen Begriffe. Ich will nur meinen Leser in den Stand setzen, sich in begrifflichen Unklarheiten zu helfen." (LWPP, § 686)

My schematic reconstruction of Wittgenstein´s catalog of psychological concepts runs like this: The main theme of the remarks on the philosophy of psychology is the many forms of awareness that characterizes the human being (*Aufmerksamkeit*). Awareness is always mediated since it is part of an agenda (*Beschäftigung*) with things, but there is a range of possibilities. At one end of the scale we have a more immediate kind of awareness, sight (*sehen*), and at the other end we have awareness of a possibility of *aspekt-Wechsel*. In between, we have various forms of observation (both *observieren* and *betrachten*), as well as various forms of "search" (*suchen*). All of these forms of awareness involves an anticipation of a future experience (longing, awaiting, wishing, hoping, fearing,...), and each of these forms of anticipation might have a variety of connections with the past (or with past

experiences). Especially, the temporal features of a kind of awareness may involve memory (*Erinnerung*) and/or recollection (*Gedächtnis*), the difference between the two being that the former is immediate (*unwillkürlich*) and the latter is mediated (*willkürlich*), because the latter involves *thoughts* (*Denken*, *Ge-dächt-nis*). [By the way, recall the aim of Wittgenstein´s philosophy; to provide *Erinnerungen* - and not *Gedächtnisse*)].

So there is a general issue concernng the *duration* (*Dauer*) of certain kinds of awareness, and in relation to this issue there is an associated issue concerning the "place" (*Ort*) of these forms (example, my waiting for NN takes place in my sitting room where I recall that NN smokes, and so I place cigarettes on my table, I feel an immediate joy in his coming soon which manifests itself in my opening the window and letting the sunlight in). The issue of duration also relates to the issue of the *will*; and in that respect Wittgenstein draws a distinction between two kinds of actively relating to certain matters; reactions vs. considerations (*Reaktionen* vs. *Überlegungen*). I can put my recollections on display in a sense in which I cannot do so with my memory, as such; and I can interrupt my putting things on display. If the distinction between reactions and considerations is strictly parallel to that between memory and recollection is however not entirely clear.

Now, *we* (philosophers, doing grammar) are trying to become aware of the variety of forms of awareness. We are conducting a special kind of search in this respect, a kind of search - not over and above - but alongside *all* of the other forms of awareness; this is why we might call it an *Unter-Suchung*, a perspicuous exposition of the many forms. Consequently, we consider the many forms of awareness as a variety of language games. We then try to provide another survey of the possible *pieces to be moved* within these games. This will be an open ended, unlimited list of items, because this might involve any object in the world with which we are occupied; however once we narrow the focus to a specific kind of context, it makes sense to inquire which kinds of "psychological" features are involved. Before mentioning Wittgensteins catalog of these features, one should note that we are not referring to factual matters, to occurrent phenomena "in the mind"; we are referring to features that have significant forms of *expression*. So it goes for each of the "elements" we now list that they are not names for a variety of mental "states" or "conditions" (Wittgenstein considers only "intentions" as mental states by contrast to "motivations" and "reasons", because he links intentions with representation and picturing):

The most general concept of psychology seems to be that of *experience (Erlebnis*). I think the best english phrase would be "I happen to have this ...." where the dots are filled by what in a more narrow sense can be called the content of the experience (I happen to see an apple, I happen to notice Smith crossing the street, I happen to

observe how Smith smiles in despair, ...). Also it makes sense to say "I have experienced many things in my life"; it is the Jimi Hendrix kind of experience, not Kant´s. Let us call it *life*-experiences.
Life-experiences are divided into many categories. It seems as if "inklinks" (*Empfindungen*) belong to the list, and that the reminder that they so belong is an important part of the LWPP by contrast to RPP, even if the analysis of "pain" plays a role in the latter; another main difference between RPP and LWPP is the invocation in the latter of the distinction between *Vorstellung (presentation)* and *Vorstellungs-kraft* (power and ability to present).
Anyway, what certainly are categories of life-experience are conceptually mediated "experiences" (in the Kantian sense) involving presentations *(Vorstellungen*) - I deliberately do not write re-presentation, because in that case "exhibiting" (*Darstellen*) or "picturing" or "configuring" would be more adequate expressions. Let us call these Kantian kinds of experiences *opinions*. Wittgenstein distinguishes here between "impressions" (*Eindrücke*) and "conceptions" (*Auffassungen*). Opinions have degrees of intensity and involve various forms of duration. They form so to speak the bulk of our life-experiences.
The most interesting range of life-experiences are those called *Emotions* (*Gemütsbewegungen*), like grief, joy, excitement or depression. They have "real duration" by contrast to "colorings" (*Stimmungen*) which are characteristic features of the *descriptions* of emotions. The emotions are divided between dispositions and attitudes (*Gemüts-dispositionen,* example love and hate, and *Gemüts-Einstellungen*, example fear for something). This again has to do with a distinction between "directed" and "undirected" emotions; an example would be the distinction between fear *for* animals and joy *over* animals, [Wittgenstein mentions the traditional distinction between fear (directed) and anxiety (undirected)]. Emotions have not got specific "places" in our surroundings, but they involve characteristic *mimetic expressions*, and they carry a "face" (*Gesichts-ausdruck*) - a main them already in the Big Typescript.
Another important kind of life-experiences are *convictions* (*Überzeugungen*). The main examples are "belief" and "doubt" and "certainty" (*Gewissheit* and not *Sicherkeit* - to be convinced - and so the translation of an important, often quoted, remark, should run, "the kind of conviction is the kind of language-game"). Convictions manifest themselves by means of thoughts and do not - by contrast to the other kinds of life-experience involve a handling, an elaboration, of something; no *Beschäftigung* is involved.
Thought, presentation, imagination, and in general *operation,* is a necessary medium for opinions in the sense that by these means opinions are related to the *other* forms

of life-experiences. *These* relations, or combinations, are governed by rules, they have *verwendungen* whereby one can *learn to make use of* the distinct psychological features we have mentioned. So we come back to a very Kantian theme; that of (more or less) immediate forms of awareness involving rule-governed abilities to, spontaneously, produce a variety of conceptually mediated features. But where Kant pointed to a limited number of distinct forms of "synthesis" in this respect, Wittgenstein points to the unended manifold of such possible forms of synthesis.
Now, by contrast to all this we have "intentions". They are mental states in a "deep" sense; they are spiritual states (*Geistes-zustände*), a bit like Aristotelian virtues or religious attitudes, Wittgenstein also calls them "dispositions of the soul".
It seems to be a general point that only a *combination* (what I called synthesis) of different kinds of life-experiences (combined within memory and recollection) can acquire a skilled utilization (this is badly expressed since it is not an ontological matter but what *we* - philosophers - say characterizes what one would normally call ...). Anyway the more general point seems to be that when such "combinations" of life-experiences are adjoined to the dispositions of the souls, they are to be seen as expressions of *life* (*Lebensaüsserungen*); they have a significance in "the stream of life", they catch on to the "given" background, the natural history of Mankind, the forms of life that people actually associate with themselves.
Here I stop listing the catalog, but I will mention in passing that Wittgenstein in fact also discusses the Kantian distinction between appearence (*Erscheinung*) and phenomenon (*Phänomen*), just as he distingushes between The Understanding (*Verstand*) and Spirit/Soul (*Geist*). In the LWPP he even carefully analyses the role of perception (*Wahrnehmung*) in its interplay with intuition (*Anschaung*). But let us recapture:
It is no exaggeration to draw a parallel to the three Goethean *Urphenomene*, Life, Life-experience, and Deed (*Leben*, *Erlebnis*, *Tat*) and their basic role in the manner in which human individuals manage to catch on to the world by means of a selfconscious and directed attention. Wittgenstein´s focus is indeed on the way in which an individual person is always standing within a given "situation". The "primary" focus is that of a person´s having a habitual surrounding (*Gewöhnliche Umgebung*). The world is present as the place in which we "live" (*Wohnen*), as when we say we live in a certain house. In such a house we "know our way around" (*kennen uns aus*); but times and again we cannot find our way around, and so the problem arises: *Ich kenne mich nicht aus*; the surroundings block my spontaneous acting, I do not know how to "move on". Then, when I learn to see some things in a new light; I suddenly know how to "go on" (*Jetzt weiss Ich weiter*).
Describing such a process; first I was bewildered then my possible actions dawned

on me, is not describing the possibility of an *actually occurring series of events and doings*. It is a grammatical remark to the effect that we make clear how certain "grammatical operations" (my expression) conditions the possibility that one can come to "overcome" certain forms of confusion and bewilderment.

Now, the "house" in which we move consists not only of a given set of furniture (material items within our surrounding) but consists also of a series of expressions of human awareness as well as the active unfolding of forms of awareness that (usualy) are significant in the given context. And all of this is not something "happening" to people; people are present *within* the situation. For instance, *observing the duration* of the different forms of life-experience matters (I am constantly getting mad at him, I occasionally forget my fear for burglars, I sometimes but not always associates green with hope). The mutual transformation of the forms of awareness *enters* into the situation. And recall, all of this is part of an active handling of things (both of the material items and of the psychological features as well as of the abstract items such as expressions and symbols). Main example; how I write the letter "F" matters, I may have a life-experience of the expression (*Ausdrucks-Erlebnis*); and it is a main theme that "the dawning of an aspect" (now I see it like this, now like that) need *not* involve particular such experiences, although it is possible that it matters.

A general theme is the irrelevance of trying to "explain" life-experiences. The main example is the impossibility of "noticing" (*Betrachten*) pains, qua inkling (recall I reserve the term "impression" for a kind of opinion). Inklings stand in mutual temporal and spatial relations; even so they do not constitute real, objective *objects* of awareness. Their kind of duration does not allow our describing their occurrence by conceptual means. Or better; there is no occurrence of something called "the pain". Rather, something happens which makes me react and makes me feel, and remember, and act, and think, and .... It it this whole package, a mixture of reactions and considerations, that makes the use of the word "pain" significant in the context. First of all, the expression "pain" comes *after* the emergence of inklings, and so the expression follows up whatever occurs; and this "following up" is not, in itself, an objectively given form of temporal process (whatever that means); it is a matter of *somebody´s* following something up. What follows after and along the inklings is not something that merely *happens* to somebody; but is something that makes people *do* something; for instance becoming aware that "the pain gets stronger" by means of concentrating on the matter in a certain way.

Now, presenting our issue in a schematic way, Wittgenstein considers psychological phenomena as language games. So we shall try to imagine a kind of games where the pieces to be moved are not only macroscopic material items, but include stuff like sensations, feelings, emotions, thoughts, recollections, reminders and include the

understanding of any piece of the game as either a typical example of something or a interestin manifestation of some kind. In short, *all* kinds of pieces (having *all* kinds of features) enter these, in this respect complex, but in general primitive and well known games. We are talking about the common phenomena of experience, of joy and grief, of reflection and of imagination; the kind of phenomena without an understanding of which you do not realy cont as a normal, adult person. Associated with each such phenomenon there are "connections" we draw as a matter of course in the manner in which we talk and behave in the various contexts. So our focus is in a sense directly on, and merely on, linguistic practice. This is the kind of *self-observation* we are interested in.

It is an important part of Wittgenstein´s approach that there are no other, ontologically and methodologically prior kind of self observation that characterizes or objectively expresses psychological phenomena. We are basicly producing grammatical fixations (*Feststellungen*).

We shall see things the other way around: Our account of linguistic practice informs us of a whole *variety* of forms of self observation where the "connections" between objects, actions, sensations, emotions and so on are drawn differently. One of the real major themes turns out to be the difference between those kinds of self observation that presupposes the observations delivered by others, i.e. the difference betwen 1. person and 3. person accounts. The point is not merely that there is a certain philosophically important difference between a 1. person and a 3. person account. The point is instead that the difference between these two kinds of account always matters, but matters *differently* when expressing, say, joy in contrast to love. Part of this complexity is also the variety of forms of observation that answers to the German terms "beobachtung", "betrachten", "untersuchen", "suchen", "sehen", "schauen", "vorstellen", "darstellen" and so on. As I said above, we here have to do with a varity of forms of *Beschäftigungen* with a range of objects. There is no *one* kind of "intentionality" but a variety of ways in which we can be said to "deal" with things.

The dawning of an aspect is by the way associated with a quite special form of "viewing", namely *conceiving* (*auffassen*). So there is a general point behind the well known example that one does not conceive or conceptualize that others are in pain, instead one has the attitude of somebody´s being in pain (recall, I use the term "opinion" as a translation of "Vorstellung", and thus differently from Anscombe in her translation of "Auffassung" as "opinion").

To me it is obvious that Wittgenstein discusses the way in which a variety of different language games can be entangled and enmeshed (*Übereinanderlegung*). His aim is to have his reader face the way in which language games are associated with a

variety of circumstances and triggering features (*Umstände und Anlässe*). This is not to say that there are given mechanisms or given input-output dispositions. It is saying that language games have *some* features that are reproductive in character. This is the dimension of *utilization*. We are not saying that being stuck by a needle *must* cause pain, but that being stuck is something that is usually *connected in our understanding* with the emergence of certain painful sensations and, say, typical kinds of concern (will I be able to use my hand tomorrow or be able to play with the children?).

The various moves in a language game "catch on to" such recurring features (*Anspielen*). It is important that all sorts of utilizations (of different tools that is) may enter into one developed game. Indeed, that is why Wittgenstein points to "calculating in the head" as a rare example where we have to do with just *one* kind of regularity, one kind of regular use of something. Calculating in the head is characterized by a regular use of *opinions* (in my sense of the term).

In a few paragraphs, Wittgenstein mentions the idea of a "natural history of mankind" and introduces the (Romantic?) idea of an original tree (*Stammbaum*) whose branchings in the clear can be related to certain roots (sources) in the ground. This is the closest association with the Tractarian view, and its revised version 8-9 years later, concerning certain elementary forms from which all other developed forms are composed (TLP) or weaved (RPP). Wittgenstein seems to be stressing that there are "many roots", and it is interesting that he considers "opinions" as a prime example of such roots, indeed, in the *Last Writings* he explicitly refers to the *Vorstellungs-Kraft*. Apart from the obvious reference to a well known Kantian theme, it is interesting that Wittgenstein clearly thinks that such features as "opinion", "intuition", "pictures", "recollections", "thoughts" etc. are stable and fixed forms within human experience (*Erlebnis*) without which experiences cannot be said to be part of a selfconscious, and behaviourally meaningful, situation. Another interesting feature is Wittgensteins willingness to ask very general questions about, for instance the way in which "opinions" involve or does not involve perceptions and intuitions. The role of perceptions is not an independent part of the *Stammbaum*, it seems. Perceptions are a bit like mesons and myons; they play a role in relation to any of the grounding features of our experience but have no identity of their own.

So if we grant that Wittgenstein tries to elucidate a certain kind of models concerning pscychological phenomena, the first general feature of these models that we should recognise is the juxtaposition of "situations", "triggering circumstance" and "behavior" (*Situation, Anlässe und Benehmen*). [Wittgenstein even states that "human life consists of situations and reactions"]. Now, we shall imagine a given context that gives rise to a phenomenon that is *not* an internal part of the given situation. I am

standing and having a friendly chat with some collegues, and now (the triggering event) my female collegue sais "you left your zip open", and I suddenly feel ashamed or humiliated; consequently I act (by speaking or doing something). This is the general scheme which has some finer distinctions: My acting as a response to what moves me in the situation can be seen either as a plain *reaction* or as a well considered deliberation. *Reaktionen und Überlegungen* seems to be the two poles on this scale of possibility. Now, our scheme is a model and as such it is a model of how *others may view my behaviour*. It is a 3. person model, but it includes hypotheses about how 1. person selfobservation and selfcontrol enters the situation. My feeling shame comes out in the situation in so far as my reaction leads to either my turning red or my excusing or explaining something (just as I were putting my clothes on the phone rang and I had to run quickly to the other room and pick it up. It was about my child having an accident, and so I forgot all about my clothes and my looks). Public manifestation is a criterion for the phenomenon of shame (a grammatical remark). In *such* a situation the person feeling shame may, and may not, have certain opinions popping up. I may immediately imagine what I look like with my zip left open, or I may deliberately produce the picture of my underpants in order to assure myself that the situation could have been even worse. This is how another distinction enters the model. Some of the features of the situation are immediate, others are mediated (*Unwillkürlich / Wilkürlich*). The 1. person can *initiate and break off* the mediated features but has no such selfcontrol over the immediate ones.

This leads to a general characterization of *dispositions* which (according to the grammatical criterion) involve a necessary connection between a *kind of trigger* and a *kind of behaviour*. The main example is love. If it is the very fact that the loved one - or something related to her - is present in the situation that triggers that my being in love shows, then we say that I am disposed to love her. The presence of the loved one so to speak colors everything in the situation. The point of this model is to make a contrast to another kind of model, models of attitude. We shall say that I am *inclined* to love her if I willingly *try it out*. Here "she means something to me" is a matter of my giving shape to my behaviour in a way that I am not already disposed to do.

So *Einstellungen zur Seele* are characterized by not being associated with a certain form of certainty. When I see another man hurt I react and try to help him. I *make* him the object of my care (spontaneously), but I do not have to act in this way *because* of my attitude. I am not disposed to so act. I do it as a matter of course. That is how I happen to be *as a person* not qua a certain dispostion to be moved.

It is however not only the grammatically necessary link between triggering features and subsequent behaviour that we refer to by the term "disposition". The main

criterion is that the kind of attention at issue can have "interruptions and displacements". Main examples are "believing" and "understandng", "knowing" and "making up ones mind in a certain way". In all these cases, it is not a matter of constantly being in a certain condition or continuosly mantaining certain pictures, expectations or states of affairs. There is no list of features wherein it consists to believe etc. I believe there is a chair next to my table. This comes out in my letting my body try to sit on it. I have slightly misjudged the distance between the chair and the table and I have momentarily to direct my attention to the problem of my keeping my balance. Now suddenly Peter enters the room and I recall that he must not see the present I plan to give him tomorrow. It is lying on the table and I quickly push it down on the chair and hide it. Here, my attention is interrupted and displaced, and still I was all along "believing that there was a chair next to the table".

It follows that the kind of immediateness associated with dispositions can be spatio-temporal in several ways. Also, there are certain kinds of immediateness that are *not* part of our being disposed. That is the role of sensations (*Empfindungen*). Here the reactions need not lead to actual *behaviour*. What triggers sensation simply happens, it is not a kind of *presence* that we react to. However, such happenings may play a role in *mediated* forms of experience. Say, I display the attitude of being in love with Mary, because I sit and wacth this foolish film with her which she likes, and I do not even get irritated or impatient or start drumming my fingers on the chair; however whenever there is a noise in the room I react by wondering if what is producing the noise gives me a suitable reason for leaving the room without disappointing her.

So our models can be distinguished by the special kind of *duration* that is associated with the spatio-temporal character of the kinds of immediateness and mediation in question. For instance, Wittgenstein uses this as the grammatical criterion for distinguishing between the various kinds of life-experiences (*Erlebnisse*). "Experiences" are associated with certain kinds of *process*, and the special kind of experiences called "impressions" embody distinct spatio-temporal *relations*. "Emotions" involve no processes in that their duration is not spatially located. They can however be "directed" in contrast to indirected (anxiety vs. fear).

A final, basic distinction in relation to our models is the way in which *thoughts* are at stake. The distinction seems to be that thoughts can have a "background" (and this kind of life-experience is called "experience", including opinions. Thoughts can be the expression of something (and this is the kind of life-experience called "consideration" [*Überzeugung*]). And finally thoughts can be "colored", and *this* is what characterizes emotions, both directed and indirected.So

a) immediateness (vs. mediation)

b) duration (that is allocated in different forms)
c) the role of thoughts
seem to be the major dimensions in our coordinate system relative to which we distinguish the basic kinds of *models* of psychological phenomena.
This soon leads to the principal importance of distinguishing between *Erinnerungen* and *Gedächtnisse*. The former do not involve thoughts, and they are immediate. The latter are mediated and involve thoughts. But I think the point is that features of the former may play a role in the formation of the latter; and that *previous* recollections may be part of what triggers certain memories. Anyway, Wittgenstein´s consideration of the various forms or roles of memories and recollections shows that, for him, *all* life-experiences are spun between the poles of immediate awareness and response (on the one hand) and recognition, repetition and reidentification (on the other). What I see as "red", now, is the piece of paper that I used yesterday to make a paperplain to my child.
Before I continue explaining why Wittgenstein might have wanted to look at these kinds of models, there is a further distinction that is of interest. It seems to be crucial for Wittgenstein *not* to include "intentions" on the list of life-experiences. The former are merely "conditions" (*Zustände*) associated with certain "dispositions of the Soul". As I understand Wittgenstein, intentions *accompagny* my behaviour. It is part of the way in which I treat things and conduct my affairs. Intentions are not reasons, causes, motives or any thing *behind or at the end of* my behaviour. Intentions do not cause, shape or direct my doings. They are *part* of my behaviour. Intentions relate to the dimension of "use", not "application".

Wittgenstein´s anthropology

I hope it is evident that I lay stress on the fact that psychological phenomena are *analyzable* and that they have a kind of complexity that harks back to the enmeshment and entanglement of language games. I will claim that it was the gradually growing importance of the analysis of psychological phenomena that led Wittgenstein to bring into play our tripartion between use, utilization and application *systematically*. "Utilizations" become central as ways in which various form of skill mediate between use and application as described in the beginning of this text. I have also claimed that the idea of mathematics as mediating between the formal features of our language and the empirical application of these features is another major theme in Wittgenstein´s later philosophy. I have yet to claim more substantially that the idea of mathematics and our tripartition are two sides of the same coin. Recall, I have just stated how the issue of analysing psychological phenomena

gradually became prominent in the overall attempt to give a general description of our use of language. Maybe it is as simple as this: Wittgenstein gradually tried to analyze, *explicitly*, more and more aspects of the living, speaking person. "The physicist" is no longer the paradigm for relating meaningfully to reality. Just as Goethe´s physicist must relate to the chemist, the painter, the historian and the philosopher, so must Wittgenstein´s user of language relate to a *variety of ways* in which concepts are associated with tables, schemes, rules, criteria, not the least in relation to the issue of how certain features of things can be considered to be positioned spatio-temporally.

The principal dependency of physics on mathematics is not put in question, but it is implicitly suggested that there is a kind of ordinary understanding, which however is deeply full of insight, and which a careful analysis of psychological phenomena will bring to the fore. It is further suggested that this deep authentic kind of understanding has many, crucial, analogies to the idea of mathematical operation. Finally, it is explicitly part of Wittgenstein´s analysis of psychological phenomena that this analogous kind of "operation" hinges on the fixation of certain kinds of *utilization*. This is, technically and formally, how our different thems hang together.

If we look at matters less formally and more substantially, the first thing to note is of course the view that the ability to think - which is a crucial anthropological feature - is seen an ability to *operate* with symbols. We have also seen that the notion of "internal relations" is crucial as is the idea of recognizing or producing a *series* of elements. We also recall how this idea of mathemaics shifted so as to include considerations on verifyability. So the genral account of the physicist is broadened so as to include psychological features. That things can be *settled* in certain ways plays a crucial role in human understanding. The very idea of "observation" is the idea that things can be settled. The idea of observation and the idea of "phenomena" are two sides of the same coin. There being phenomena and there being observations comes to the same. And what it comes to is a matter of putting something in place. The quantum theorist is aware that what now appears as a particle did appear yesterday as a wave. The person with a deep psychological understanding is aware that what is now triggering my emotion of joy is something that I had reasons to resist yesterday (and so I am surprised that I enjoy Mary kissing me). *This* phenomenon only is what it is - we say - because it is grammatically enmeshed and entangled with other phenomena in a complex way (that we may still be able to somehow survey). This is our grammatical analogy.

To be more substantial still, the picture of the human form of life indeed is that we are embedded or injected or infused into or onto the World. We are situated and we are actively situated, somewhat in the sense of Merleau-Ponty´s *operative*

intentionality. And in any such "situation" we are open to the World, receptive but always also reacting spontaneously, both as regards our reactions and our considerations. If we use the term "space-time coordination" in the general loose sense in which Niels Bohr or Ernst Casirer did, we can also say that space-time coordination is a general feature of what we are deliberately and undeliberately trying to do, all the time. We are portrayed as free, interested and caring creatures. But we carry a burden which is at the same time our basic ressource, *the natural history of our human kind*. It is *the reality of things* that constantly - by acquiring shapes, connections and directions - appears with a new "meaning". What is now truly a lump of rubber becomes a ball to play with, and now becomes garbage only to end, again as a lump of rubber before it gets burned and evaporates.

One should ask: What distinguishes the kind of concepts that Wittgenstein calls "psychological". It seems that they all point back to certain operations upon "inner tools" (*Innere Requisiten*). All the different kinds of elements we have been listing above count as such tools, including not the least three different (may I say "personal") kinds of expression, *Mimen, Gebärden und Tonfälle*. My behaviour is as such an *articulated combination* of many different kinds of expression. Wittgenstein reminds us that such combinations of expressions only make sense in relation to certain kinds of circumstance. Thus, Wittgenstein uses the term *Ausdrucks-Zusammenhang* for the real life-situation in which the combined appearance of certain kinds of expression matters. Well, this has not yet given us an answer to our question about what distinguishes psychological concepts. We have been reminded that the set of "inner tools" includes bodily forms og expression and is thus closely connected to natural (real and sponteneous) reactions, moods and emotions. So there is a personal, individual dimension here. But there is also another such dimension: An individual person may cheat or hide certain things and pretend to be in a condition, or pretend to be trying to do something, he is not. There are forms of *verstellung* and *heuchlen*. Here, Wittgenstein reminds us explicitly of his interest in detective stories, the kind of narratives that are associated with specific forms of questioning and suspicion (*Verdacht*). The *private* character of personal behaviour that interests Wittgenstein is precisely this possibility of being suspect *in certain ways*. The suspicious behaviour involves certain kinds of organization, also spatio-temporally (Does my behaviour today match my testimony yesterday and what happened at the crime scene?). Obviously, the "natural fact" that Wittgenstein on which his remarks on psychological concepts hinges is the difference between the First Person account and the Third Person account. I think that Wittgenstein´s main idea is not to see this difference as a difference in cognitive capacity, but instead as a difference in respect to the tool box available for making certain kinds of claim. I

can *oberserve* Mary´s joy when I touch her in a way in which she cannot. She, however, can feel and want certain things that is part of what it means, for her, to be happy, which I cannot feel and do not want *in her way* (though I may indeed want what she wants in my own way). We are here talking about patterns of action, emotion, feeling, recollection and so on. Mary and I are involved or situated differently in respect to the way in which we each *operate* the articulated combinations of all these "inner" elements.

I think this explains Wittgenstein´s generel expression for *not* understanding someone: I cannot find my feet with him (*Nicht mit ihm Verkehren*). This picture of an intersubejctive "traffic" is very telling. Mary and I are both privately situated in the sense that I have *my* traffic, as she has hers, within the common field of traffic. *The* traffic is not a result of how we follow certain patterns, rules or regulations. Such rules are just *some other* particular element in *The* traffic. *The* traffic is what is actually unfolding as a complex interplay between *my* traffic and the traffic of others. Now, the point is, *my* traffic means that some of the features within it, as a matter of fact, are *willkürlich or unwillkürlich* presicely and just for *me*.

Wittgenstein has another picture in relation to this. What we just called my "traffic" is in another sense called a *pattern in the carpet of life*. What we called *the* traffic is now seen as a carpet; something that is continuosly weaved and expanded at places (or in ways) and is shortened in other places (or ways). My sorrow is such a pattern in the carpet of life. Better. *This*, my sorrow, now, is a *modefication* of patterns in the carpet of life. A lot of what Wittgenstein wants to tell us is in fact included in these metaphors!

Two main themes now emerge: The first (set of) theme(s) concerns our tripartion between use, utilization and application. Because there are ways in which we can "cross over" from one language game to another in which parts of what enters into one game is used, utilized or applied in another. This is important for instance when we consider how we can learn certain things, or is important when certain kinds of experience and recollection matters for what we should do next. The second (set of) theme(s) concerns questions arising from the fact that such crossing overs (enmeshments and entanglements) have a tendence to be ignored; such that, where in fact, the enmeshments and the entanglements is a presupposition (or preconfiguration) upon which something makes sense (has a point), we misunderstand these meaning and points and associate them with less complex and perhaps structurally ideal features, and do so in totally illusory ways. Thus the need for Wittgensteinian therapy.

However, such therapy also has its positive and constructive functions. First of all one should, after having gone through the therapy, be better equipped to see how

what appears to be a "direct" kind of recognition similar to the oberservation that there is milk in my glas is instead a quite complex consideration and decision to *take* a given state of affairs and try to make sense of it in a very special context. An example may be: Recognizing that my stealing a special foreign beer from the supermarket yesterday had been discovered, I shamefully looked at my glas, aware that the detective had reason to believe that that beer was now in my glas. The point is, I guess, that we shall not be led (by philosophers and other theoreticans) to believe that there are some basic or prior *forms of presence*. There are no proto types concerning recognition, identification, discrimination, classification and so on. All these forms of observations (noticing, remarking, pointing out ...) have their special *surroundings*. We do not say that "noticing" always has a different kind of surrounding than has "remarking". We say that *any* case has *its* surroundings. But we do also say that, as a matter of fact, Men have learned to associate a variety of individual cases with certain general considerations. Again: We do not mean that there are some special general considerations that attach to certain kinds of circumstance. We say that any case may be attached to *its* relevant general considerations; but as relative as this is; we utilize *general* considerations. We have some standard ways of maneuvering that become *Teil-Verwendungen* within a rich variety of cases.

In this way we learn to see how a mixture of *Stellungnahmen* and *Vermutungen* and *Gedächtnisse* and *Stimmungen* and ... all enter in a complicated interplay even in relation to what *might at first seem to be* a very simple kind of feeling. The kind of complexity that enters into the phenomenon of "the dawning of an aspect" is a telling example. But so is the example of headache as well. For it is not the fact that "the head hurts" that characterizes what we call headache. It hurts somewhere in the head *when I touch* it so and so or when I move it so and so. And I know that it was probably caused by my bumping my head against the wall an hour ago, or because I didn´t sleep very well last night but still had to have a long day at the office. And I know that I now have the right to go home earlier, or that I have a good excuse for not smiling to my secretary when she told me about how funny her kids had been last weekend. All these things are examples of what belongs to "having a headache". Having a headache has many things in common with being a *connaisseure*. You are able to hold together a great variety of elements within a whole series of different "operations" with these elemens and *still* be able to be aware of fine details in given phenomena.

It seems that the manuscript published as *Last Writings* lay special stress on the notions of sincerity, being pretentious, being assured and being sceptical. "What must a man not have learnt in order to be able to pretend that...". I think it is

important that these notions are not *epistemic* notions, so it is important that Wittgenstein distinguishes between being assured in ones action (acting with *Sicherkeit*) and the epistemic notion of certainty (*Gewissheit*). Wittgenstein is mainly interested in how the notions express what he calls "a coloring of our thoughts". My not being assured that the salesman presents the products he is trying to sell me without withholding some bad things he knows about these products colors how my thoughts are taking some special courses. I allocate certain forms of distrust, misgiving and observation to a number of things I think about within the given situation. I do not have one special attitude to something. I have a variety of attitudes to something. The attitudes are associated with ways in which they answer to a certain kind of test (to special degrees and kinds of evidence). And these tests enter into the displacements and interruptions that are associated with the dispositions of my Soul. It is the set of these dispotitions that characterizes my not being assured. In saying this, we are, Wittgenstein says, producing *Hilfsmitteln*; producing as it were a kind of blueprint that can be said to cover a variety of real cases. *We* help ourselves in the description of the application of psychological concepts by talking about "dispositions", "operations", "aspects", "attitudes", "duration", "place" and so on. I mention this for two reasons: The first reason is that I think there is an important parallel to the metaphor of TLP of "throwing away the ladder" and *Goethe´s* notion of "trowing away the *Gerüst* when the house has been build". We are trying to associate what it as a matter of historical fact makes sense to say about people with a special kind of modelling our use of psychological concepts. And when satisfied, it is now up to whom it may concern to actually develop and use such models for some reason in certain contexts. "I am not erecting a new building but preparing the ground for one", Wittgenstein said. And I think this has to do with the interest he had in th question about *Die Grundlagen der Mathematik* (I mean it has to do with the very fact that it makes sense to talk about a "foundation" in that context). Now the second reason why I mention the idea of *Hilsmitteln* is that a main example is precisely the context of mathematics because we are considering a context that is characterized by a very special kind of being assured; *mathematische Sicherkeit*". I am not making any claim about why mathematicians do not disagree, I merely state *that* it is so", Wittgenstein says. "How one is allowed to be assured is the kind of language game". Wittgenstein explicitly says that just as there is a kind of philosophical investigation into the foundations of mathematics, we are now doing something similar, investigating the foundations of psychology in a philosophical way (and the former is not a mathematical investigation, just as the latter is not a psychological one). Now, there is a distinctive feature of the latter: We focus directly on the kind of situations where one *cannot be assured about other persons* in certain ways. My dealing with

others will always be internally related to certain forms of *Unsicherkeit* that colors the whole of my actions, thoughts and emotions are internally related.

Self-observation

No doubt, the major theme in RPP is the criteria concerning a persons observation of features of, and connections in, his or hers life-experiences. I have already pointed out, that such self observation must involve some Third Person accounts in systematic connection with certain First Person ones. There is also a special temporal dimension of self observations which has to do with the very way in which this observation hinges on certain forms of expression: There are obvious temporal contrasts between expressions like "ouch", "it hurts when you prick me", "I think it is raining", "I see a tree in the field", "I have for long believed that he will not come". These expressions are indications of the many ways in which *Erlebnisse* can be differently related to the expressions that enter into a variety of forms of self observation. The point is that there is no direct connection between the distinct phenomena and the expressions that enter into self observation. Also, self observation cannot be reduced to the expressions or manifestations of self observation. So there is a quite complex structure here: What we do not have is three different items, how it is with me, my observation of how I am, and my expressing that I have observed myself to be so and so. We have first a variety of phenomena (*Erlebnisse*), we have a variety of forms of "seeing", "considering", "noticing", "observing" and so on; and we have forms of expression that go along with it all. This whole package of elements is *what it means* to "observe oneself"; and on top of that we further have a variety of expressions and implications of the fact that I have observed myself in a certain way.

It is as always easier to put the point negatively. It is an illusion, says Wittgenstein, to invoke a simple notion of self*description*. Wittgenstein thinks that, in general, "descriptions" come very late in the development of language games. He says that "descriptions" presuppose a variety of forms of observation, recollection, consideration, comparison (LWPP § 51), and he says that descriptions are always weaved into non-descriptive uses of the features of *Erlebnisse* (ibid.). Thus, there can be no simple observational report "I find my state of mind to be so and so". A statement like "I think that he is coming" is not a description at all. It may be an expression of the fact, that I *am* awaitening NN by cleaning my room, finding cigarettes that I recall he smokes and by my preparing tea and cakes. Or I am answering a question, standing at the bus stop and seeing the bus approaching, my other friend angrily says "he is not coming"! and so I reply "I think he *IS* coming".

Here, I am not describing anything but is doing something (assuring my friend).
Now, the main point is that self observations involves many forms of expression, and that these are weaved together in what Wittgenstein, as mentioned, calls an *Ausdruckszusammmenhang* (LWPP § 27). My facial expression, my bodily posture, mu running, my screeaming, my firm grip on a heavy stone all enter into the fact that I fear the lion approaching me. All the expressions of my fear are interrelated as the various elements of a *dramatic* story.
However, the dramatic combination of expressions is an integrated part of what we can call the *task* of human awareness; namely piecing and holding together a variety of *Ereignisse* (happenings, experiences, situations). I am aware that Mary is kissing me. I am aware that this is something new, I am aware that she does not just kiss anybody all the time, I am aware that she is doing it not so much in order to dwell in the joy of tasting my lips but is doing it more like an expression of her wish to see me again. Her kissing me is a symbol expressing that something has happened between us, and that she is looking forward to certain things we can have together.
Turning the tables, I observe myself kissing Mary. It is not the touching lips nor any concrete event, nor a certain kind of action that I observe. It is this whole series of doings, feelings, thoughts, recollections, wishes and so on each of which has similarities and striking contrasts to other things I have experienced, and all of which is now present with the kind of force and intensity that characterizes what we call excitement, joy, surprise (or reluctance, forgiveness, indifference....).
More complication: Mary is observing some of my reactions, expressions, and behaviour. And I am observing that she is observing and so on. Wittgenstein´s point is not that we shall now engage in Sartrean dialectics between "me" and "you". His focus in on the way in which all we have mentioned is *continuously integrated* into our awareness and how features of it all become elements in various operations and combinations. The upshot is; *our integration works*. "The kiss" can be the end of dancing together, the beginning of a Romance or a symbol for our reunion or it may be a public demonstration that despite rumours to the contrary; we are not getting divorced. Kissing, in one way or another and in certain circumstances and with a given background *makes sense*. It is making sense in "the stream of life", and the kiss is as such an expression of life (*Lebensäusserung*).
Remember, we are not trying to desribe a very complicated interplay between a manifold of "mental functions". We are noting that psychological phenomena presupposes that part of what *enters* into the phenomena involves the application of psychological concepts. We are merely holding on to the fact that psychological phenomena are *analysable*. And we are giving (hypothetical) examples of ways in which they are analyzable. We are saying; a kiss can be many things, for example

this, or we are saying, pain can be many things, for example *this*. We will later point out how a philosophical reminder about this "grammar of psychological concepts" may be of use in science and elsewhere. But here, we are first of all saying that ordinary, adult people as a matter of fact manage to make sense of their own activity, as well as make sense of that of others, by means of reflections that are *in principle* akin to the kinds of analysis or *übersicht* we have presented.

So our philosophical grammar claims to reveil some crucial form of *authenticity*. We are adequately portraying our Human Kind, portraying the human form of life. It should be clear that certain forms of metaphysics, psychology, and linguistic philosophy is implicitly beeing criticized by our models. But I think it is important to stress that having this critical target is not the primary aim of Wittgenstein´s remarks. He is, much like in TLP, trying to elucidate the *possibility* of analysing a set of concepts. He is, again, trying to draw a parallel to certain formal features of the practices of mathematics. Given the fact that these practices are *possible*, we try to see how certain features of the practices correspond to the fact that the mathematical practices are analyzable in certain ways. There are teachers and practicing experts whose judgements secure a kind of platform for maintaining a clarity in relation to the question of *what are we doing now*, say we are calculating the vector product of three dimensional vectors in a Euclidean Space.

But where the emerging forms of new mathematics are in a sense free creations, even if they will have to be applicable to the real world, the developent of psychological concepts is in a complicated manner a gradually emerging response to a set of spontaneous reactions, presentations, thoughts or recollections, and all these reactions are expressions of interests, volitions (my word) or anxieties that we happen (contingently but inescapable) to have. So psychological concepts are all emerging from what Wittgenstein calls the "family tree" (*Stammbaum*) of primitive mental reactions and forms of behaviour. The development of psychological concepts need not, and do not, be answerable to, or correspond to, something "original". We are just saying, that not *any* development is possible, and that the developments that make sense do so because, in principle, they involve transformations and utilizations of features that have, actually, already grown "naturally" from the "family tree". But it is also important to note that saying this does not in any way rule out the possibility that we may need or want, some day, to develop a radically new way of understanding and describing ourselves. The claim, that we are producing reminders of the natural history of mankind does not rule anything out, unless it in an explicable way contradicts something that we can never deny. Also, we have not at all said anything about *what it is* that makes sense to us now and what there can be that makes sense in the future. Our claim concerns *how*,

whatever is at issue, makes sense. We are analysing the very phenomenon of "making sense" as a general formal feature of human life.

It is true, and obvious, that Wittgenstein thinks that an autonomous explanatory science in effect does little real work when it comes to the understanding of psychological concepts. These will still be "flying above the waters", untouched and unchallenged. My grief as a reaction and reflection of the civil war around me can never be explicated in totally different terms and in a way that ignores the fine details of my life. My grief is a complicated combination of something *very* universal and *very* personal. An explanatory science is just as irrelevant to the understanding of me as Newton´s laws are irrelevant to the question of *why* the Solar System is causally structured as it is. Newtonian laws tell us how the system is causally structured, not why.

There is nothing new and exciting about this claim, which of course can be contested. But the point Wittgenstein makes is not that the explanatory sciences are futile, it is instead that even where they are necessary, they are not sufficient. It seems (from LWPP § 807) that Wittgenstein associates the explanatory sciences with the task of "*discovering realities*" (*Wirklichkeiten*). The sciences in question reveal how things are really functioning, are structured or are developed as part of certain processes. They discover blueprints that the courses of Nature seems to be following under certain circumstances. Again, this view of the sciences can be contested. But the point is not that this is what, what we call the sciences, are *actually* providing; *we* are drawing a normative distinction between science and philosophy; because we want to stress a certain feature of what we call "science", we want to stress its *utility for grammar, and thus for philosophy as well*. The information that water is H_2O may not be a necessary truth about water, but in so far as we count water as a certain chemical substance, we know what it means to try to secure that the water, we drink, is "clean" or is "containing" something else. The chemical picture of the fluid we call water adds a new dimension to our dealings with water. This is what interests us, the fact that the information that the scinces provide helps us to imagine *new possibilities* for the self-observable character of human behaviour.

The sciences speak about the kinds of causal structure that has no say on what we call the *consequences of making sense* (LWPP § 820). It is like having send a letter or having made a bad joke; once it is done there is no turning back. Just tell your boss once that he is a selfish and arrogant persom without any ability to communicate with his employees, and see what happens. So the sciences cannot tell us *how* what happens *matters*. But the philosopher can. The philosopher canot decide or predict *what* will matter; but (s)he can suggest how something new may come to make a difference. Say, the sciences claim to have discovered that we are

all in a sense robots. Then the philosopher should tell them, all right, but we are not the *kind* of robots that have often been portrayed in science fiction novels and movies. Because these robots are either pictured as distinctively *not* of the human kind (say, they cannot cry) or portrayed by means of analogy to features of ourselves (say, they get hungry when "detecting" what we call food). So we are a very special kind of robots. But then, why call us "robots". Why do we need this term in the characterization of ourselves. What we should inquire is how calling us "robots" leads to new policies, new kinds of schools or new kinds of romance. We should try to imagine the eruption of high seas in the stream of life. What, for instance, does *mortality* mean to a robot, and why should he (it) care about being mortal? Say, a robot is mortal all right, it will not live forever, but I am glad to tell you, Mr. Robot, you do not only have this one life, being the person you are now, when this person dies you will become another robot with another personal identity, and this rebirth will happen a thousand times; *you* can be reloaded 1000 times, then it is all over").

How our themes recur in *The Philosophical Investigations* - and *Zettel*

In this section I will try to show how our tripartion as well as a number of the reflections og psychological concepts can be said to be integrated into Wittgenstein´s best known work, Part One of *Philosophical Investigations*. I think that it is clear, that the three notions of use, utilization, and application play a significant role in the text. One can even say that the structure and themes of many parts of the text can only de formulated adequately in terms of our tripartion:

First there is the response to Augustine´s account of how children might learn to *use* certain words. Then we are told that this account treats children as already possessing a language (by contrast to animals) in that these children are already able to *utilize* certain instruments of language (such as a translation manual between a set of experiences and a set of linguistic expressions). Furthermore (against Frege and the idea of what Wittgenstein calls “sentence-radicals”) we are told that there are indeed many forms of such utilization. Now, we can imagine primitive utilizations of the instruments of language, and thus Wittgenstein introduces the notion of a language game. However, because of the manifold of possible utilizations there is always an open question concerning the meaningful utilization of the instruments. Take the technique of ostensive learning; it is of use only to the extent that it already makes sense to *apply* the technique in a certain context. The application is not governed by the rules associated with the instruments. But there can be no real use of any feature of the language were it not the case that some instruments, or so called paradigms - are of use.

This seems to be a main line of argument in the first 90 paragraphs of the *Investigations*. Then follows the paragraphs on the nature of philosophy. However, from § 139 and on, Wittgenstein raises a specific question: Does it make sense to say that I have grasped the *whole of the utilization* of a given word? (PU I, § 139). This question points in two directions. There is first an issue of how utilization is parasitic on application; and *that* is “the rule following considerations”. Secondly, there is an issue of how utilizations lead to uses, and *that* is “the private language considerations”; you cannot have your *own* 1. person use of a word since uses are associated with certain utilizations and these are in principle public, in that they involve 3. person forms of instruction and demonstration. I will elaborate on these issues shortly.

CConcerning the first issue, the tripartion enters the account by considering that there is no universal dimension, no universal rationality, nor method, nor attitude, in our following rules. There *is* nothing that in general is called "following rules". But there is something in general called being trained to do something. *How* you do "what you are trained to do" has no fixed form. But *that* you do so has a general feature; namely that you aim at *applying* the expressions of the rule in question in a certain way. It is precisely because the training in utilizing something is *guided* by a series of special kinds of normative practices that utilizations can be seen as recurring features of particular forms of activity at all.

The multiplicity of the applicability of languistic features

Before I elaborate more on the both the rule following considerations and the discussion of the possibility of a private use of a language, I want to say that I think that the main themes of PU, Part I are constructive rather than negative. Wittgenstein is trying to let the fly out of the bottle. He is trying to have us avoid certain pictures and models that "holds us captive", and the main isssue in all that is *the multiplicity of the application of languistic features*, of the elements in the tool box. Below is a list of some of the things that hold us captive, according to the Wittgenstein of PU,I:

i)That we try to establish a *general* idea about how language is related to reality
ii)That there is a proto-form of descriptions
iii) That there is a proto-form of denotations
iv)That following a rule is akin to a certain conception of an "inner process"
v)Frege´s distinction "sense" and "force"
vi)That a logical notation determines a given linguistic practice
vii)that a logical notation

viii) That there are proto-forms of reality (or in reality), like "processes", "conditions", "objects", "states of affairs" and so on. That there are fundamental ontological categories

ix) Judgment is an epiphenomenon of "thought". Judgments involve a certain kind of intellectual exercise over and above what as a matter of course belongs to a certain form of life.

Now, this list is neither a complete set of typical metaphysical illusions nor a precise formulation of the issues. Each point requires a much more detailed formulation. But the list is sufficient in respect to what I see as a major, positive, point of PU I: All the metaphysical illusions that was mentioned each play their part in a series of distortions that can be associated with a philosophical account of the character of, as well as the possibility of, *self-observation*. One side of this story is clear: One has modelled the recognition of psychological features on the recognition of physical features. An other side should also be clear: The operations of consciousness are seen as conforming to a kind of mathematical scheme that secures that the operations in principle can "catch on to" features of reality. The simplification of concious operations and the simplification of ontology goes hand in hand. The last side of the story is the idea that fundamental epistemic qualities, such as certainty, clarity, repetition, or judgement in relation to truth values all hinge on a certain kind of *self*-awareness. It is as if all other forms of awareness presupposes this fundamental self-awareness.

Wittgenstein´s attack on all these typical illusions is however only a means to and end: He wants to turn the table and show how *another understanding of the possibility of self-observation* can both help undermine the assessment of the illusions and guide us in the elaboration of a new set of epistemic practices, a kind of excellence or expertise that will not do violence to what as a matter of course belongs to the human form of life.

If we go deeper into the problems concerning our list of metaphysical illusions, there are two major themes that emerge. One concerns the idea of knowledge, the other concerns the unity of the knowing subject and the objects to be known. As to the former theme, we get already in PU, I a series of remarks that points to the general theme of *On Certainty*. Wittgenstein wants us to look at the use of the *words* "knowledge", "certainty", "judgement" and so on. He shows us that the uses of such words can mean different things in different situations and that sometimes it does *not* make sense to use them. He also shows that the use of the words belong to certain clusters. The use of the term "know" is for instance somehow related to the use of the term "doubt". We have aleady seen that Wittgenstein later would contrast this

issue (of pointing to a kind of semantic holism) withthe issue of making use of language as a matter of course, thus displaying various forms of *Sicherkeit*and not *Gewissheit*. Indeed the latter, what belongs to the spectre between certainty and doubt, relates to various kinds of *convictions* (check, check !!!!). Acting as a matter of course, by contrast, does not involve a special epistemic attitude but is more like being clear about what one is doing which involves an ability to stick to a certain practice knowing how and when to relate to features of other practices. One of the points in the theme which Wittgenstein unfolds in *On Certainty* is that somebody´s making sense by means of actions and utterances is not constituted by the person´s being able, continuously, to give reasons for so acting. The giving of reasons comes to an end,but - so says Wittgenstein in PU - "acting without a justification is not acting without right". Your being right in your actions is more than, is is fndamental in relation to, being able to provide reasons of certain kinds. The space of normative action is wider than and includes the space of reasons. In PU Wittgenstein famously says that being able to "judge in accordance with fellow beings", the ability to participate in a form of life, is a presupposition for being able to justify a particular opinion. So the upshut of this part of Wittgentein is that the very possibility of adoptng a particular epistemic stance in relaton to a certain matter presupposes sharing a common set of normative practices. *My* being able to direct my atention *like this* cannot be dissociated from the possibility that somebody else might redirect *his* attention similarly.

I come back to this issue, but firat I will approach what I callled the second central theme in the remarks on rules and private language by referring to two "well taken points" in the philosophy of mind and epistemology, respectively. First, be it the Kantian notion of *Anschauung* or the phenomenological notion of "intentionality", there is a general point that conscious activities implies or involves "outer" objects. No account of psychic operations can be silent on the way in which "non-mental" objects and features enters into the account. It is a well taken point - I hope - that here there is no *universal and uniform kind of causality* that provide the bridge between the mental and non-mental features of consciousness. But recall the trouble which John McDowell faces in *Mind and World*, about how we cannot allow, either, any kind of matters of fact or something objectively given, "below" the activities of the Mind, something externally constituted. What is denied here enters as one of two etreems that - according to John McDowell - characterizes many forms of philosophy. In order to steer a course between these two extreems, McDowell points to the Kantian claim concerning the possibility of empirical judgment. The claim is that following two features of human experience are *gleichursprünglich*, the receptivity of our senses and the spontaneuity of our Understanding. These two

features even presuppose each other; and so we get the well known dictum that "Intuition without conceptual thought is blind, conceptual thought without intuition empty". The special and interesting understanding of McDowell of this Kantian claim is the view that conceptual thought plays an active role, always already, in any kind of receptivity. It belongs to our sensitivity that some *operations of thought* actively grounds the possibility that we can "take in" (McDowell´s term) or "import" (Charles Taylor´s term) empirical states of affairs - "that things are thus and so".
I think McDowell´s main concern is the view (using the expression of W. Sellars) that "the space of reasons" does not extend beyond "the space of concepts". There are no possible kinds of states of affairs (no kind of facts) that can constitute, or be an esential part of, a reason to believe something. Consequently, we do not fall victim of "The Myth of the Given"; especially we do not postulate that there are certain "perceptual facts" - in contrast to conceptually mediated contents - that can in any *distinct, non-reducible way* be part of our having reasons for believing that things are thus and so. Still, and by contrast to a line of thought that McDowell calls "Coherentism" it is important to stress that empirical matters actually *constrain* the possibility of thought; the formation of beliefs does not take place, merely, within an autonomous sphere of free and spontaneous production of thoughts. The focus of McDowell´s book is how the attempt to avoid Coherentism drives us to adopt a version of The Myth of the Given, and vice versa, to the effect that there is, within phisosophical debates, an urge to oscillate between the two equally unacceptable extreems, The Myth of the Given and Coherentism. That may be true and McDowell may be right in thinking that only a kind of Wittgenteinian philosophical therapy can help us escape the oscillation.
Interestingly, McDowell tries to sketch a third line of thought that steers the course between Scylla and Charybdis. However, McDowell´s way out of the trouble is by way of postulating a very queer Realm of "Second Nature", that is best desribed by as a realm of being, or form of existance, that an animal *cannot have* and *cannot do*. The escape from the trouble is also supposed to point to a new kind of naturalism. But McDowells vague references to Gadamer and othe contiental philosophers does not suffice to make clear what exactly he has in mind. The reader is left bewildered as to how precisely to steer the course between Scylla and Charybdis, even though McDowell brings forth a series of important, Kantian, Strawsonian, Evansian, - McDowellian-Wittgensteinian reminders that help us avoid certain ontological pitfalls. I mention this in order to claim that Wittgenstein account of the objective features of consciousness do not lead to either the kind of trouble McDowell faces or to an illusory escape from such trouble. The objective features of psychological phenomena is constituted by the diffent kinds of *expression* that enter into them.

"Pain" is something inner and personal (only) in the sense that certain facial expressions and bodily *Gesten* are ionternally related to having pain. And "chairs" are objective and factual in that I can initiate and break off a series of expressions in relation to *it* (the teacher, "sit down young man. No, not on that chair, there is your seat...". pains and chair have different relative positions in the *same* language games (it hurts my back when I sit on this wooden chair).

Again: Drop the inner/outer and the factual/mental dichotomies and begin to notice the language games that we can play: It hurts *me* when I sit down of *this* thing. If there is any interesting "difference here, it is between *how it shows* that it hurts me, and how it shows that it is the chair that is in question.

Now, concerning the unity of obejct amd subject, in most kinds of recent epistemology we find another well taken point: Any reference to "objects" presuppose an account of some kind of "access" or "acquiantance" to the subject matter: Even a realist like Frege would admit that: To be "an object" is to be an object of a *possible reference*. There are no objects *as such*. Now, we know from the critical discussion of Kant that we cannot make this point by claiming *what it is* or how it is we cannot postulate "objects as such". When we use terms like "in themselves" or "real essence" or "primary property", we are implicitly making a kind of contrast and we face a recoil: for how is it that the objects "for us" or the nominal essences or the secondary properties are related to the former kind? Again, here we face a kind of trouble that we need not face, and it is an important part of Wittgensteins analysis of consciousness that he avoids getting into trouble:

First, when Wittgenstein speaks in general about "pieces" to be moved within various language games, it obviously doesn´t make sense to regard "being a piece" as an ontological characterization. Second, there being "pieces to be moved" is a formel concept that stands proxy for a manifest, intelligible feature of some sort of intersubjective account. Third, the "pieces" are not the sum total of the items involved in the performance of a language game. When I move the pieces, I touch, hear, rememember or fear a whole variety of *other* things. The model (the established accountable practice) "states" things, the practice thus stated "shows" other things. The joy of playing football or the discipline of playing chess does not come out in the rules, but it *belongs* to these games. Finally, recall thee thre levels of "use", "utilization" and "application", and the idea of the entanglement and enmeshment of different language games (that I have accounted for in the former part of the book): What counts as a move in one game is only a formal feature of another and any estabiliced practice may have all sorts of different applications in a variety of other games.

So we conclude: "there being objects" means little more than "such and such games

can be played". Compare: The objectice existence of atomic objects - although it is not defined by nor conditioned by a given experimental practice - *is a part* of that practice. The fact is not "there are atoms". The fact is: These experiments *on atoms* takes place. The atom is not a construct of the results of experiments. The atom is a necessary part of what makes a certain kind of experiments have results that other kinds of experiments hasn´t. Compare: Not, "water" is what frezes and evaporates at these temporatures and pressures. But; for a liquid to freeze and evaporate at these temporatures and pressures, there must be ... present; call it "water".
The point; neither "the atom" nor "water" is a *direct object of the practice*. It is if you like an "implicit object", but not in the sense of Hacking´s (if you can spray them they are real)(better, somethings being real is shown by our ability to spray some *other* things, so and so). So the idea of objectively given features of directed conscious activity *is not at all a matter of how we "take in" or "grasp" or "perceive" things*. This is the point of the metaphor of the tool box in Wittgenstein: Various features and elements can have a dynamic, synthetic function within a conglomarate of such features and elements (that each have there characteristic spatio-temporal structures). What corresponds to a noun in the language presupposes all that. "There are lions" presupposes thousands of such conglomerates. Fear, food, speed, big, rare, teath, meat, weapon, hide, recognize, warn, explain, hunt, capture, guard.... all this and much more is involved in the observation of lions.

So if narrow our focus and say that the target of Wittgenstein´s remarks on the philosophy of psychology is roughly speaking The Spectator View of Knowledge and its implications, let us ask what our lesson shuold be. What is it about living the human form of life that we should see better? I believe this: in the TLP it was already important to Witgenstein to let his readers see in a new light "we can do science". We do not begin with a postulate such as "we are intelligent" (which we are) or "we have discipline" (which we have) or "we are practical" or "we have language". We point to a *particular practice*, "we can model the world". This is supposed to cast a light on how we understand ourselves in general.
Now, for the later Wittgenstein, instead of one general form of "modelling", we have an ever extending series of calculi. When it comes to the mixtures of objects, emotions, thoughts, pictures, sensations.... we *do perform a variety of operations*. We do not face a complex ontological wilderness; we are at home in the world *along with* all the different kinds of features (objects, emotions,....). It is a multi-complexity all right, but *there is no need to simplify*, as philosophers and scientists usually do: We *are* at one with the world and nothing is hidden.
Here, the "psychological" is nether a mystery ("how could it arise in the midst of a material, bilogically developing world") nor a safe epistemplogical heaven because

we always know what we feel and see about ourselves in a way that we do not with certainty see and feel things around us: There simply is nothing special about self-observation, qua "observation". So any idea about how mental capacities form the backbone of our actions and descriptions of the world around us should be dismissed.
When psychological phenomena is put to the forefront, it is the *agent* who is exposed, but not in terms of his activities, but in terms of all that these activities involve, and this in effect is a piece of the natural history of Mankind. I proudly or shamefully, quickly or slowly, alone or before others, with relief or indifference eat this apple. In whatever I do, I prolong an Original Sinn.

What are the "rule-following considerations"?

I wrote a dissertation in 1982, before my reading Crispin Wright´s, Saul Kripke´s, Baker and Hacker´s, Colin McGinn´s, John McDowell´s or Simon Blackburn´s readings of what *they* called - or what due to them came to be caled - "the rule-folowing considerations". In my dissertation it was a big point that we should not address any issue of "following" a rule but should instead look at what would count as *introducing* a rule. My dissertation dealt with issues in the philosophy of science and I draw a very close analogy between the possibility, in physics, to introduce a rul*er* and the semantic notion of introducing a rule. I approached the issue by way of catching on to the Wittgensteinian idea that "there is a way to follow a rule that is not an interpretation", that gong by the rule is a habit, a practice, and an institution. So I was never inclined to conceive of the following of rules as an intellectual achievement, as such. It was also prettty much a common view in the philosophical circles I came from that Wittgenstein was interesting not the last becuse he did not adopt a Humean ontology of events. Again, this was the critical view of a philosopher of science that saw the world realistically as containing causal structures and dynamical systematic fields of interaction. The notion of "events" was derivative. It followed that *facts* could never carry much epistemic weight. Single observations and particular states of affairs were not of crucial relevance to any issue, as such. So it was without questioning that Wittgenstein´s account of the ability to use a concept in the language could be seen as hinging on certain facts of the matter. I mean, it was almost impossible that one could see Wittgenstein as inviting his reader to be puzzled by the claim that our use of language does not rest on facts. In the circles in which I moved, Wittgenstein´s analysis of the possibility of language was obviously non-naturalistic and non-empiricistic.
This always blocked my beeing really impresssed by the in many respects impotant

discussion about Wittgenstein throughout the 1980ies. I found John McDowell´s reading most interesting on the issue, even if my general approach to Witgenstein was largely influenced later, in the mid-eighties, by my reading Stanley Cavell, Peter Winch, and Cora Diamond. Looking back, and given the sketch I have given in this book of the general development of Wittgenstein´s philosophy from the TLP to the remarks on the philosophy of psychology, I think I can now say what both interested me and irritated me in the debate that Crispin Wright and Kripke gave rise to. First of all, the debate lacked a clear distinction between somethings being "fixed" and thus forming a feature of a background for a certain practice. on the one hand, and the idea of an objectively determined significnce of an utterance, on the oher hand. The distinction between (practical) *Sicherkeit* and (epistemic) *Gewissheit* was blurred. This distinctions harks back to the distinction between *Aussagen* (grounding the possibility of establishing verification conditions) and *Hypothesis* (associated with verification conditions).

We can say: The analytic *basis* for a special kind of linguistic meaning is not just factual. That *these* features grounds the possiblity of a certain language game is already a normative issue as well. The Standard Meter in Paris is not only preserved by way of preserving a set of physical qualities. Its beeing "preserved" in a certain way is relative to certain *criteria* associated with a kind of human practice. But we an also say (somewhat in analogy to a point in the TLP): If the question so much as arises, "how is this set of signs to be understood", the problem is not one of "interpretation", if the string of symbols means this or that. The problem is that the string has not been given a clear sense *in the first place*, so that we have a pseudo question. *There is* no set of symbols that can leave us wondering, "what does it mean?". Maybe *people* do not understand each othr (at the level of application). But the signs means what they mean (on the level of utilization). That is why the reminder that "there is a way of following a rule that is not an interpretation" does not carry much weight. It is a truism.

There has also been confusion about the continuity of our practices. First, one has not seen that the mathematical possibility of "continuing a series" is not a matter of continuing a certain linguistic practice, as such. And one has not seen that the latter kind of continuity still has nothing directly to do with the continued *application* of a given linguistic practice. One has confused "successor" with "what to do next", and "how to move on". So again, even if McDowell hit the point of steering a course between Scylla and Charybdis in the account of following a rule - in this case there being factual constituents of linguistic meaning and linguistic meaning hinging on certain (intelectul interpretaions - he takes on a kind of phlosophical worry, tht Wittgenstein, on my reding, will not have us worry about: McDowell insists on asking

how there being habbits and institutions determine linguistic meaning. We know that he had an Aristotelien answer ready at hand ("Virtues and Reason"). But Wittgenstein does not need and does not point to a normatively shaped perceptual experience that counts to all fellow beeings as a matter of epistemic excellence or virtue. But utilizations does not determine nay applications though they are part of what makes applications possible.

McDowell missess that although it is true that "interpretations" the point is not merely to see interpretations as relative to a normative background. No, interpretations do, according to Wittgenstein, provide a positive contribution: They are *rules of substitution*. And since they ar rules, they can not be what explains he very possibility of following rules. "Interpretations" are part of mathematical operations. They are grammatical operations. We do not *follow* such operations; we *utilize them* and so doing we make possible certain kinds of application in a variety of language games.

Following a rule is neither "learning to do the same" as the rule says, nor is it "learning to do the same as a teacher would do" concerning the rule he is explaining to his pupils.

Let us recall how Wittgenstein approaches the issue by making several important points: We learn for instance that any word must correspond to a certain technique, a certain rule for utilizing something by means of *eine ständigen Gebrauch* (PU I, § 199). For example, I can only be said to *read* a written series of symbols if I can make use of a certain grammar. Reading is a stepwise practice of applying sentences (i.e. of making particular moves within certain language games). Reading is however both a technique and an application of this technique as regards the inter-subjectively recognized practice of telling people something. Learning to read is learning to make use of certain canonical forms of expression each of which can be applied within a series of language games. Consequently being able to read, and similarly being able, in general, to utilize certain techniques, is being able to make use of a series of *expressions of* rules (tables, schemes, paradigms, formula, canonical sentential forms). Such expressions of rules must be “grasped” and thus applied in a variety of ways. The application, and not merely the utilization, of the techniques are required in that, for example, learning to read is not all it takes to speak a language in real contexts.

Here it is important that the grasping (*Auffassen)* of an expression of a rule is more than interpreting it. When you grasp the possibility of utilizing a technique in a certain context, you are not only preparing yourself for playing the language game in question by means of re-orientating your understanding of things towards a certain

context and agenda; you are already engaged in playing it. Following a rule (grasping the expression of a rule) is finding your way around by means of your holding on to certain signposts.

The characterization of expressions of rules as signposts (PU I, § 198) is important. In (PU I, § 85) Wittgenstein has already talked about the exposition of rules as a kind of signpost (*Wegweiser*). Paradigmatic expressions are "leading the way" in the very same sense in which a series of mathematical expressions points to possible successors. Recall, there is no necessity or pre-given reason for continuing a mathematical series in a particular way. The crucial thing is that "*this* can follow from *that*" makes sense; that the particular step makes sense; that the step does in fact take the game one step further. "Now I know how to go on" is simply being able to go *on*, and is not being able to go on *in accordance with the previous steps*.

Canonical expressions are canonical *introductions*, public displays that *stands there* for every participant in the game to catch on to. They "stand there" qua being the expression of a given utilization. And they stand there as a signpost for applying the expression of the rule in a given manner, as a signpost for a variety of possible performances.

Baker and Hacker claimed (in 1984) that there is an "internal relation between a rule and its application". What they meant was that there is no intermediate feature (an interpretation or the like) between the expression of the rule (say by means of a formula or a indicative gesture) and the acts that would count as "following the rule". But saying this is strictly speaking wrong: Baker and Hacker disregard the *activity of performing* the expression of a rule. Like so many others they reduce the role of a teacher to the function of exemplifying instances of "following the rule", such that the pupil is supposed to learn to "do the same" (the whole point of B/H is that this is supposed to mean "do the same-as *the teacher* does"). However, instead we should say: The teacher is introducing certain "pieces" while trying to make clear that *they* shall be utilized in ways that makes sense. The teacher is making it clear that he is playing *some* games with the pieces, and the pupil now has to learn to play *other* games. So I would say; it is the series of such possible "other games" that can be said to be internally related to one another.

It is strictly speaking imposible to distinguish clearly between "playing a new game of chess" by following the same rules as before, and "playing a new game, similar to chess" by changing the rules. *Any* activity of playing chess is playing a *new* kind of game in the sense that the activity unfolds within a certain intersubjective normative setting (say, each draw must only take 5 minutes, no player must smoke or drink coffee, and the winner can choose between a Mercedes and a year of free consumpsion from *Burger King*).

I thus find that Baker and Hacker reduce the role of the pupil to that of learning how to be able to stand in for the teacher. The pupil shall learn to be able to provide what would count as the *same* kind of instruction in "how to go on". Consequently, I think that Backer and Hecker ignores of one the main issues in learning by means of having been instructed, namely learning to do something *new* that might, by a number of people, including the teacher, be approaved of. Learning mathematics is more than learning to solve the questions at the end of textbooks. It is learning to solve them in new ways and learning to formulate mew mathematical questions. This is a (Kuhnian) point that is worth remarking.

The psychology and temporality of sameness and repetition

So I am claiming *both* (i) that considerations on the relation between "sameness", "identity" and "learning" shall be addressed at the level of utilization, in the sense in which a pupil becomes a teacher according to Baker and Hacker, *and* (ii) that the ability to utilize specific techniques does not only have a role in learning to become a teacher but always has a further creative-critical role. We shall recall that Wittgenstein always related the possibility of performing any language game with the possibility that someone might make some sort of "critique" of the given conduct. I hereby underscore the importance of the fact that establishing utilizations become part of the gradual building of habits (*Gepflogenheiten*, PU I, § 199). Say, the utilization of coins can always be accounted for by simple mathematical methods. If this was not so, the application of the coins as means for making certain payments would not be possible. But the possibilities and significance of applications of money are change all the time. The "utilization of money" is enmeshed in an ever changing variety of activitiesunder varying circumstances. So to be instructed in the utilization of money is forst of all that it lays the ground for introducing *new* games to play with the kind of pieces that the instruction involves.

Now at this point, we come to the psychological features of the issue: For can I not be said to "repeat" something and to be able to "recognize" or "identify" something. Is there not *something* that occurs repeateadly? No, Heraklitus was right; I cannot play the same match of football again, nor score the same goal twice. *I cannot make the same move twice*. "Repeating" is a deliberate act that has many forms. I play this tune again, I post what I have written to the Pope, who has not answered me, again, or I kiss Mary again. Here, there are different temporal structures. My "playing a tune", "posting a letter", or "kissing" are different bundles of games in which doings, presentations, pictures, considerations, feelings and .... are differently conjoined. So we have not "it *happened* again". We have "this *kind of performance* was executed

again".
We shall not look at the "epistemic" act of recognition or repeating, nor shall we look at an ontologically speaking re-occurring event. We shall look at the *psychological phenomenon* of repetition and recognition in the sense in which we considered in relation to RPP.
Also; we have to do with what Wittgenstein called an *Ausdruckszusammenhang*. So considering the introduction of rules, what we should regard as the fixed and stable elements of a repeatable action are in effect what might count as a proper *expressions* or scheme for the following of specific rules. It is for instance possible to utilize a red object as a pattern or paradigm for a certain kind of white colour (Z, § 316). I think that the "deep" philosophical point that interested Wittgenstein was the fact that *expressions* can really be conditions for applying certain things. I am for instance not free to mean (to do) anything by expressing the sentence “red is composed”; I must be able to associate the phrase with the utilization of a certain technique (Z, § 338). The fixation of such techniques is a matter of having been trained (Z, § 318). The application, however, of this training is open ended, in that the expressions of rules are merely signposts, and not like railway tracks that predetermine every possible move (PU I, § 218). There can be no rules for the application of (the expressions of) rules (PU I, § 85). But there *can* be applications of these kinds of *expressions*. Recall, we are doing philosophical grammar. In our toolbox we have a variety of experiences, thoughts, doings and *different* kinds of expression. We have the formal grammatical predicate structures, we have facial and bodily expressions *and* we have expressions of *rules*. And like any other feature in our toolbox such expressions are part of a variety of combinations with other features in the box. On top of that, all sorts of *Erinnerung* and *Gedächtnis* plays a part as well. There is an anthropological dimension that is imortant and which I will discuss in much detail in the following chapter. But it is crucial in relation to the rule following considerations: The picture is not that people gradually build a thicker and thicker layer of abilities, the picture is not that of a continuing growth of knowledge. The picture is that what we expect and what we recognize continuously leaves us bewildered and in the dark. *Yet, still we know a way to move on*. We are engaged in a continuing battle with the past, but we win this battle in all sorts of creative ways. We are not like robots nor computers. We are not animals that has the same patterns of behaviour most of their life. We are the kind of beings that is able, times and again, to connect past, present and future in ever new ways. *That* is the main concern of the rule following considerations.
Another major theme is the ability to *convey* (or avow) a certain attitude towards applying a certain technique (Z, § 299). That is also at the heart of the need for

expressions of rules. Expressions of rules are not expressions of abstract, intellectual, or symbolic connections. They are expressions of the possibility of performing certain concrete forms of *appoaved* activity. There being paradigms, formula, tables, schemes, rulers or patterns is there being various forms of human, intersubjective approaval. It is the fact of there being activities, at all, which, as such, embody *human understanding*.

Can psychological phenomena repeat themselves, or be repeated, privately?
In (PU I, § 243) Witgenstein, famously, initiated a series of remarks known as "the Private Language Argument", even if there is no obvious snse in which the series of remarks constitutes an "argument". The argument is sometimes supposed to shown that thee can be no such thing as a "private language", and where it is disputed whether it is *what we talk about, or* how we talk about it, that canot be "private". I think these formulations are all misleading. It is closer to Wittgenstin´s agenda to clam that there can be no such thing as a *private ostensive definition* (PU I, § 258). For we can circumscribe this issue much more clearly that the vague issue of a "private language". We know that an ostensive definition only makes sense when seen as an integrated part of an ostensive *teaching*, and we know that the idea of a "private" activity is associated with the possibility of *Verstellung*, of making believe (RPP, p. 105). So our issue concerns a form of teaching that is not, that cannot, be public in a certain way. We also know that this has to do with the way in which 1. person accounts are interwoven with 3. person accounts. And I think that it is a main part of the issue that the kind of deception that the person who tries to construct a private ostensive definition can be said to display towards others is bound to involve some sort of *self*deception. So if we shall talk about an argument at all, it is this: "If the supposedly private possibility of deceiving others implies that I have to deceive myself, then it can hardly be said that it is *I* who deceive others. It is my activity that is deceptive, a such. The kind of teaching I take to instruct myself is not a kind of teaching at all. I try to apply a set of techniques, but this application is running idle in the rest of the stream of life. It does no work, and thus never becomes enacting any real *use*. And that is the sense in which the attempt (as Wittgenstein calls it) to establish the application of a term *“für den eigenen Gebrauch”* fails."
Now we can circumscribe the issue even closer: The main example concerns the reidentification of a particular *sensation*, which in contrast to emotons can be spatially located but does not have a "real duration". So whereas a picture or presentaton of what makes me happy may play a certain role for my being happy, there are no such fixed elements on which I can hinge my identifying a certain pain.

The closets we get is "it hurts - when I move my leg", and now everything depends not on how "it hurts" but on how I *move my legs*. And it doesn´t really make sense to say that I have a special personal way of moving my legs that is somehow assesable to only me.

The act of fixing a particular pain must in some sense have to be repeatable. There must be something called what it is to repeat the attachment of the term to the pain. Now, it is not that there are straightforward ontological reasons for saying that “the would-be private speaker cannot do that”, as if the act of concentrating your mind on a particular pain cannot take place. The point is rather that such an act of concentration does not constitute something repeatable. It is one thing to concentrate your mind it is another to do so, in a particular fashion, *repeatedly*. As I said above, here the important thing is not the ontological issue of repetition; it is the socio-grammatical possibility of being able to account for your acts, and you can only do so by pointing to something, which is publicly known to exemplify something. You must be able to explain yourself to someone else. Even if you are a pioneer or inventor, you must be able, in principle, to teach someone else to repeat your activity. Especially, you must be able to point out what it is *not* to repeat the kind of activity in question; and so you must associate your action with “criteria of correctness” (PU I, § 258, 265).

In short; it is *the aspiration* of wanting to introduce a special private kind of activity that does not make sense. The would-be private linguist does not understand what it is he sets himself to do. It is not that there *is* something that this linguist cannot do. The criterion is that it must be clear *what it is* that one *sets oneself to do* when one draws attention to a certain possibility for actually carrying something out. It must be clear to *somebody* what one actually is doing, but there is no required clarity concerning what is "taking place" *in* doing this. There are no “raw” acts of recognition but a variety of ways of naming, identifying, selecting, discriminating, or circumscribing things. In short, you not only have to learn to concentrate your mind in particular ways, you have also to learn to utilize such a concentration within your entire use of your language as well as of the other instruments of your actions.

Chapter Two
The semantic notion of theories
(as rules for modelling the world)

Introductory remarks on the later Wittgenstein and the philosophy of physics

The later Wittgenstein´s view on science is often presented as answering, solely, to his own *philosophical* framework. But one should recall the fact that the young Wittgenstein was very much inspired by Heinrich Hertz and Ludwig Boltzmann´s notion of physical theories as corresponding to certain models. So the possibility that

Wittgenstein, in his later years, reacted to certain developments within the sciences *themselves* should perhaps not be disregarded. Actually, there exists an interesting book, from 1938, written by one of Wittgenstein´s students of the 1930´s, W. H. Watson, which might illustrate how certain elements of the early Tractarian view on theories as corresponding to models might have been integrated into the views of the later Wittgenstein. An early book by another of Wittgenstein´s students, Stephen Toulmin, *The Philosophy of Science*, from 1953, provides another such clue.

Apart from small remarks scattered throughout Wittgenstein´s many notes, we do not know for sure how he assessed the natural sciences in his later philosophy. But it would be very strange if he never considered if the development of both quantum physics and the theory of relativity did or did not challenge his gradually changing views on the relation between symbolism and experimental science. Since the development of physics in both cases involved a recognition of the observational practices of the physical experimentators, Wittgenstein might well have thought that his later philosophy was somehow in line with this recognition. The physical sciences could hardly be viewed as exemplifying a kind of cognitive assess to the world that would give lie to, or which could impossibly be in accordance with, the general themes and points of the philosophy of the later Wittgenstein.

In this part of my book I have two agenda´s. I want to show how our tripartion between use, utilization, and application may be seen as having actually been put to work by two of Wittghenstein´s pupils, W.H. Watson and Stephen Toulmin, in two groundbreaing works within the philosophy of science to the effect that Wittgenstein in some sense can be seen acknowledged as an ancestor, or perhaps even innovator, in respect to what is these days clalled *the semantic conception of scientific theories*. According to this view, a scientific theory is but a set of *models* associated with certain linguistic rules.

However, recent developments of the semantic notion of theories have clearly been inspired by Herman Weyl´s utilization of the physical concept of a phase space (Weyl 1968) , and inspired by Patrick Suppes´ later idea of modelling in accordance with mathematics (“and not meta-mathematics”) (Suppes 1967, 1972). The standard versions of the conception must be said to be those of Bas C. Van Fraassen and Ronald Giere (Van Frassen 1980, 1989)(Giere 1985, 1988, 1999); but there is an important version, elaborated in common by Jerrold Aronson, Eileen Way, and Rom Harré (Aronson, Way, Harré 1995), a version which might also be called the “semi-structuralistic” conception in that it incorporates various features of the so called “structuralistic” conception of theories presented by Sneed and Stegmüller in the 1970s (Sneed 1974)(Stegmüller 1976,1979). Finally, one should not forget Nancy Cartwright´s special version (Cartwright 1989).

I find, however, that many interesting proto versions are missing in this list; the original views of Helmholtz, Hertz, Boltzmann, Max Planck, Niels Bohr, and Heisenberg as well as the original Tractarian version. I have myself argued intensively that Helmholtz initiated a neo-Kantian conception of physical theories that all the leading physicists, including Heisenberg and Bohr, adopted. This conception of physical theories is indeed associated with certain principles for the construction of a certain kind of models (for constructing the phase-space of given physical systems in Hamiltonian fashion in accordance with certain principles, like the principle of least action and principles of conservation). On my account, the development of atomic physics and nuclear physics is but one long history of constructing various forms of models. It would come as a big surprise to me were I to learn that the later Wittgenstein, who had himself from early on been initiated into this Helmholtzian tradition by reading the modern classics of Hertz and Boltzmann, at some point turned his back on it and came to adopt an entirely different understanding of physical theory.

But let me give a more systematic survey of the semantic notion of theories. The neo-Kantian, Helmholtzian – the original – version associates a theory with the elaboration of a phase-space that symbolizes or expresses the physically significant forms of change of the energy-conditions of a given physical system. Theories are principles for the *use* of these models in order to both specify and see the relation between various kinds of phenomena. However, the principles for the use of models must answer to certain criteria in respect to the application of certain concepts to a realm of objects. There must be so-called “schemata” (as the philosopher of science would call them) or be a definite kind of “Hamiltonian” (as the physicist will call them) that expresses these criteria. There is a certain pre-determined *formal* characteristic of any physically adequate theory that ensures that the theory is a “conservation law” and that it involves the possibility of recognizing definite kinds of “constants of motion” or “constants of change”. This comes out, in a nut shell, in the use of a certain kind of mathematical operation, the so-called Poisson Brackets, in the description of the conjugate physical variables of various kinds of physical systems.

As the discussion about the interpretation of quantum mechanics shows, physicists can agree on following this method and still disagree about the “interpretation” thereof. The same is true of the various recent adherents of the semantic notion of theories. It is as if the Hamiltonian method produces an urge to supplement it by a *deep* story about human cognition, explanation, and rationality. But maybe, all that is needed is a reassessment of the fact (according to the method) that the natural sciences embody distinctive methods for *the use of language*.

W.H. Watson´s account of scientific *Darstellung*

W. H. Watson followed Wittgenstein´s lectures between 1929 and 1931 and informs the reader that he has read various manuscripts of Wittgenstein from the period of 1933/34. Watson declares that these papers has influenced what he claims in the book of 1938. However, there are two things that immediately stands out. First, Watson seems to associate the views of the later Wittgenstein more tightly with those of *Tractatus* that one usually would do, and second, he explicitly formulates a verificationist criterion of linguistic meaning. So it may be contested how close Watson´s view in that book is to that of Wittgenstein, at least to his writings from 1934 and on. But still, it may be said that Watson has caught on to a heart of the matter in both Wittgenstein´s early and later view on the physical sciences; that he has caught on to the very idea that a scientific theory, in essentials, corresponds to a certain linguistic practice associated with the construction and use of models; and where mathematics is required for the elaboration of those models. Watson wrote,

"Theoretical invention in physics consists in making a new language for this purpose and in applying new symbolism invented by mathematicians. The making of a new language consists not merely in the introduction of new technical terms but in the erection of a new logical structure, that is, in making a *system* of new ideas or devising a new method of representation." (Watson 1938, p. 18)

"We have to learn the correct use of each sign. We do not exhibit the meaning of ´red´ merely by pointing at a number of red-coloured objects. For the meaning of ´red´ is bound up logically with the meaning of ´blue´, ´green´ and so on. What we learn when we learn the meaning of these words is a piece of logical grammar. The meaning of words is shown in their application." (Watson 1938, p. 28)

So it seems obvious to associate these views of Watson with those formulated by Wittgentein between 1929 - 34. We have seen that Wittgenstein gradually widened the philosophical framework surrounding these views, but we have also seen that he in no way "denies" or "refuses" them. The view that the experimental physical sciences are characterized by constructing a "symbolism" or a "method of representation" in accordance with a given "grammatical" background, and such that certain methods of verification correspond to the significance of elaborating and applying the symbolism, are views that Wittgenstein never criticized.

A closer look at Watson´s account shows that it is not the early verificationist position of wittgenstein from 1930, but the more refined, I would say, *Goethean* variety, where the idea of a *series* of experiements is important and the focus is on an entire *system* of concepts that can be gradualy developed and applied in different

fashion.

An example is what Watson calls "the general idea of a “dynamics”". On this, he writes,

“Generaly speaking, philosophy requires us to examine language not from the point of view of one scheme only, but also from every other point of view that we are able to occupy. This activity is a particularly trying one for mathematicians who are accustomed to settle any mathematical problem in a single proof and are not interested in a variety of proofs. Yet, variety of proof is always logically important just as variety of route is geographically important … Our schematisation, put forward only for the purpose of simple illustration, treats dynamics according to the pattern of the mathematical problem of drawing a curve satisfying a certain differential equation to pass through a given set of points. But the data sufficient to determine the curve might have been given in an entirely different form in which there is a variety in their geometrical nature. One can, for instance, determine a circle to pass through three given non-collinear points, or through one point and touching a given straight line, or touching a pair of lines and so on. In physics our experimental data have this kind of variety, and any scheme which ignores this fact is an inadequate representation of what is done by means of physical symbolism.” (Watson 1938, p. 123-4)

So the various methods of representing physical systems are to be seen in both contrast and analogy to one another. The possibility of surveying this variety is crucial for any distinct form of experimentation. The conclusion thus is, that instead of saying that any scientific discipline reveals the characteristics of a definite “realm of being”, a certain substance, one should instead note how the experimental sciences corresponds to our having a map, and thus to the possibility of moving around, connecting and separating a variety of different phenomenon because we have acquired meaningful routes of inquiry for doing so:

"In mathematical physics the signs are the apparatus for expressing laws of connection, and they are merely part of physical symbolism. Instead of thinking of a substratum, we ought to think of the ´superstratum´of our experience of actual things and processes, into the description of which the laws enter as part of the necessary symbolic apparatus, and in this respect the new laws do not differ from the old. All that has happened is that we are now forced to call in question our former uncritical attitude to *all* physical symbolism, in order to surmount logical difficulties in understanding the new theories. But the method of physical science is the same as ever, and for proof of this statement one has only to look into the laboratory". (Watson 1938, p. 140)

Thus, Watson ends his account by stressing that the defining character of the physical sciences is what might be called a certain "laboratory practice" that involves the use of particular forms of symbolism, and which – not the least in respect to the

development of quantum physics – involves a critical understanding of the various ranges of application for these forms of symbolism.

Toulmin´s original account of lingvistic inference within the sciences

I shall come back to Watson´s idea of a "laboratory practice", but no one has followed this line of thought better than Stephen Toulmin in his early masterpiece *The Philosophy of Science*. In the Preface, Toulmin declares that,

"I owe a special dept to the late Professor Ludwig Wittgenstein [whose lectures Toulmin attended between 1945-7] and to Professor W. H. Watson, whose book *On Understanding Physics* I have found a continual stimulus."

Like Watson, Toulmin thinks that the experimental sciences are build around the utilization of certain “methods of representation” . Toulmin uses that phrase explicitly, for example when saying that,

"It can always be asked to what degree of accuracy a given method of representation can be used to account for a set of phenomena." (Toulmin 1953, p. 29)

However, for a number of reasons that I shall explain shortly, Toulmin most often talks about methods or principles of *inference*. A telling superscript in the early part of the book is this (italics in original): *New points of view come with new inferring techniques*. Toulmin introduces his agenda by warning against what he calls "the Man Friday fallacy" . The point is that Robinson Crusoe, once he discovered some footprints, was already capable of recognizing *what* such prints indicated, what they were evidence of. Crusoe was already able to infer, there are footprints so there is a Man around. In the case of the development of new theories in physics the situation is different; here one has to deliberately construct and define *what* is supposed to be evidence for *what*. This is because theoretical novelty first of all has to do with our “looking at familiar phenomena in a new way, and not at new phenomena in a familiar way” (p. 20). Especially, we learn to see new kinds of connection between familiar phenomenon where we previously saw no such connection. This brings Toulmin to introduce the main example of his exposition, the reconstruction of the methods of representation that define *geometrical optics*, the method of producing and tracing beams of light where each beam is mathematically modeled as a straight line in a Euclidean space. Toulmin associates this method, first, with *a novel method of drawing physical inferences* (p. 25, italics in original), and second with “a new model, a new way of regarding [optical] phenomena, and of understanding why they

are as they are” (p. 29).

So Toulmin associates the introduction of a new theory with the introduction of certain mathematical models (1) that are used in the construction of particular kinds of experimental devices (such as light sources that generate beams, prisms through which such beams can be reflected and refracted) and (2) which are internal to an understanding of the experimentally relevant kinds of phenomena as well as of the explanatory relevant features of these phenomena.

So the idea of “constructing a model” becomes the idea of there being a certain *family of language games*; the idea that once a certain number of games have been established, an unspecified variety of new games will eventually pop up. Toulmin writes,

"It is in fact a great virtue of a good model that it does suggest further questions, taking us beyond the phenomena from which we began, and tempts us to formulate hypotheses which turn out to be experimentally fertile. Thus the model of light as a substance in motion is a good model, not only because it provides us with an easily intelligible interpretation of the diagrams of theoretical optics … but also because it carries us beyond the bare picture of something unspecified traveling, no matter what, and leads us to speculate about light-particles or light-waves as the things which travel, or are propagated: these speculations have borne fruit. Correspondingly, the models of thermal and gravitational phenomena as effects of caloric and gravitational fluids were bad models, since the questions they prompt one to ask turned out in fact to be unprofitable …” (p. 39)

Now, the Wittgensteinian approach with which this idea of the development of “fruitful” models is associated comes out from the early part of the book where Toulmin formulates the issue purely in linguistic terms. The development of the sciences is seen a hinging on our “coming to ask new questions” about phenomena (p. 21), “learning to draw pictures of states of affairs” (p. 28), and ultimately,

"When a new theory is developed, all kinds of phrases which in ordinary life are devoid of meaning are given a use, many familiar terms acquire fresh meanings, and a variety of new terms are introduced to serve the purposes of the theory ... the adoption of a new theory involves a *language-shift*, and one can distinguish between an account of the theory in the new terminology - in ´participant´s language´ - and an account in which the new terminology is not used but described - an account in onlooker´s language´. (p. 13)

The theoretical developments of the sciences are seen as associated with certain developments of (our) language. It is true that theories may correspond to very radical new forms of language, but still one must be able to "describe" these radical forms in an "onlooker´s" perspective by means of ordinary, or natural, langauge. This

is an important part of Toulmin´s account of the sciences. However, there is another part that is equally important. For once a new kind of language has been deviced within a particular branch of science, it is supposed not to ground one particular scientific practice, but to lay the foundation for an ever growing variety of such practices; and the use of ordinary language, as well as the invocation of a number of "other" theoretical concepts, enters into the conditions for the possibility of erecting new particular forms of explanatory endeavors. Toulmin wants to draw our attention to a new, philosophical, account of the way in which the sciences can be said to be *stratisfied*. The various practices and methods of the sciences are interwoven, and the introduction of some presuppose the application of others. Indeed, it is no exaggeration that it was an explicit aim of Toulmin to point to the mutual entanglement between, and enmeshment of, a range of language games, and do so by paying attention to the way in which the possibility of *using* certain theoretical terms presupposes the *utilization* of various techniques of inference which again presuppose the *application of certain whole language games*, and vice versa. Toulmin writes,

"Theoretical physics is *stratisfied*: statements at one level have a meaning only within the scope of these at the level below" (p.80)

"..it is important to ... distinguish between four different classes of sentence that one meets in books of physics ...
(i) abstract, formal statements of a law or principle-e.g. Snell´s Law;
(ii) historical reports about the discovered scope of a law or a principle- e.g. that the statement that Snell´s Law has been found to apply to most non-crystalline substances at normal temperatures;
(iii) applications of a law or principle to particular cases- e.g. the statement that, in a particular prism now under examination, the directions of the incident and the refracted beams vary in accordance with Snell´s Law; or the statement that the sunlight over a certain wall is travelling to the ground behind the wall in a straight line;
(iv) conclusions of inferences drawn in accordance with a law or a principle - e.g. the conclusion that, the angle of incidence and refractive index being what they are, the angle of refraction must be 36 [degrees]..". (p. 90-1)

Note, this strict stratification of the vocabulary of an experimental science, a strict classification of various classes of sentences, does *not* point to a certain method for the development of theoretical thought. It is not the basis for there being a certain *structure* within the development of physics. It is true that the formulation of the principle (Snell´s Law) must be given before any statement concerning physical substances can acquire the special meaning they have within particular disciplines, and that the report of specific experimental results in turn presupposes such characterization of the various substances. However, what characterizes the growth

of scientific knowledge, on Toulmin´s account, is not the development of any particular "stratification" associated with any one particular "law" or "principle". It is the ability to survey the possibility of *jointly applying* a number of *different laws* that matters. He writes,

"If we are asked what the job of Newton´s laws is, we may not know at first whether to say that they describe the way things move, define such things as "force", "mass" and "momentum", or tell us about the mode of measurement of force and the rest. But there are very good reasons for this uncertainty. The laws themselves do not do anything: it is we who do things with them, and there are several different kinds of things we can do with their help. In consequence, there is no need for us to be puzzled by the question whether Newton´s laws are descriptions, definitions, or assertions about methods of measurement; rather it is up to us to see how in some applications physicists use them to describe, sqay, the way a shell moves, in others to define some such quantity as electromotive force, and in others again to devise a mode of measurement of, say, the mass of a new type of fundamental particle. It is not that the laws have an ambiguous or hazy status; it is that physicists are versatile in the applications to which they put the laws." (p. 89-90)

Thus, the individual theoretical features of a given branch of science can be applied in a variety of manners because there is a variety of ways in which the utilization of these elements can be *enmeshed* (in my terminology). Note that saying this is not just describing a surprising fact. Instead, it is characterizing a special kind of unity within the sciences; a unity that comes about because we can picture scientific practice as a form of *language*. It is part of the "grammar" of the experimental sciences that their elements can be utilized as words entering into various combinations with other words (as pieces to be moved in a variety of language games). This linguistic feature of the practice of experimental sciences was already underscored by Watson:

“Instead of treating the subject as a method of representation by means of which we propose propositions to be compared with reality, we regard the experimental facts as the data and the method of representation as a system for connecting the facts which would otherwise remain unrelated to each other except by accidental external connections, as opposed to intrinsic logical connections. Compare this with the use of connected signs in a language as opposed to meaningless array of signs which have no application in language.” (Watson 1938, p. 123)

The point is to conceive of facts as *signs*, which is to say that they are only the facts they are in so far as there is a method for making *use* of the facts; namely the possibility of connecting different facts with one another corresponding to a certain method of representation – representation not of individual facts but of different kinds

of physical *system* (our example was “dynamical systems”).

The normativity of science

As I will explain below, describing the possible practices of the experimental sciences as a kind of "grammar" is not to point, as such, to a certain logic of discovery or method of thought in any strict sense; instead it is underlining the *normative* character of the sciences. This is especially clear in respect to Toulmin´s account. After a long critical discussion of two classical philosophical ideas about laws of Nature; namely those of Locke and Hume, as well as after a critique of some recent attempts to overcome both of these ideas, Toulmin finally comes to a main point of his: The idea of a "logic" of scientific discovery, or the idea of a "structure" of science, involves the fallacy of not acknowleging the way in which the development of science, times and again, involves "a contribution on our part", and involves "decisions"(p. 128). In short, Toulmin points to a kind of *freedom* within the development of science, which, however, is *not* an expression of a conventionalist or nihilist account. It is the very freedom of human action, in general, which is at issue. This freedom can never be put aside; but there are ways in which in can be shaped and informed. So deep down, Toulmin´s book is about *the normativity of science*; it is about following rules. He wants to criticize Locke´s picture of natural laws as "laws of necessity" (rules as rails) without endorsing the Humean notion of natural laws as, merely, our contingent constructs.

The recent explications of laws of nature are criticized because they think they have to address the issue if laws of nature can be said to be "true" or "false". To Toulmin; laws of nature are not even candidates for being "true" and "false". It simply doesn´t make sense to say that (p. 10). Instead, laws of nature may be said to be *applicable* in various ways in various instances. As such, they may be said to *hold* in these cases. And that is all there is to say, in general, about laws of nature *as linguistic entities*; a pieces in a variety of language games, with which we can make a variety of moves/uses. However, there is a whole lot to say about the fact that language games can be played, and played *like this*. The normativity involved in making use of experimental findings is not to be denied; and here we have to do with the normativity of human action, in general, not with a special "logical" or "theoretical" necessity.

Toulmin´s critique of both the clasical and the recent conceptions of laws of nature turns out to have parallels to his critique of various ideas concerning "the place of reason in ethics", which of course was the title of Toulmin´s first book. He writes,

"Where ´the principles of necessitation´ view classes of laws of nature as opaqualy necessary propositions, and the ´constant conjunction´view clases them as contingent propositions of a somewhat sophisticated kind, Schlick sees the unsuitability of putting them in either category. But his reaction is too strong. For his conclusion is that, if the laws of nature are neither necessary propositions nor contingent ones, they cannot properly be spoken of as propositions at all; they must accordingly be found a place with those other alleged quasi-propositions, the prescriptions and recommendations of ethics and aesthetics. Hence the imperitival words he chooses: ínstructions´, ´directions´, and ´rules of behaviour´. As so often in philosophy, in objecting very properly to his opponent´s conclusions, he is betrayed into the same fallacy as they." (p. 103)

The fallacy Toulmin here warns against is the very idea of allocating the application of propositions (statements that have a definite truth value) a certain "place" within scientific reasoning in general. Toulmin finds that modern forms of constructivism, instrumentalism, and pragmatism have fallen victim of this fallacy (which parallels the fallacy, I think, of believing that the giving of reasons has a particular role in practical deliberation in general, which Toulmin criticized in his first book *The Place of Reason in Ethics*).

Getting it right; normativity without truth?

The hard question to ask Toulmin is of course the sense in which the normative rightness associated with particular language games is associated with a substantial notion of truth, or better: Does Toulmin´s view of the experimental sciences involve a refusal of scientific realism? The straight answer to these questions is properly that it is hard to tell from the text (disregarding what Toulmin has written in other works), and a defender of Toulmin might want to claim that there is no immanent reason why these questions *have* to be put to Toulmin. He may well be right in the sense that he has erected the proper background for even *raising* the issues of realism and truth, at all.

The important thing, however, is to make clear what role the notion of ´models´ plays in these semantic investigations. As stated, Toulmin associates the notion with mathematics, and his examples seem to this reader to strongly indicate that models play a role somewhat analogous to those of a Kantian schematism. We have to do with methods of demonstrating in an "intuitive" or understandable sense how the use of various theoretical terms are asociated with a certain procedure for the production of certain physical characteristics. The term "refraction indices" only has a meaningful use when corellated to the utilization of the method of producing

and tracing beams of light, observing the possible deflection of such beams.

What is more, the utilization of certain methods of representation (principles of inference in Toulmin´s sense), must be seen as part of the application of the *whole* of the techniques associated with a certain branch of science. So far, what differs from Kant, is only the acceptance of a plurality of forms of intuition, and thus of various forms of schemata. The distinctive Wittgensteinian feature of Toulmin´s account lies elsewhere; namely in his adaption of the *early* Wittgenstein´s notion, in the *Tractatus*, of laws of nature to the effect that these are (but) laws for the objects of a certan *model* and do not represent Reality as such. Toulmin adds two things to this Tractarian view (or Hertzian if you like): First, the use of theoretical terms in the application of a model to a number of phenomena constitutes the *criteria of meaning*, in the later Wittgenstein´s sense, that conditions the possibility of making sense of a particular use of certain terms within the sciences. Second, the issue is not formulated squarely, as was the case in the *Tractatus*, as hinging on a strict distinction between "saying" and "showing". This is precisely why Toulmin states that "the laws in themselves do nothing". So the idea that the possibility of applying a system of laws "tell´s us something" cannot be stated globally or universally as a fundamental philosophical statement about *das Gerüst der Welt*. What it tells us, what shows, when we find that a method of representation is applicable to a range of phenomena, is only a matter of "learning how to go on" (as Wittgenstein might have put it) or of "finding one´s way around phenomena", as Toulmin explicitly calls it (p.104). In short, the applicability of all that is involved in the peformance of a branch of science to a number of phenomena informs us (1) that the use of certain forms of description and explanation concerning these phenomena *makes sense*, and that the practice of so employing the concepts in question *holds*. Here, "holds" simply means "it works" according to plan. Caution is called for: It is not that we have a neutral Archimedean point from where we can characterize the manner in which, in any context, whatever works is working. There is no general pragmatic or other kind of account of *how* it "works". The claim that something "works" is entirely internal to the family of language games at issue. Still, "it holds" is indeed a *universal formal feature* of any language game. It is the very idea of there being "moves" that can be repeated, moves that have a function in certain contexts, and moves that are *somebody´s* "move", including somebody´s *decisive act*.

I personally have an inclination to go transcendental at this point and state that the fact that certain games "hold" tells us something about the causal structure of Reality. The last chapter of Toulmin´s book indicates what might be his misgivings about this inclination: It seems as if he draws an analogy between "causal" and "dynamic" systems, and that he thinks that this is merely a feature of certain *models*,

not of Reality as such. He mentions Wittgenstein´s analogy betwen "machines" and dynamics. I do not want to scrutinize Wittgenstein´s original view here, but wish merely to point out that Wittgenstein might well have reminded his readers of a well taken neo-Kantian point to the effect that any "dynamics" must be associated with a *kinematics*, and need not involve any idea of "machines", to the effect that the idea of some kind of unity between kinematics and dynamics lies at the heart of what characterizes a domain of lawful physical interactions. I suggest that Toulmin, at the time of writing this early book, did not have a clear idea about the conditions of a "dynamics". Perhaps Toulmin caught on to Watson´s account. Watson was, in contrast to Toulmin, acquainted with the principles of physics. True, Toulmin was already the most prominent inheritor of Wittgenstein´s later philosophy in the sense that he was able to apply and develop the Witgebsteinian themes he had been introduced to by following Wittgenstein´s lectures. He was able to produce a new and fruitful philosophy instead of merely trying to explain to the World what the great master had said about this or that.

Consequently, I suggest there is a neo-Kantian consideration that Toulmin did not realize in his early book, a lesson which Watson implicitly had learnt by associating the "symbolism" of both classical and quantum physics with the *Hamiltonian* formalism: The Hamilton formalism is, as I have argued extensively elsewhere, an expression of a certain kind of unity between kinematics and dynamics.[3] When such a unity is established, as was for instance the case when quantum mechanics was elaborated, we can say that there is something that "holds" or something this succes "tells us". It is not just a matter of having established one, out of a number of other possible, branches of human activity. Now the strict Kantian view about this unity is to see it as a precondition for an understanding of the *lawful* character of a certain field of physical regularities. Toulmin might be right in denying that particular requirement, but in making this denial one cannot simply keep silent of the issue. So one can argue that Toulmin did not really consider the very idea of establishing a *science*. He did not ask what it means to establishing a *rational* investigastion into natural phenomena. The distinctive character of the sciences is not an issue for Toulmin. Thereby, he may be said to fall victim of the same kind of fallacy of which he accused Schlick and others. He reacted so harsh against received views that he had to formulate his own view as an *alternative* in a certain sense; a view defined by *not* having to bother with certain well earned philosophical questions about how the sciences rationally reveal the causal structure of Reality.

There is a way to defend the young Toulmin: You may say that his point is

[3](Brock 2003)

that the development of the various sciences need no distinct *philosophical assessment*. What succeeds in the sciences speaks for itself and the philosopher is only called for when the journalists of science brags or are confused as to the factual states of affairs within the sciences on which they report. So Toulmin is right in denying that the development of the sciences do not correspond, say, to the development of Human Reason, or to the acquisition of a special clarity within our epistemic capacities. I will come back to the assessment of Watson and Toulmin´s understanding of the natural sciences below.

A variety of versions of the semantic notion of theories

But first, let me give a survey of some more canonical versions of the semantic conception of theories. These differ in many respects. First, are we to say that models represent ideal, actual, or possible phenomena? Second, does a given model embody a structure in a formal sense before it answers to a physical sense, and does "formal" mean "mathematical" or "logical"? Third, is a model an abstract entity or can a model also be iconic, that is, be a concrete miniature model of something else. I will offer some answers to these questions below. But first, let me underscore what is in common to all the versions: All these (more and less implicitly) point to certain fixed elements within the analysis of theories. There is a feature of theories relating to verbal expressions, another feature relating to the formation of certain logical or mathematical structures, and there is a feature relating to the way in which such structures (in accordance with the elaborated set of verbal expressions) may "fit" or be adequate to a series of real phenomena. Finally, all the versions hinge on some idea as to the issue of how the possibility of making mathematical sense is associated with a possibility of making physical sense.

Another basic thread is that any scientifically relevant phenomenon must as such be configured. Phenomena are neither raw events nor pure experiences; they are constructs. Phenomena appear, concretely and real; but they are not occurrent effects of anything. They are symbolic, they answer to prescriptions, and they satisfy certain previously elaborated schemata. Most importantly, the way in which any one particular phenomenon is prescribed is conditioned by the way in which a whole *range* of concepts are mutually conditioned.

The model is supposed to be a focus of attention, and the claim is that *only on the condition of a certain kind of structured attention it is possible to observe a given phenomenon*. The model can function as the medium within which certain phenomena may appear. "The pendulum", "the electric circuit", or "the planetary orbits" are examples of such models. Realists like Aronson and Harré take such

models to represent objects of a certain type; empiricists or naturalists like Van Fraassen and Giere take the models to be abstract structures (of a certain mathematical kind) relative to which the real world is cognisable or detectable. Finally, the verbal aspect of theories has to do with there being a certain logic of description relative to certain kinds of models. The various descriptive features of the models mutually exclude and condition each other. The possible description of the model must answer to rules of description, and describing the model has *normative* implications (say, “anything to the left of this line cannot lie on the right side”). There are “tautologies” expressing the structure of models. A model forms a logical space.

Obviously, all versions of the semantic conception of theories hinge on an implicit idea as to “this is how it is done”; in science we *do* make use of models and there is nothing called the use or application of theories in abstraction from this fact. The elaboration of theories and the elaboration of models is internally related. There is neither reference nor empirical content to be had in abstraction from the elaboration of models. Finally, models cannot be said to be *applied* to reality. Modelling the world is a kind of map-making. You can *follow* a model, utilize it and trust it, but there is nothing called confirming or assessing a model. The model does not represent anything that can later be confirmed. The model is but a way to orientate yourself in the world as well as to trust it.

I too adhere to the semantic conception of theories but I have also two basic points of criticism. First, most of the philosophers of science I have mentioned (Toulmin and Harré excluded) have very muddled semantic ideas, not the least concerning what it means to “apply”, to “make use of”, or to “use” certain symbols and certain constructs. Typically these notions are associated with notions concerning the *aim* of science, the *cognitive attitude* in accepting theories, or the *present historical status* of a certain research program. These philosophers associate the characteristics of using models with a special concern about giving and evaluating *reasons* for pursuing certain things. Second, within the different versions one typically portrays scientific disciplines as ways of “adopting” oneself to the world in somewhat Darwinnian fashion. The very process of elaborating theories and models is taken to exemplify, or even embody, a “natural development”.

My criticism is that the various attempts to defend realism, empiricism, naturalism, constructivism etc. stands and falls with their respective accounts concerning the meta-perspectives that I have just mentioned, and do not hinge on the proper account of the relation between theories and models. Usually the philosophers of science portray the various language games of constructing theories and models, only, in relation to a meta-practice concerning the aim and historical structure of science. At best, the account of this meta practice functions as a kind of

transcendental condition for the possibility (i) of constructing theories and models, or (ii) of providing a Darwinian elucidation of the matter. But then, the philosophical effort boils down to a normative claim to the effect that a certain kind of methodological practice is possible. So we have to do with a rigid kind of neo-Kantianism. We have then blocked the possibility of asking why this is the kind of practice we call scientific or why this kind of experience has got a metaphysical value at all? Some idea as to the success of science has become our philosophical framework.

On this point Nicholas Rescher is honest (Rescher 1987, 2000). He explicitly points to the fact that a historical-pragmatic approach to science aims not only at elaborating our experience in certain directions but aims also at clarifying and justifying certain *regulative principles* of enquiry. The philosophy of science on this account is not an isolated philosophical issue concerning the understanding of scientific progress but is part of constructing a proper epistemology.

In contrast to all this, I think that *one should let the semantic conception of theories stand on its own feet*. The account of how the elaboration of theories is part and parcel of the construction of models should not - as described - be in need of a certain philosophical backing but should rather be part of a thorough reorientation as to the issue of what, at all, an adequate philosophical assessment of the sciences might amount to. It is here that the three Wittgensteinian notions of use may be of help.

I believe that all the recent attempts to explain and defend a semantic notion of scientific theories do in a sense relate to the issue of associating the possibility of making *mathematical* sense of certain structures, on the one hand, with the possibility of making *physical* sense, on the other. As I see it, all the versions hinge on a recognition that some sort of *schematism* is necessary for the possibility of making physical sense. Here is a short survey of the various versions as to this issue: The mathematical versions of Patrick Suppes and Van Fraassen saw mathematics as a method of making sense that was, as such, applicable to a phenomenal realm. Thus, mathematical models become "representative" in Nancy Cartwrights sense; they represent something that can possibly happen or be the case. In the structuralist version of Sneed-Stegmüller and in Harré, Way, and Aronson´s semi-structural version, the reverse is the case: Here, models always carry physical meaning, the issue is not whether they are applicable but which of the models happen to be realized in Nature. To Sneed-Stegmüller, there are formal (but not semantic) criteria associated with the possibility of models but these criteria embody no special and distinct "formal meaning". The Sneed-Stegmüller concept of models corresponds to the original Kantian Schemata in that they can always be

realized by certain objects. The models of Cartwright, Harré, Way, and Aronson are rather "reversed schemata"; the realized, concrete exemplar corresponding to certain models is given independently of the possibility of "abstracting" crucial formal aspects of the model. Models generate concepts just as much as they are realizations thereof. To Cartwright, this link is essential to the effect that the possibility of abstracting formal features of given models allows us to see the models as *concretions* of the formal abstract aspects (specific causal structures that may be actualized within different kinds of "nomological systems"). To Harré, Way, and Aronson the point is rather that what seemed to be different kinds of models may turn out to involve the *same abstract* features, which we can then regard as the *source* of a certain family of models, yet to be generated.

The elaboration of models is on all these accounts a matter of making sense, of making sense by means of exemplars. The mathematical version of Suppes and Van Fraassen concerns making physical sense, as such, by means of making mathematical sense. The structuralist verison of Sneed-Stegmüller is a matter of making sense by means of pointing to specific instances of that sense. The semi-structuralist version of Harré, Way, and Aronson is a matter of making *better* sense of what certain models already implicitly embody. For Cartwright it is a matter of making a *right* sense of what the model reveals, of revealing the very idea that is put on display through the model (Cartwright mentions Lessing in her account of this thought although it also has an Aristotelian flavour).

The problem that I have with all this is that the possibility of making sense of something as part of the practices of physics is taken, *literally*, as a matter of making "physical sense". The terms used here are mine; but it is quite obvious that the possibility of making sense, in the context of physics, for all these writers carries a distinct *ontological* or *epistemological* element. The phenomena are saved, the real forms of the world are discovered, or the essential structures of physical reality is disclosed. The possibility of actually applying a certain model is seen as some sort of *fit*; there is something that *succeeds* in relation to the world or in relation to our attempt to respond to it. We have to do with an achievement within our principal cognitive endeavors. The possibility of actually applying mathematical notions to the world is seen as a basic thing; it tells us - they all think - that our thoughts about the world really does have an empirical import.

I think that there is a failure here, a failure that resembles that which I find in a number of accounts of Kant´s idea of a schematism (I think in particular of M. Friedmann and R.E. Butts). The schematism is seen as a method for *specifying the senses* of the logically coherent set of concepts in terms of which we represent physical Reality. The schemata specifies the categorical structures of physical

thought. The principal, abstract notions of cause, motion, and substance become specified in relatiion to the concepts of matter, force, and causal interaction. In that sense, Newtonian physics reveals *how* the physical world corresponds to the very (Kantian) idea of a system of things that can be analyzed by rational means.

McDowell between the Myth of the Given and Coherentism

I want to associate the different versions of the semantic notion of theories with two kinds of "extreems" that we considered in the former Part of this book and which - according to John McDowell - characterizes many forms of philosophy. If we invoke the poles portrayed McDowell, the empiricists like Van Fraassen, can be seen as playing the role of the free-floating coherentist, spinning in a void, that sees the sciences as selecting and elaborating a certain web of concepts without having to consider how there might be objective constraints on any such net. The realist versions can instead be seen as falling victim of a very special version of the Myth of the Given; the myth that there are categorical structures of Reality - the myth that the structures under which a range of phenomena falls correspond to a basic structure of Reality itself. Cartwright and Harré is aware of this fallacy, and I will discuss Harre´s *Bohrian way out* below. Cartwright takes an Aristotelian way out. She sees the categorical structures as idealized versions ("as nomological machines") that still can be said to be actualizations of a certain tendency of Nature itself to acquire a causal structure in given cases. So we have to do afterall with a basic "capacity of Nature".

However, to me, all of the recent proponents of the semantic notion of theories fall victim of the fallacy (which Kant pointed out) of believing that the structure corresponding to the operation of the Understanding corresponds to the true and rational account of Reality. There is no straightforward route from the realm of phenomena to the realm of Noumena. Similarly, from the fact that certain structures are realized within what we take to be experimentially adequate phenomena there follows nothing, as such, concerning the objective structure of Reality nor about the adequate structure of experience. The structure of experience does not embody a rational world view; it only symbolizes how any conception of Reality is associated with a set of normative constraints in the elaboration of any such conception. The space of concepts is normatively constrained and this, I agree with McDowell, is a matter of how the normative constraints answer to a variety of empirical constraints on the development of concepts.

Watson and Toulmin steering the course between McDowell´s Scylla and

Charybdis

Now, given our account of Watson and Toulmin´s conception of the relation between models, linguistic rules, and the practice of utilizing theories in experimental research, we have in effect found a way in which to steer a course between the Scylla and Charybdis portrayed by McDowell. We have learnt that our making sense of the world by means of models is not primarily a matter of learning to give shape to what our cognitive effort are *about*; it is not a realm of reference that is shaped. In our Wittgensteinian language, we can say that instead we give shape to the *pieces* with which we learn to make moves in a variety of games (for instance light rays and prisms). Thereby we learn that some pieces can be used to make moves in a variety of *different* games (for instance toying with electrons is part of most experimental practices in modern physics). Now our ability to toy with objects like electrons, photons, light rays, electric circuits, or ideal gasses may be said to constitute the *kind of evidence* we can produce in respect to our adequate experience of a variety of different kinds of physical systems. What we know of an atom is for instance a sum total of our experience in toying with - what we can claim to be - various *parts* of this special system "the atom". So *it is not the structure of experience of an independent Reality, as such, but the structure of possible EVIDENCE that we shape by modelling the world*. The fact that it is *us* that structure the possible evidence does in fact not lead to a kind of subjectivism, but instead to a kind of objectivism. For our active structuring of the possible forms of evidence is part of our being clear *what it means* for something to be evidence of something *else*. We are in the clear that *these* kinds of phenomena have to do with *this* kind of physical systems. Thus, by having a clear (Fregean) sense about *how* we are to observe the presence of certain things, we manage to refer objectively to something the configuration and constitution of which we can - actually and objectively - *think about*, but which we cannot experience *as such*. We do not "know" *the atom*. We know *about* the atom; and do so through our being able to experimentally deal with various atomic constituents. I will discuss this special form of scientific realism in more detail, below.

Here, the point is that our understanding of physical Reality, our conceptual grasp of it, does not unfold in abstraction from the way in which our immediate experience of certain kinds of phenomena presupposes the application of certain concepts in a way that "already makes sense". This - McDowellian (or should we in fact say *Tractarian*) point - is precisely what the idea of *modelling* the world expresses.

So I think it should be noted that both Watson´s and Toulmin´s analysis of the experimental sciences in this way meet the charge I put to the various accounts of the semantic notion of theories. They do not analyse these sciences "from

sideways on" nor "as from outside"; but neither have we to do with a strict internalist view. Watson and Toulmin do not merely analyse how the sciences may come to assess *themselves* by becoming aware of the criteria and methods that, as a matter of fact, characterizes these methods of empirical thought. In short, there are no specific aims, values, standards of cognitive success, formal criteria as to exactness and the like, nor any elaborated idea of what makes up a "complete", a "mature", or an "efficient" epistemic practice. The only thing we are told is *this is how we do it*. The only persons who can truly understand *what* it is that we do "like this" are the participants of the various sciences, but anyone who cares to learn about the possibility of establishing and maintaining *these* practices can catch on to the relevant and informative survey of the various aspects of the given practices, given by Watson and Toulmin, including the mutual entanglement and enmeshment of these features.

So it is pretty much like learning that the everyday doings of a certain people unfold according to a certain grammar or language. Its like saying: There are things you can do (that makes sense) and things that don´t - without there being a severe circumscription of a certain range of "possibilities". The "language" of a given science should be understood as we understand a *game*, in that we are well aware that this is in principle a quite simple, narrow, and less flexible kind of activity, even if the particular game includes leisure and relaxation. Also, it is not a contingent fact that most games require the cooperation between the participants and a *referee*. You can say; the reminders that Watson and Toulmin put to us correspond to what a "referee of science" might care to bother about.

Watson reminds us in effect of the main features of the Hamiltonian practice of theoretical physics, since Helmholtz´s original attempt to give a new account of the unity of physics in *über die Erhaltung der Kraft*. Watson tries to illustrate that practice as a certain set of *linguistic* practices, a variety of "symbolism". His aim is to make clear how the introduction and employment of a variety of representational techniques secure, as it were, a readiness and an openess in respect to the making of experiments. He begins and ends his book by making use of the notion of a "laboratory". This is a place where language is put to work and where the trained participants always find a new way to "get on with it". Watson´s paradigm is the Cavendish laboratory where able experimentators produced new concepts and acquired new insight into *what happens in the world* (Watson, p.1).In the laboratory you are able to make things happen. You do not "discover" or "grasp", nor "construct" or "create" what happens; you mange to *let* it happen. The experimentator´s ability to do this and the fact that *this* can happen are two sides of the same coin.

There is however a "positvist" ring to Watson´s account. As with another of

Wittgenstein´s associates, Waissmann, the stress is on the possibility of clarity in our linguistic endeavors. It is a matter of being in the clear what is going on and what we´re doing. And as with Waissmann, this clarity implies a certain bonus. We are allowed to lean back and sigh in relief that the adequate description of the practices of mathematics and physics, respectively, in fact do embody certain formal and normative features we - as a matter of course - cherish. There are in fact, we state in relief, certain algebraic, and causal, and nomological features to be asociated with the two families of linguistic practice. In the case of Waissmann, we acknowledge with relief the adequacy of Felix Klein´s Erlanger Program, in the case of Watson, we acknowledge with relief the Hamiltonian features of quantum physics. In that sense, the relief points to a certain kind of *conservatism*. We get a picture of possible forms of development that involves continuity and familiarity. But in contrast to both Goethe, and *my* Wittgenstein, we do not get the full acccount of a city that continously grows by the acquisition or erection of new suburbans; because we do not get an account of what makes up the structure of a city, anyway. Here, maybe linguistic practices can grow and be extended as pictured by Watson, but what does this tell us, at all, about the specific character of, say, an *experimental* science or a branch of *physics*. We do not get any idea as to the rationality of working with *conservation* laws; and that, precisely, is what characterizes Hamiltonian physics.

So here is a point where we might ask if Toulmin does better: Before I come to that let me invoke what I see as one of the major qualities of Ernst Cassirer´s understanding of rationality. Cassirer does not see rationality as something a priori. Rationality comes forth when we realize how the fact that something "works" or "functions" in a certain context has an impact on the prospects for the development of *other* contexts. A paradigmatic example would be the fact that certain forms of calculus works within mathematics or logic conditions the possibility of a new development of, say, physics, or technology, or the arts. The *integration* of certain features of given practices (i.e. "symbolic forms" in Cassirer´s sense) thus becomes part of the *differentiation* of a variety of such forms. There is no *one* system of symbolic forms, be it the system of Klein or Hamilton. The point is instead that no form of symbolismthat works can escape the possibility of becoming part of the conditions for the configuration of *other* forms; there must in principle be *some* structural or formal connection between any two symbolic forms.

I think that Toulmin´s idea about the - inescapable - stratification of the practice of modelling answers to this Cassirean view. In that sense, I think that Toulmin can be said to have underscored the possibillity of there being *a systematic connection between possible uses, utilizations, and applications* of the various elements of our linguistic practices. The network of Toulminnian practices has an

architectonic structure that need not be associated with the methods in Watson´s laboratory. The family of practices that makes up geometrical optics, on Toulmin´s account, are erected stepwise and always as part of an attempt to *maintain some grounding features* of these practices while still extending the family. No wonder, Toulmin later associated all this with the development of a natural species.[4]

A main example of such grounding features were those elements of geometry and dynamics that lies behind Kant´s elaboration of the schematisms, and which are embodied in the canonical Hamiltonian method of representing the phase-space of given physical systems. Details apart, this is the main example of how the possibility of making mathematical sense is associated with a possibility of making physical sense.

The Bohrian way out; Harré on experiments and realism

Now, as I have promised above, I will defend a form of scientific realism. I already explained how our modelling the world is a matter of giving shape to the possible *evidence* for our theoretical claims about objective Reality. As I have written extensively about elsewhere, I think that Niels Bohr´s understanding of quantum physics precisely hinges on a new account of the possibility of evidence.[5] I thus think that Bohr elaborated a form of scientific realism; and the best account of this is - I believe - given by Rom Harré. It is interesting to note how Harré links his intepretation of Bohr with a *Wittgensteinian* account how our uses of concepts are embedded within a variety of practical activities.

In this context, for Harré, the important thing is the way in which the notion of a model is associated with the notion of an *experimental arrangement*. Making a model amounts to making an experimental design. The preferred example is the Stern-Gerlach apparatus utilized in discovering the spin effect of atomic elementary particles. Here, the quantum theory is but a means to construct such an experimental design the concrete and particular aim of which is the possible production of certain kinds of phenomena. It is a language game. It is a matter of toying around with certain atoms. We let the atom be a piece now in this particular game, soon in another. Now, it turns out that in so far as Nature allows (Harré would say “affords”) the production of certain phenomena by means of a certain piece of apparatus *when utilized like this*, Nature might also allow that one can produce another kind of phenomenon by means of the same apparatus when utilized *like that*. And so it might

[4](Toulmin 1972)

[5](brock, 2003)

turn out that two different language games that make use of the same pieces (such as atomic constituents) cannot be simultaneously *utilized*. Those utilizations are "complementary" and can consequently be *applied as such* within an explanatory account of the physical systems upon which we measure.

What a dispute over realism might mean

I agree with Harré that this approach might form the first step in a proper causal account of atomic behaviour. But what is important here is, in the first place, that we are just about to find out *what a dispute over realism might mean* in the context of experimental physics. Because we are just on the verge of finding out what it means to have an experimental science, at all. We are trying to explain what it is and what it means that we manage to make experiments with something *else* (than what is defined by means of the experiement).

The strategy is this: Recall our basic problem concerning the possibility of describing agency. According to our logistic of action, which I put forward in the first Part of tis book, it follows that there is at the outset no clear-cut circumscription of the particular activities of science. Do they perhaps embody a special kind of thought or a special kind of doings? Consequently, we (following Niels Bohr) attempt to introduce a manner in which to picture scientific activity *as* a special kind of activity involving the production of signs, the use of signs, the utilization of such uses, and the application of such utilizations etc. Such a description does in itself form part of a "language of contrast". The circumscription of experimental activity can only consist in an account of how it differs from other kinds of well-known activity, for example how narrow and restricted it is supposed to be. This is how "ordinary language" is necessary according to Bohr (Brock 2003). It is not that ordinary language carries a special epistemic or semantic status. Ordinary language is but the never ending and far reaching possibility of expressing contrast between particular activities, corresponding to Toulmin´s "onlooker´s language".

In this way, scientific experimentation (whatever else it is) is something towards which anyone sharing the ability to participate in "ordinary" conversations can be *instructed*. There is something called teaching how it is done. There is something called experimental "refereeing" in the sense of Watson and Toulmin. And what you are taught to do, in learning to create certain forms of experimental design, is to be able to idealize both the causal structure and the spatio-temporal configuration corresponding to a certain kind of (conceptually defined) physical system.

Following Niels Bohr, this is the way in which we shall understand the possibility that certain *phenomena* appear within the utilization of an experimental

design. For instance, "particles" and "harmonic waves" are idealizations, they do not coressponf to a pre given objective Reality, as such. However, there are some (atomic) objects that are put on display within the appearence of the phenomena. These objects (say, electrons or photons) are on the other hand real constituents of a physical (atomic) system, the causal structure and constituent features does *not* correspond to the defining features of the phenomena. These objects are thus, Bohr calls them, "abstractions". In two sense, first they are not appearing as isolated, individual items but always as elements of an atomic system under given conditions; and second, they enter into the experimentally appearing phenomena as "atomic elements", and that means as abstracte from a whole atomic system. Or put in th language of quantum mechanics; the *free* objects that enter into phenomena are manifestations of features that atomic elements have as *bound* within atomic systems.

Abstraction and idealization

The notions of abstraction and idealization are therefore important in our context. Agan, following Niels Bohr one can associate a given model with a kind of *idealization*, namely a cognitive ideal form of manifestation of something indescribably complex. That is the job of an experimental design, ideally modelling the production of experimentally relevant phenomena (say harmonic waves or particle trajectories). However, the model must embody *abstractions* (which here means *posits* corresponding to concrete *parts* of the objects and systems investigated). The idea of elementary particles, like electrons, is the main example of such abstractions; an electron is both a constituent of atoms and is an item that also, as such, might enter into a given range of phenomena. In this sense, mapping an electron configuration space (mapping a phase space or a space of possible energy states) is neither mapping the nature of a given atom, nor mapping a set of possible manifestations of such. As Rom Harré puts it, it is mapping what a given atom affords in the context of a variety of experimental designs. In line with Bohr´s terminology, I would rather say that the configuration of possible *bound* energy states is mapped relative to the emergence of *free* elementary particles within various forms of experimental set up.

Anyway, one may say that the phrase “the atom” expresses that certain features of reality are interrelated in accordance with the way in which these features count as pieces in a variety of language games. The model is a *model of such shared pieces*; say the electron (this specific part of the atom) is soon an electric particle, a harmonic wave, or a spinning non-classical moment of force. The model outlines how the same object might enter as a piece in different experimental games

in different ways. So Goethe´s (and later both Wittgenstein, Watson, and Toulmin´s idea of a formula for arranging a series of experimental experiences, actually plays an important role within quantum physics.

Now, in physics in general, one makes use of clocks, rulers, springs, and meters. Bearing in mind the recent idea of "pervasive computing" one might suggest coining the phrase "pervasive readings" because within an experimental design clocks, rulers, springs, and meters are integrated into the design. Their manner of integration expresses the very design. They do not function separately and one and the same piece of apparatus may be part of two different instruments of measurement according to the manner of utilization of the respective pieces.

The making of an experimental design

I want to end this Part of my book by elaborating on the issue of what it takes to make an experimental design. I will try to give a Goethean *Übersicht* of the many ways in which uses, utilizations, and applications are interwoven within the making of an experimental design. The initial step in an experimental design consists in the *application* of certain forms of measurement. Since the rulers, scales and meters will have to be both calibrated relative to one another and become part of the same experimental setup, these applications can be siad to be integrated into one construction. This integration is performed by (this construction is given by) means of a number of *uses* of various pieces of apparatus. Shutters are constructed, screens are erected, or possible tracks are outlined. The possible kind of outcome, the possible kind of phenomena that might appear within the experiment, is designed, in practice. This design is finally *utilized* within the observation of a particular phenomenon. The construction of the design and the consequent utilization is finally *applied* within the explanatory effort of interpreting the experimental production of phenomena as entering into a certain enquiry.

Thus, we can see what is crucial about the notions "theory" and "model". On this account; having a theory has little to do with either having a "world-picture" or having an opinion. Having a theory is like having a toolbox containing various elements such as principles (say, the conservation of energy), concepts (say, "current", "voltage"), and means for the identification and discrimination of objects and of phenomena. It is neither a matter of describing, nor explaining, nor in any sense accounting for what is involved in a ceratain language game. Instead, it is a matter of finding ones way around within a given *set of* games. It is a matter of knowing what one is doing even without there being pre-configured practices and predetermined links between different such. Having a theory is to incorporate a readiness for *consulting* (I suggest to call it) Reality in a way, which should have

rational implications concerning further steps one might seek to take. It is in this way that having a theory is having guidelines for the construction and employment of certain models in the ongoing development of the Art of experimentation.

Goethe:

"Man kann sich daher nicht genug in acht nehmen, dass man aus Versuchen nicht zu geschwind folgere, dass man aus Versuchen nicht unmittelbar etwas beweisen, noch irrgendeine Theorie durch Versuche bestätigen wolle; denn hier an diesem Passe, beim Übergang von der Erfahrung zum Urteil, von der Erkenntnis zur Anwendung ist es, wo dem Mennschen all seine innere feinde auflauren, Einbildungskraft, die ihn schon da mit ihren Fittichen in die Höhe hebt, *wenn er noch immer den Erdboden zu berühren glaubt*, Ungeduld, Vorschnelligkeit, Selbstzufriedenheit, Steifheit, Gedankenform, vorgefasste Meinung, Bequemlichkeit, Leichtsinn, veränderlichkeit, und wier man die ganze Schar mit ihrem Gefolge heissen mag, alle liegen im Hintergrund und überwältigen unversehens den handelden, so auch den stillen, von allen Leidenschaften gesichtert scheinenden Beobachter." (Goethe 1981, italics mine)

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