The Practical Intellect

- design and use of knowledge1

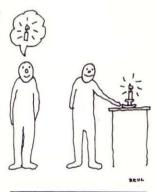
by Bengt Molander

B JÖRN LINN SAID in the introduction to his lecture "The God of the Artifacts" that knowledge is more important than intelligence; one reason is that knowledge includes judgement. This is important. In this lecture I stress that knowledge — or better, knowing, to emphasize the active form — is in the doing, it is knowledge in action, rather than something "underlying" it (in the mind or in the brain or something like that). In this respect I agree, for example, with Donald Schön's emphasis on knowing-in-action and knowing-in-practice. With such an emphasis it is clear that judgement is part of knowing.

Last week I gave a lecture at the "Interdisciplinary Program on Health Research" at Linköping University. As usual I stressed that knowing is in the doing. One of the people present at my lecture, a physiotherapist, wondered about the status of her knowledge and skill as a physiotherapist. (I don't make any sharp distinction between "knowing", "knowledge" and "skill" for reasons that will be clear shortly.) Her education, she said, began with theory and theoretical instruction, then she learned, through training and practical instruction, how to practice her "theoretical" learning. She had, however, now switched to theoretical research and did not practice her profession any more. And she had found that she had lost the ability to practice it. It was no longer in her backbone so to speak. This is a common experience I suppose most of us had as regards some skill.

The question she then posed to me was: What kind of knowledge did I lose, theoretical or practical?

There is only one proper answer to give: *Neither*. That is, refuse to accept the alternatives in the question as genuine alternatives, which is difficult, because the theory-practice dichotomy is so entrenched in our language and our thinking. But it is bad for thinking. Bengt Ahlqvist, in his lecture at this conference,"Architecture – field of

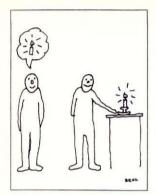


Tema DESIGNTEORI

Talk delivered to the International Conference on Theories and Methods of Design, Chalmers University of Technology, Göteborg, May, 1992.



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Teckning Hans Nordenström

activity or knowledge", seems to have been trapped by a similar dichotomy: "activity or knowledge". I am happy to join his insistence on the need for knowledge. What we need is however knowledge in the activity.

You have all seen the nice BRUL picture with a man (?), his idea, and a candle. It is a symbol of this conference.

This is a picture of the design process, if we read it from left to right. It is a picture of the cognitive process, if we read from right to left. However, the most interesting thing is not depicted, viz. why we can say that the very candle in the man's mind – his idea – is the idea of the candle on the table. The idea and the product are connected in the design activity. Or, if we read it from the right, as a cognitive process, the object which is there beforehand is connected to his idea by what he can do with the object (and other things connected to it) with the help of the idea. This is a pragmatic conception of design knowledge and knowledge of the external world.

Given the existence of a traditional distinction between "theory" and "practice", I try to move exactly *in between* these two. And this "in between" constitutes the space where knowing has its *life* – the place of knowing *in use* (live knowledge, active knowing, ... whatever label is preferred). This "in between" is the topic of my lecture today. I will discuss various concepts and approaches which will shed light on this (non-existent) borderline – which is a *connecting* line. One of them is "the practical intellect", but I will not start there.

And what was my answer to the physiotherapist after the initial "neither"?

Theory and practice are joined only *in* action, with theory-and-practice. She had lost the connection.

Attention

In an interview on the Swedish radio a couple of years ago the Swedish art critic and art professor Ulf Linde talked about "skill as a form of attention." It could also be rendered, quite generally: "knowing as a form of attention." (In Swedish: kunnande som en form av uppmärksamhet.) The topic of the interview was art, and Linde said that Picasso was always attentive. He said moreover that even though one cannot produce geniuses by education, it is possible to learn attention as a routine.

I am uncertain of how I should translate Linde's remarks into English. Perhaps I should add "application" to "attention". Anyway, the meaning is something like: having your mind-and-body-and-eye – that is, yourself – focussed on what you do (on what you do in what you do) but not in such a way that everything else is shut off from attention. Attention is something that belongs to the person, not to any part of the person in question, nor to knowledge abstracted from persons and action.⁵

"Skill as a form of attention." I take this as a characteristic of knowing (in action) quite generally. Attention is exactly on the right "borderline" between theory and practice.

Attention can be *learned* in various ways, but it cannot be learned through "pure practice" or "pure theory", supposing for at moment that such concepts make sense. Such learning requires a kind of dialectic, which I will explain through an example in the next section. Before I do so, one final general remark on attention.

Attention cannot, of course, be defined as a purely general capacity independent of subject matter and context. Attention cannot be moved from one field of competence to another. It is, to a certain extent, tied to a certain task field (or certain professional field), which in turn, is realized in a certain context. Attention requires familiarity with the subject matter and context. But attention cannot be exclusively task and context specific, then it would close off a practice rather than develop it. Attention must therefore *also* always be paid to the search for the unusual and the new. Knowing as a form of attention thus requires curiosity and even courage to go beyond the already established.

A master class in musical performance

In his *Educating the Reflective Practitioner* Donald Schön discusses a description of a master class in cello.⁶ Bernard Greenhouse, cellist in the Beaux Arts Trio, describes his early lessons with Pablo Casals as follows:

We spent at least three hours a lesson. The first hour was performance; the next hour entailed discussion of musical techniques; and the third hour he reminisced about his own career. During the first hour he sat about a yard away. He would play a phrase and have me repeat it. And if the bowing and the fingering weren't exactly the same as his, and the emphasis on the top of the phrase was not the same, he would stop me and say, "No, no. Do it his way." And this went on for quite a few lessons. I was studying the Bach D-Minor Suite and he demanded that I become an absolute copy. At one point, I did very gingerly suggest that I would only turn out to be a poor copy of Pablo Casals, and he said to me, "Don't worry about that. Because I'm seventy years old and I will be gone soon, and people won't remember my playing but they will hear yours." It turned out, of course, that he lived till the ripe old age of ninety-seven. But that was his way of teaching. ... He was extremely meticulous about my following all the details of his performance. And after several weeks of working on that one suite of Bach's, finally, the two of us could sit down and perform and play all the same fingerings and bowings and all the phrasings alike. And I really had become a copy of the Master. It was as if that room had stereophonic sound – two cellos producing at once.⁷

But then, Schön says, Casals did something surprising, and he continues to quote Greenhouse's description:

And at that point, when I had been able to accomplish this, he said to me, "Fine. Now just sit. Put your cello down and listen to the D-Minor Suite." And he played through the piece and changed *every* bowing and *every* fingering and *every* phrasing and all the emphasis within the phrase. I sat there, absolutely with my mouth open, listening to a performance which was heavenly, absolutely beautiful. And when he finished, he turned to me with abroad grin on his face, and he said, "Now you've learned how to improvise in Bach. From now on, you study Bach this way.⁸

Now just a few comments on this story (I have benefitted from Donald Schön's remarks).9

When I read the quoted passages to a friend of mine who is a keen amateur violinist (Olle Sjöström), he immediately said: "The greatest sin of the amateur is that she only listens to how she herself plays." I think this indicates something important about *attention*. The most important thing was perhaps not that Greenhouse should play exactly like Casals but that he should *learn to see and listen*, that is he should learn to be attentive in playing.

At the end of the quotation Casals says, "From now on, you study Bach this way." I take that to mean that he tells Greenhouse to study Bach now, not Casals! It is an important turning point. I think that similar turning points occur again and again if (and when) a person continues to develop her skill or her art. One of the tasks of a supervisor or coach is to help the student – who may already be a skilful performer – to reach the turning points and then to continue on his or her own. The student must also transgress the limits of the supervisor, which sounds a bit paradoxical. She must leave the rigid following of rules and instead use them more freely with skill and judgment.

Copying is therefore not only copying, but learning "a double attention". Let me sketch a possible structure: Greenhouse learns to attend to Casals' performance, and in this process he learns to perform and to connect his performance with a wider experience of his own performance, the way he learned to listen to Casals'. He learns this as a routine, by training. This routine then gives opportunity to let the attention go further, beyond the routine. The routine takes care of some of the basic attention (cf. Ulf Linde's words). Greenhouse can thereafter also listen to himself without being bound to copy Casals. He can pay "double attention" to his own performance. We can also put it this way: his attention has matured into a frame for advanced judgment and learning—not primarily about right or wrong, but rather about what can lead further and what cannot.

Attention is not a matter of "disinterested observation", it is a paradigmatic example of *interested* observation, from the point of view of a performance with certain goals. Learning attention is far from restricted to technical matters.

When I have expressed it this way I have not only the example discussed so far in mind, but also "the practical intellect", to which I will turn shortly.

In light of the discussion above, I want to remind you of the interesting tripartite structure in the cello lessons. I have added some further descriptions of what is "contained" in each of the three:

performance
training (to do, to see...)
routine
rule following
- discussion of musical techniques
learning a language (about music)
reflection on performances
training of memory
- reminiscences
establishment of trust
enter personally into a tradition (and carry it further)
a narrative form of understanding

I think this structure characterizes all knowing in action (live knowledge), not only learning. Time is important, knowing is a process over time. We can also put it this way: knowing which has not become a rigid ritual or "mechanical technique" is an ongoing learning process. In the epistemology which has dominated science and philosophy of science time is however abstracted away. I will return to this towards the end of my paper.

The practical intellect I

The Practical Intellect is the title of a book¹⁰ by Bo Göranzon, a working life researcher and now Professor at the Royal Technical Institute in Stockholm. It is a highly original book about knowing and skill in working life. He uses art, history of ideas and many other things to make *visible* what such knowing and skill *is*. The book is scheduled to appear in English later this year. I will briefly present some of the main ideas in the book, as I see them.¹¹

The origin of the expression "the practical intellect" ("the practical intellectuality") is a book by the master cabinet-maker Thomas Tempte, *Arbetets Ära* (The Honour of Work), published in 1982. He uses it in a section on "professional ethics" – and it is no accident that it is placed there. He talks about two kinds of intellect or intellectuality, "the practical" and "the abstract". 12

It is a common misunderstanding among people who are not craftspersons, Tempte says, that a craft is a kind of manual labour. Another misunderstanding is that less complicated thinking is required (compared with what is normally considered to be "abstract" or "theoretical" work¹³). The truth is exactly the opposite, Tempte says, sophicticated ability for abstraction is required. In advance, the craftsperson must form a *conception* of what the object to be produced will *look like*, *how* it should be *produced* and *how* it is to be *used*. And, finally, the object is produced in a process in which production resources, materials and labour are used – and in some cases irreversibly used up. If anything goes wrong it must be corrected by deeds, not by words. This whole process is not one of manual labour, but, Tempte says, a series of judgements and choices which require a considerable amount of mental energy.

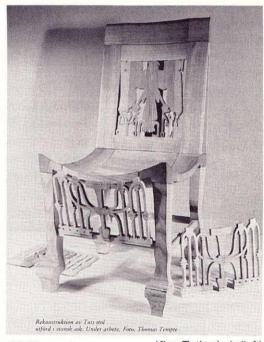
The intellectuality of this process, from the conception to the object actually produced, is called the practical intellectuality. It is not abstracting, Tempte says. It is rather an intellectuality that *gives form* to ideas and things. We have something like design. But design *can* be understood (or rather misunderstood) from the point of view of what is commonly called "technical rationality", which is very close to or identical with Tempte's "abstract intellectuality". ¹⁴ In Swedish he talks about "ett gestaltande intellekt". It is impossible to translate directly into English. Therefore I add a few comments. ¹⁵

The verb used, "gestalta", is very much like the German gestalten, which can correspond to English verbs like: form, shape, design, arrange, organize, create and produce. ¹⁶ Basically to create, give form to, and produce. I am also convinced that gestalt in Tempte's use is strongly connected to unity. Gestalt is the form of the whole. A similar use of the corresponding German noun can be found in Gestalt psychology. Actually, the noun "gestalt" can be found in English, this is the explanation in Webster's New Collegiate Dictionary: a structure, configuration, or pattern of physical, biological, or psychological phenomena so integrated as to constitute a functional unit with properties not derivable from the sum of its parts. Tempte, however, uses the active, dynamic form corresponding to the German gestaltende, thus characterizing the intellect(uality) as dynamic and active. It is also a very strong emphasis on artistic form, in Tempte's use – the goal is artistic and functional unity.

An example may convey the core idea. Tempte has reconstructed "King Tut's chair", that is Pharaoh Tutankhamun's chair from 1300 B.C. ¹⁷ He then also tried to reconstruct the way the Egyptian cabinet-makers thought and worked. From the gestalt of the chair – and historical knowledge about the tools and ideas of the period – Tempte could get in touch with the *gestaltende* intellect of his colleagues.

This reconstructive work can also shed light on Greenhouse's way to Casals' and later his own *gestaltende* intellect. Tempte was not





King Tut's chair (left) and Tempte's reconstruction (right).¹⁸

engaged simply in copying or mimicry, but in *rethinking* and *reconstruction* – which is to do something *new*. What *Greenhouse* did was perhaps also to reconstruct and thereby to *create anew* all the time. This comparison is well worth an elaboration, though I will not go into it here.

I want to stress that I do not want to buy Tempte's dichotomy between the practical and the theoretical (abstract) intellect(uality). The reason is that the way he explains the craftperson's process of production – with its direct connection between conception and process of production – it is exactly what I called live knowledge, or knowing in action above. Thus it is exactly in between "abstract theory" and "manual work". The "practical intellect" is on the right borderline. The borderline is a connecting line, it consists of the skilful activity and judgment of the craftsperson.

The practical intellect II

In a discussion about Bertolt Brecht's play *Galileo*, Bo Göranzon says:

In spite of more precise and reliable technical instruments which contribute to make each observation more differentiated, something always remains beyond reach. This is the paradox of critical knowledge.¹⁹

Bo Göranzon also stays firmly on the borderline. His conception of knowledge and skill is a conception of something never closed, something open and *inexhaustible*. The knowing of the practical intellect has its life in changes, tensions and even paradoxes. The dialogue in

which several voices can be heard and no final agreement is reached is a basic idea.

I will now highlight some features of "the practical intellect" which I find important.

- (1) The *unity* of routine work (for example, routine calculations) and skilled judgements.
- (2) The irreducible dialectic between *trust and confidence* in action and the critical awareness that "something always remains beyond reach" (the danger of *scepticism*).
- (3) Knowing in action (*live* and *open* knowledge) is the starting point and the basis of all knowledge. Knowing must be *kept alive*. Two aspects of this:
 - (a) a "hermeneutic research method" in which results are always carried back to those who have been "objects of research" is necessary in research on skill and knowledge in action;
 - (b) the *presentation* of skill and knowing must also be open and alive (and thus lead to further processes of reflection and reconstruction).
- (4) Understanding requires *Gestalten* rather than copies of reality. (This is a quotation from the photographer Peter Gullers.²⁰)
- (5) One cannot talk about knowledge (knowing) in general. Two aspects of this:
 - (a) the need for case studies of working life (no purely abstract account is acceptable);
 - (b) there is no formula or definition which covers knowing of all kinds.

Let me comment on a few of these – indeed, abstractly formulated – points. I start with a comment on (4), partly because I have a strong feeling that it might be badly formulated. At least it needs some explanation.

Roughly stated, to improve understanding one should not try to copy or mirror something ("reality") as precisely as possible, but to give it a presentation with an artistic form. However, one should not think that any one form gives the right understanding. To improve (my own, other peoples') understanding here means to improve attention—make people see things, make them ask questions etc. The Earl of Kent in King Lear says: I'll teach you differences. Your can learn more about that from, among others, Shakespeare, Wittgenstein—and Bo Göranzon.²¹ Casals taught Greenhouse differences. Understanding then is improved by different Gestalten. Search for copies kills differences.

Taking this as a basic epistemology of skill is indeed radical. One important aspect is that the *most direct* way to depict skill (knowing-in-action) is by (as it were) *indirection*. Knowing about skill – part of

which is artistry, as Donald Schön has pointed out – comes to life and is kept alive in the medium of art. This also covers point (3b) above.

An important form of (re)presentation which is open and is able to show tensions, real tensions, is dialogue. Of course I would like to think of the philosophical ones.²² Bo Göranzon has found a particular friend in Diderot (and the Enlightenment spokespeople generally).

I have now commented on (3) and (4). I will add nothing to (5). I will however make some comments on (1) and (2), partly by referring back to the "Master Class in Musical Performance" example. Attention will again be brought into focus.

The unity of routine work (for example, in musical performance) and skilled (professional) judgements is, I think, obvious. Training is always needed. Attention needs routine, in a twofold way, as I pointed out earlier. Greenhouse learns attention as routine by being more or less forced to reconstruct Casals' performance. The routine attention then makes further attention possible. Judgement is basically a unit of attention, experience and trust (confidence, security).

The second point is a crucial one – and a difficult one. I will just make a few remarks. The moment when the trust and the critical awareness of "ignorance" (the limits of one's knowledge) exactly face each other is at the final part of the Greenhouse-Casals' story above. After the stereophonic performance comes Casals' own performance. Greenhouse then learns about what he knows and what he does not now. With that insight he has to go on on his own. The skilled performer will later meet similar situations without the teacher – moments when she must reach further. Routine also gives security and trust in such cases. Attention brings the critical limits into light – sometimes after failure. The tension, the dialectic, is unavoidable.

The musical lessons – and their end – also provide a beautiful illustration of a central concept in the "epistemology of action", namely to *follow a rule*. This takes us into Wittgenstein's philosophy, and I will just briefly touch on that subject.²³

Any practice is governed by rules, that is what keeps it together as one practice. You do *like this*: ... (rule). The rule does not, however, "speak for itself", you have to learn the practice of following it. The *formulations* of the rule – "the theory" of how to do – does not decide how it should be followed, *training and practice* decide. Wittgenstein at one point expresses this in the following way: "When I obey a rule I do not choose. I obey the rule *blindly*."²⁴

In the first stage Greenhouse learns to follow Casals' rules. But the rule following is always open to new ways of action. *Creative* judgment is possible – for example in different interpretations of a piece of music – but at the bottom line there is no room for choice.

Casals *shows* the possibility of creativity. The piece is still Bach's D-Minor Suite. The rules are still there, the same, and yet not the same. Casals shows this *by example*, however, not by giving new rules. This

is given a dramatic representation in Greenhouse's/Delbanco's story. Thus, at the end, to quote Wittgenstein again: "Not only rules, but also examples are needed for establishing a practice. Our rules leave loop-holes open, and the practice has to speak for itself." Which is exactly how things are at the *beginning*. Think also about Tempte's way of letting King Tut's chair "speak for itself".

A person's own actions can, then, turn into a *source* of knowing. "Blind practice" is never by sufficient itself – again, witness the Greenhouse-Casals example: Casals may have said to Greenhouse: "Now you study Bach *and* your own performance! Let your own practice speak for itself, but be *attentive* in order to learn more."

Now I turn to a brief comparison between two ways of approaching knowledge, to put what I have said in a wider context.

Knowing - two approaches (two pictures)

The traditional western – I mean modern traditional – concept of knowledge makes knowing something secondary to "what is the case in the world". There are many variants in the history of philosophy, and I shall not go into detail.

I once more use the BRUL picture which is the symbol of this conference. The candle on the table stands for what is the case in the world, in reality, viz. the facts. In the head (or mind) of the man (?) is his ideas, his possible knowledge, which according to tradition is something like a picture or description of reality. Now it is in general assumed to be expressible in a language of some kind. Be that as it may, the basic idea is that the statement, the picture or theory is a piece of knowledge only if it is true to the facts. Then, strictly speaking, the human being has been taken out of the picture. Try it on the picture! Truth – and in consequence theoretical knowledge – becomes essentially a matter of relation between the symbolic candle and the real candle. One of the characteristic features of this picture (and similar ones) is the non-existence of human, cultural time (and space). There is a longing for timelessness or eternity.

An alternative picture of knowledge can also be illustrated by the BRUL picture. Now the most important things are not "the facts" – the candle on the table – but the human being, a human being who has done something before the picture, and who is on his way to do something with the candle – or with the help of the candle. The basic questions could be formulated, slightly metaphorically, like this: Where does the man come from? Where is he going? That is: What is he doing? He is always on his way. This is a picture of knowledge in action.

The focus of interest here is (to borrow G. E. M. Anscombe's phrase²⁶) "knowing one's way about". The pair of questions "Where from?" and "Where to? are always present. In the first picture of knowledge *both* of these are curiously absent. And I want to empha-

size that the first question (Where from?) is not a matter of "pure history". You have to "retrace and cross your tracks" again and again, because you cannot find where you *are* except by constantly looking forward and backward, i. e. by reflecting. Of course, we need all the time to refer to *facts*, from a critical point of view. But facts are not "just there", you *encounter* them *in* what your are doing, there are no "pure facts". I am inspired here by William James' pragmatism.²⁷

To give a satisfactory account of knowing in action in various professions and contexts demands a rich conceptual framework – including human *time*. My second picture of knowledge *makes room* for such an account. The first excludes it.

Several persons researchers on skills in working life have emphasized *time*, the *time* needed to form a conception (a picture) of relevant parts of reality, the *time* for maturation, the *time* for reflection, and very crucially the *rhythm* of action and reflection. I refer to Bo Göranzon again and to Maja-Lisa Perby's work on meteorologists.²⁸

To capture people's knowing – as well as "knowing itself' – it must be reflected through various *gestalts*. Knowing must be given *form*. There are a wide variety of relevant forms of "representation", for example:

- narrative
- dialogue
- theatre
- collage

There is never THE form of representation. And representation is always an "unfinished representation" when it is not used-in-action.

"Design and use of knowledge"

I have not said anything in particular about architectural design. I have tried to present a perspective – to give knowing in action a *Gestalt* – which can help us towards a better understanding of knowledge in action. Only those working in the field of architectural design can continue the reflection into that area. I have, however, two remarks by way of conclusion, which are both connected to "application" and to the relation between "knowledge" and "use of knowledge". The two remarks follows from what I have said so far, I am not trying to formulate any new arguments.

First remark. It is a commonplace that more and more (practical) "art" has turned into or been replaced by "applied" something (science, technology, theory of this and that). Practice is often considered as the application of theory. One can turn this upside down and say that theory, to the extent that it has a meaning which guides practice at all, is an application (use) of practice. Try to understand this as literally as possible.

Second—and final—remark. Knowledge is often considered as something without cultural form. It is considered to have only "logical" form. I have stressed the importance of form in a wider sense, form in cultural space and human understanding. I have even stressed the importance of forms in the plural, Gestalten. This is the way we come to see knowledge, and this is the way we can reflect on knowledge. We must as it were design the "representations" of reality, including knowledge. This is not an easy task. It requires artistic and critical abilities. The book from which I borrowed my title, The Practical Intellect, has managed to accomplish this combination to a large extent.

Notes

- Draft for a lecture on May 14, the International Conference on Theories and Methods of Design, Chalmers University of Technology, Göteborg, May 13–15, 1992, slightly revised after the lecture.
- 2. Schön (1983), Schön (1987).
- There is of course a significant ambiguity about "the light" in the mind, I leave that out here.
- 4. July 28, 1987.
- 5. This is seen as part of "personal" or "tacit" knowing by Michael Polanyi, Cf. Polanyi (1978).
- 6. Schön (1987), p. 176-177.
- 7. Delbanco (1985), p. 50, quoted from Schön (1987), p. 176–177.
- 8. Delbanco (1985), p. 51, quoted from Schön (1987), p. 177.
- 9. The example was criticized by Jan Ahlin at the conference. He said, among other things, that other descriptions of Casals' way of teaching contradicted this story and that teaching by mimicry is defended by almost no one. Just to make one thing clear now, I do not put forward the described teaching as a *good* way of teaching. But I think it is a *possible* way. I am above all interested in some of the "components" in the teaching process.
- Göranzon (1990). Note added in June 1993: The English edition was published by UNESCO and Springer-Verlag (1992). My quotations are, however, my own translations from Göranzon (1990).
- 11. I have recently published a critical discussion of the book in Swedish, in *Nordisk Arkitekturforskning*, 1992, no. 1.
- 12. Tempte (1982), p. 76–78.
- 13. Tempte is *partly* caught in the traditional dichotomy between theory and practice.
- 14. "Technical rationality" is discussed and criticized by Donald Schön in the two books mentioned above.
- 15. In Tempte (1991), p. 161, and in a survey of the research Theme Education-Work-Technology, 1977–1991, p. 40, by Magnus Florin (1991) the expression "creative and imaginative intellect" is used, which does not sound very good to my ears.

- 16. This list comes from Langenscheidts Taschenwörterbuch der englishen und deutschen Sprache.
- 17. Cf. Tempte (1982), Tempte (1988) and Tempte (1991).
- 18. Tempte (1982), p. 46-47.
- 19. Göranzon (1990), p. 99.
- 20. "Förståelsen kräver gestaltningar snarare än avbildningar." Quoted in Göranzon (1990), p. 122.
- 21. He quotes the words from King Lear, Göranzon (1990), p. 169.
- 22. Cf. Molander (1990).
- 23. For an excellent, short account, cf. Johannessen (1988).
- 24. Wittgenstein (1972), § 219.
- 25. Wittgenstein (1974), § 139.
- 26. Anscombe (1963).
- 27. Cf. James (1978).
- 28. Cf. Perby (1988).

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