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## **The grounding of usable knowledge: An inquiry in the epistemology of action knowledge**

by  
Göran Goldkuhl

CMTO	Jönköping International Business School
Linköping university	Box 1026
581 83 Linköping	551 11 Jönköping
Sweden	Sweden

tel + (46) 70 552 98 15  
e-mail ggo@ida.liu.se  
fax + (46) 13 28 44 35

### **Abstract**

This paper is an inquiry into the epistemology of *action knowledge*, i.e. into theories, strategies and methods governing people's action in social practices. It is an inquiry in how to justify such knowledge; how to ground action knowledge. A distinction is made between *empirical, external theoretical and internal grounding*. The empirical grounding has to do with the effectiveness of the application of knowledge. External theoretical grounding relates the action knowledge to other knowledge of theoretical character. One part of this is the grounding of the action knowledge in general explanatory theories. Internal grounding means an investigation of internal warrants (as e.g. values and categories) and internal cohesion of the knowledge. These different grounding processes form together a coherent approach for the Grounding of Action Knowledge (GAK).

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# 1 INTRODUCTION

## Knowledge in practice

In social practices people are using knowledge governing their action. Such knowledge is situational, i.e. adapted to current circumstances. But such knowledge is not pure situational. Recurrent elements in knowledge are used. In order to manage social practices knowledge is habitualized and institutionalized (Berger & Luckmann, 1967). Knowledge is transferred from one situation to another. Experiences made by ourselves and by others are used recurrently as norms and guiding principles. Within a social practice such knowledge is not only related to individual human beings. Much of the practical knowledge is genuinely social. This means that the knowledge is intersubjective. The knowledge is transferred from persons to persons. This can be made in particular educational settings but also directly in social practices where people are working together.

All knowledge in social practices is not made explicit or linguistically codified. Much knowledge works in the background of consciousness and directs attention and action (Polanyi, 1958; Rolf, 1995). Such knowledge is often labeled *tacit knowledge*. Knowledge of this character does not always remain tacit. It can be made explicit through articulation and reconstruction (ibid). This makes it possible to improve the knowledge in a more conscious way. The knowledge can be criticized, modified and justified when being open to social discourse.

This is a way to make knowledge in social practices still more usable. The notion of knowledge in social practices is by definition *usable knowledge* (Schön, 1983; Schön & Argyris, 1996). Through reconstruction, evaluation and justifying practical knowledge, this will be one way to improve such knowledge.

## Purpose: The meaning of grounding of action knowledge

This paper is an inquiry into the epistemology of *action knowledge*, i.e. into theories, strategies and methods governing people's action in social practices. It is an inquiry in how to justify such knowledge; how to ground action knowledge.

What do we mean by grounding of action knowledge? I make in this paper a distinction between *empirical, external theoretical and internal grounding*. The empirical grounding has to do with the effectiveness of the application of knowledge. External theoretical grounding relates the action knowledge to other knowledge of theoretical character. One part of this is the grounding of the action knowledge in general explanatory theories. Internal grounding means an investigation of internal warrants (as e.g. values and categories) and internal cohesion of the knowledge. These different grounding processes form together a coherent approach for the Grounding of Action Knowledge (GAK).

This approach for grounding of action knowledge has been used for several years when studying theories, strategies and methods for development and change of organisations and their information systems. The GAK concept were originally presented in Goldkuhl (1993), but has now been further elaborated.

## 2 ACTION KNOWLEDGE

### Different types of action knowledge

What do I mean with action knowledge? This is knowledge directly or indirectly related to action. Strategies and methods governing people's action in social practices are obvious examples of action knowledge. Also theories can be action knowledge. This is the case when theories are used as an inspiration or a basis for human action.

The problem of characterization of knowledge for action has a long history. Aristotle (1947) made a division into two important types of knowledge:

- Techne (which can be interpreted as knowledge for production)
- Phronesis (which can be interpreted as knowledge for value rational action)

This division is based on his division of different types of activities. In the beginning of the "Nicomachean Ethics" Aristotle writes (ibid):

"Every art and every inquiry, and similarly every action and pursuit, is thought to aim at some good; and for this reason the good has rightly been declared to be that at which all things aim. But a certain difference is found among ends; some are activities; others are products apart from the activities that produce them."

I understand the distinction between techne and phronesis to be that of the former to be related to means-ends rationality of productive action and the latter of value rational action (i.e. the value of action does not lie in permanent results but rather in the action itself carrying expressions of intrinsic value). This relates to the division of purposive-rational action and value-rational action made by Weber (1978).

The division into these two types of action knowledge is however problematic. Bernstein (1983) and Flyvbjerg (1991) argues for their importance and that these two types should be kept separate. Dunne (1993) has made an in-depth analysis of the meanings and relations between these type of knowledge. It is not so simple to keep them apart since the original analysis by Aristotle consists of several obscurities<sup>1</sup>. It is important to see that these two types of knowledge were described in the dawn of civilisation and before much of the technical and societal development were made which we now take for granted. Liedman (1998) in his analysis of the enlightenment and modernity also finds that the division between techne and phronesis is not so clear cut.

The production of artefacts (using techne as knowledge) do have elements of intrinsic values of both material and social character. Ethical considerations concerning both treatment of material and relations to other people are apparent in productive actions. One can say that there is phronesis inherent in techne. On the other hand, social practices of political kind (what Aristotle called praxis and is supposed to be guided by phronesis) nowadays often involves the usage of many artefacts and thus consist of an integrated use of knowledge of different kinds (phronesis and supportive techne).

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<sup>1</sup> I have noticed this myself in Goldkuhl (1998).

I do not claim that the distinction between *techne* and *phronesis* is totally wrong and obsolete. I think that these are important aspects of practices and action knowledge, but that we have reconsider them in ways that Dunne (1993) and Liedman (1998) are suggesting. I think that most promising is to see them as analytic aspects of action and knowledge rather than separate empirical classes.

### **The many levels of action knowledge**

How does action knowledge exist if we consider it as knowledge closely related to practices?

The notion of knowledge is, to me, connected to humans. When I talk about knowledge I mean human knowledge. Knowledge as such does not exist outside human beings. But knowledge can be manifested in products outside humans. The symbolic nature of language and many artefacts make such common products as expressions of knowledge. Language and artefacts do have the ability to hold expressions which might be interpretable and thus possible to derive knowledge from. The knowledge put into an external product or message by an actor might be different than the one interpreted by other actors. There is always the case of interpretation of meanings and also variation in the intersubjective stock of knowledge. One cannot presume a one-to-one relationship between 1) human knowledge and 2) expressed (externalised) knowledge and 3) interpreted (internalised) human knowledge.

Action knowledge is thus to be seen as human knowledge: A human being's knowledge about something. I call this the *subjective level* of action knowledge. However, action knowledge related to a practice is usually not connected only to one person. This knowledge is often shared by several persons. The knowledge is intersubjective. I call this the *intersubjective level* of action knowledge. The knowledge can be expressed in written in strategies, policies or other types of prescriptions. I call this the *linguistic level* of action knowledge. When people act within a practice knowledge is used in different ways. The knowledge is not only used, it is expressed in action. The action knowledge is manifested in action. I call this the *action level* of action knowledge. The different actions leave intended and unintended consequences. There might be traces of action knowledge in materialised consequences. I call this the *consequential level* of action knowledge. To summarise: Action knowledge (as a typical social phenomenon) can exist on different levels:

- a subjective knowledge level
- an intersubjective knowledge level
- a linguistic level
- an action level
- a consequential level

This is important to bear in mind. Many categorised phenomena usually exist on one level, but when we talk about action knowledge we can mean one or several levels at the same time.

## **3 RATIONALITY OF ACTION AND ACTION KNOWLEDGE**

The action knowledge can be more or less rational. Weber (1978) talks about *practical rationality* which consists of three types of sub rationalities. The two first are related to purposive-rational action and the third to value-rational action in his action typology.

1. *Instrumental rationality* means the appropriateness of the means to given ends.
2. *Rationality of choice* means the setting of ends in relation to values.
3. *Normative rationality* means the evaluation and application of ethical principles in action.

The identification and differentiation of these three rationalities is important. The three rationalities are put together under the label of methodical-rational conduct of life (cf also the analysis in Habermas, 1984 p 168ff). The integration of them into the notion of practical rationality is important since it transcends a limited technical rationality (1). Practical rationality is not restricted to only finding the best techniques to given ends. It also includes the choice and legitimation of ends in relation to values (2). And furthermore it is taking into account the intrinsic value principles in the performance of action (3). A narrow purposive-rational action can be challenged to be the case of "the end justifies the means" and thus ruling out other important values. Practical rationality means the integration of purposive rationality and value rationality. This implies the *multifunctionality of action* involving both intrinsic values and intended purposes (Goldkuhl, 1998). Weber (1978) stated that purposive-rational action and value-rational action was to be seen as analytic categories, but they seem often to have been misinterpreted as distinct empirical classes. Action is often both purposeful and value rational (bearing intrinsic values). This relates to the discussion on *techne* and *phronesis* above in section 2.

The notion of practical rationality is necessary when we speak of grounding of action knowledge. Action rules (prescribed means) must be possible to relate not only to empirical consequences but also to ends (goals) and values. The relation to values are made on two levels; values "outside" action as expected results and consequences (2), and also values within action, i.e. expressed when performing action (3).

## 4 VALIDITY OF ACTION KNOWLEDGE

How do we know that a certain action knowledge is good knowledge? This is the problem of action knowledge validity. We can talk about the grounding of action knowledge. Grounding means putting arguments in favor of this knowledge so actors can be more confident in using the knowledge. This is an argumentative view on knowledge (Toulmin, 1958; Habermas, 1984). Claiming the validity of knowledge is presenting good reasons as arguments for the knowledge.

### Principles for grounding

There is however not one simple way to the grounding of knowledge. I follow Habermas (1984) who states that different character of knowledge (expressed in different forms of sentences) requires *different forms of grounding*. "Starting from the analysis of sentence forms, we can go on to clarify the semantic conditions under which corresponding sentence is valid." "... the meaning of grounding changes in specific ways with changes in sentence form." (ibid p 39).

In the analysis of the rationality of different communicative actions Habermas presents different *validity claims* that can be raised. This is another important issue concerning the grounding process which should be taken into account.

I follow Habermas' perspective on rationality and grounding in general. This is translated into two important principles for my analysis:

1. The grounding of action knowledge must be done in accordance to the epistemological character of such knowledge.
2. Different groundings (validity claims) can be raised in connection to this knowledge.

How these two principles are used is described below.

### **Action knowledge as prescriptive knowledge**

The form of knowledge is obviously one key to the grounding of knowledge. What can we say about the form of action knowledge? As said above, action knowledge means knowledge used to govern human action. One can describe this as rules for action or prescriptions for action. I do not reduce all kind of action knowledge to be prescriptions, but in the following I will use action prescription as the prototype for action knowledge and my analysis of grounding principles for such knowledge. A prescriptive statement is described in the following general way:

#### ***Perform act A in order to obtain goal G***

A prescriptive statement does not only consist of a reference to a certain kind of act. It includes also a reference to a goal which is assumed to be attained when performing this kind of act (Goldkuhl, 1993). A prescriptive statement will also often include some reference to situations and other action conditions of importance (Argyris & Schön, 1996).

When analysing the validity of action knowledge I will use this prescriptive statement and its "sentence form" as the basis against which validity claims of different kinds can be raised<sup>2</sup>. The epistemological character of this kind of action knowledge is thus *prescriptions for actions in order to reach certain goals*. This is how the first of the two principles above is applied.

### **Prescriptions vs explanations**

Is the suggested prescription an appropriate way to reach the given goal? This is a main validity evaluation to meet. What effects will the prescribed action have? Will it lead to the desired effects? Putting it in this way there is a clear relation to causality. If action is performed (=cause) then the desired goal is reached (=effect). We are now facing a classical problem: The relation between *is* and *ought*. There has been a long discussion concerning if *ought* can be derived from *is*<sup>3</sup>. The prescriptive statement expresses what *ought* to be done. A causal statement (if cause then effect) is no expression of *ought*, but describes what *is*; a state of affairs.

Is it then possible to derive what *ought* to be done from what *is*? An explanatory statement can be transformed into a prescriptive one. I will not call this a pure derivation from *is* to *ought*. *Is*

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<sup>2</sup> A prescriptive statement can have different surface forms. One example is given above. Another one is "If one wants to achieve goal G then one should perform act A". I have used this sentence form earlier (Goldkuhl, 1993).

<sup>3</sup> This discussion goes back at least to Hume (1739). A modern critique can be found in Furberg (1993).

is however used as a basis for derivation into *ought*. My description of this classical problem looks the following way:

An explanatory statement: If cause C then effect E ("is")

An investigation into what states are desired, a list of goals G

An identification of effects E that equals goals G

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A prescriptive statement: If act A then Goal G ("ought")

where act A equals cause C and Goal G equals effect E in the explanatory statement

It is not possible to derive *ought* from *is* directly. It is necessary to state what is *desired* (part of *ought*) and this is distinguished from what *is*. If one knows what is desired then it is possible to derive *ought* from *is* and the stated goal. What is desired is not possible to express just with reference to causes and effects. Desires and goals are always what people want to achieve. To summarise: Is + want = ought.

This discussion on *is* and *ought* shows an important relationship between causal and prescriptive statements. Figure 1 depicts the relationships between prescriptive and explanatory statements. One important grounding of prescriptive statements and action knowledge can be done with reference to empirical observations concerning actions and their effects. But this is not the only one to be made. Since there are other epistemological relationships concerning action knowledge there will be other types of groundings also.

I have introduced the prescriptive statement as the prototype form for action knowledge. This does not of course include all possible type of action knowledge, but this is here seen as the core of action knowledge. A prescribed action (as it is part of the prescriptive statement) is seen as an *action rule*. It describes the type of action suggested to be performed. There is a clear difference between the main validity claims concerning prescriptive and explanatory statements. Concerning explanatory statements truth is the main validity claim to be raised. This is not the case concerning a prescription. A prescription is not true or false. It is more or less useful. Thus, *usefulness* is the key validity claim for prescription. A vindicated efficiency of a prescription is of course open to empirical reviews and can thus be transformed into issues of truth. This can be understood from the discussion above concerning the relationships between the prescriptive and the explanatory.

I have, thus, asserted that the main validity claim of prescriptive action knowledge is usefulness. But since this kind of knowledge has different epistemological relationships other validity claims can be raised according to the second principle from Habermas (1984). This will be investigated in the following section.

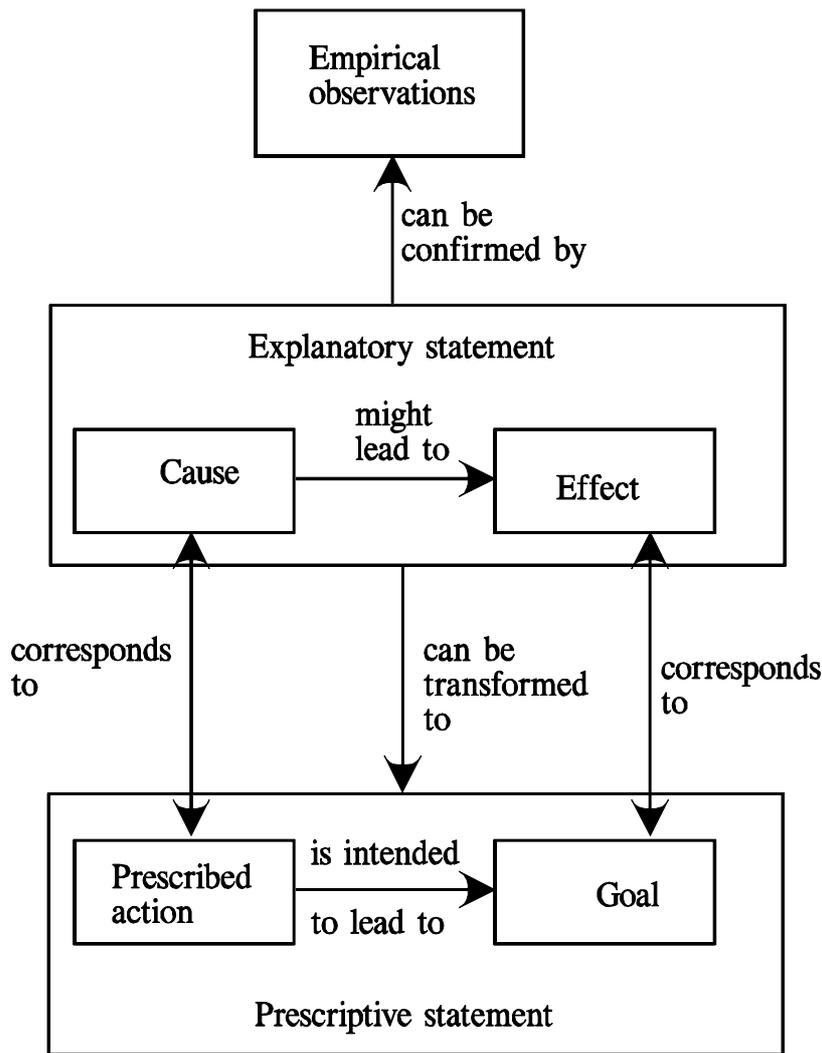


Figure 1 Relationships between prescriptive and explanatory statements

## 5 DIFFERENT GROUNDING PROCESSES OF ACTION KNOWLEDGE

When we talk about grounding of knowledge this means an establishment of an argumentative relationship between this piece of knowledge and some other part of knowledge. The other knowledge is considered as a warrant (a good reason) for the focused knowledge.

The knowledge within a social practice, which is discussed in this paper, is however not so easy to delineate. What is included in the action knowledge and what is external to it? Some focused action knowledge (some action rule to be adopted) is always part of a broader background knowledge (with concepts, norms and values) which directs the consciousness and attention towards the action rule and its application in a practical situation (Rolf, 1995). In an analysis of action knowledge there will many times be problematic to see what is part of the background knowledge of the action knowledge and what is to be seen as completely external to it. For my investigation here I will however need to make such a conceptual distinction (in an ideal typical spirit). It is obvious that some knowledge is to be seen as external in relation to some action knowledge under scrutiny.

## Knowledge sources

The justification of action knowledge can be made in relation to three different kinds of knowledge

- the action knowledge itself
- empirical observations
- other knowledge of theoretical character

I talk about three different classes of grounding related to these three different sources:

- Internal grounding
- Empirical grounding
- External theoretical grounding

This is depicted in figure 2.

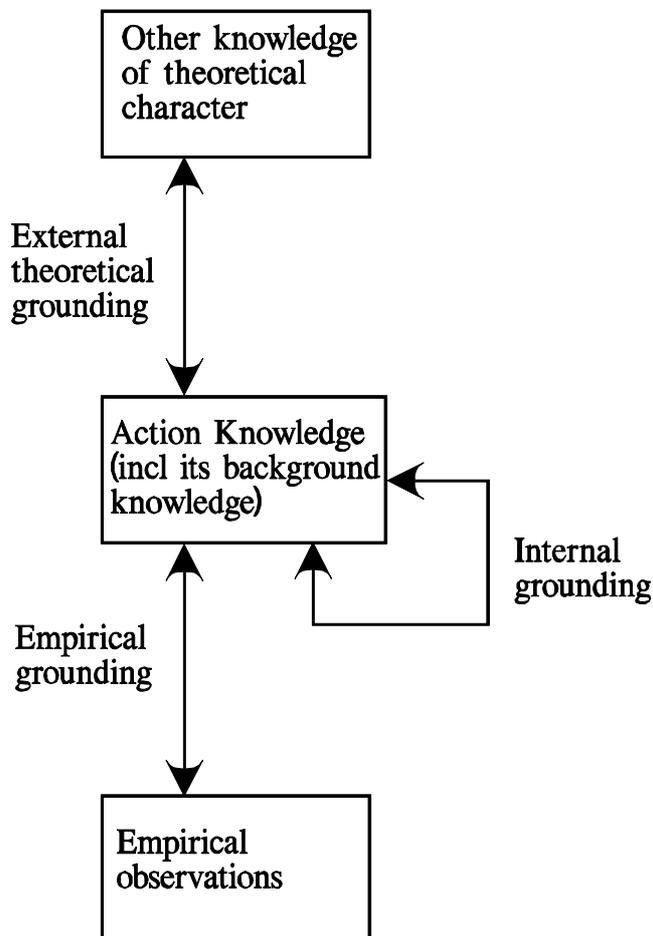


Figure 2 The grounding of action knowledge in relation to three main sources of knowledge

To justify action knowledge is to reconstruct, formulate and evaluate its knowledge basis as warrant, and as a result of this scrutiny claim the validity of the focused knowledge. The claims for validity can be different dependent on which epistemological relationships exist between the action knowledge and its different warrants. The prototype for action knowledge is in this

paper said to be the action rule. Action rules have relationships to

- other action rules
- goals and values
- categories
- empirical observations
- theoretical explanations

I refer to figure 3 as a basis for the discussion concerning different grounding processes.

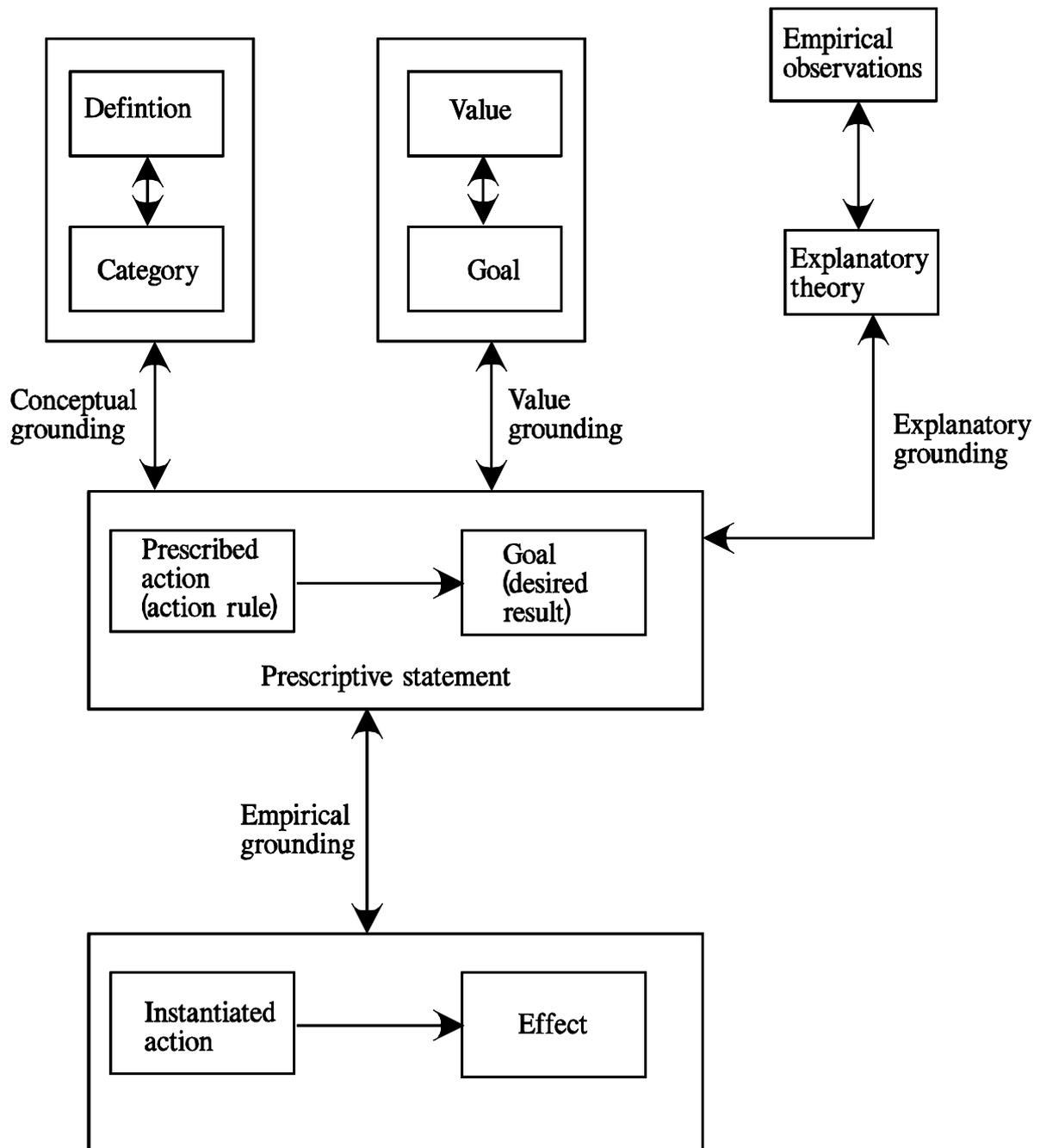


Figure 3 Different grounding processes for action knowledge

## **Value grounding**

As been described in section 4 above an action prescription includes an explicit (or at least implicit) reference to a goal to be attained. The legitimacy of a prescribed action rule lies in the goal and associated values which are intended to be reached and expressed through the action. In a proper grounding of action knowledge it is impossible to exclude grounding in goals and values. The different sub rationalities of action knowledge (mentioned in section 3 above) have a clear reference to value aspects. Confer also the quote from "Nicomachean Ethics" (Aristotle, 1947) in section 2 above which states that all action aims at some good. The good is what is conceived as valuable.

## **Conceptual grounding**

All statements (of value, prescriptive, explanatory or other kind) include the use of categories. To talk about the world means using linguistic codes with reference to intersubjective mental concepts. Action rules and stated goals include the use of words and a grounding of action knowledge cannot be done without an analysis of the concepts used. A conceptual analysis should include an analysis of the existing and possible definitions of categories. Are the categories clear and understandable? Are they proper delimitations of phenomena in the world? A conceptual grounding means an investigation of the ontological basis for prescribed action in the world. The adequacy of used categories is analysed and made transparent through reasoning and definitions.

## **Explanatory grounding**

Explanatory statements together with formulated goals can be converted to prescriptive statements as described in section 4 above. This shows a clear epistemological relationship between prescriptive and explanatory statements. Prescriptive statements can thus be grounded in explanations of theoretical character.

This is not the same as empirical grounding described below. Empirical grounding is about the application of the distinct suggested action rules. Explanatory grounding is instead a kind of theoretical grounding and only indirectly related to empirical observations. Such explanatory statements can be on a more abstract level and must therefore be derived and translated to a more concrete level of prescriptive statements.

Explanatory grounding means that action rules and other action knowledge are justified in general explanatory theories, which often are on a more abstract level than the action knowledge itself. Such explanatory theories requires of course empirical confirmation to be worth serving as a warrant.

## **Empirical grounding**

Is the prescribed action really successful in practice? This is the empirical issue concerning action knowledge. Such knowledge can be evaluated and justified with reference to actual performance of action and the effects of such actions estimated as good ones.

Empirical grounding means that the application of action knowledge is observed and then evaluated. In empirical grounding one is giving a direct reference to empirical findings. This is

opposed to explanatory grounding which only gives an indirect grounding (via general theoretical explanations) to empirical data, as was described just above.

These four types a grounding can be considered as generic ones. Conceptual and value grounding can be applied as parts both in internal grounding and external theoretical grounding, which is described below.

### **Internal grounding**

Internal grounding means grounding of action knowledge in its own background knowledge. This means that action knowledge, at least partially, holds its own justification. This justification can be more or less explicit. Many times, I think, this justification in background knowledge is rather implicit. The background knowledge needs to be articulated and reconstructed (Habermas, 1984; Goldkuhl & Lyytinen, 1984; Rolf, 1995). It is first after the background knowledge (with different categories, rules and values) has been reconstructed and formulated that it is possible to formally connect the focused action knowledge with its internal warrants.

Internal grounding includes conceptual grounding and value grounding. It can also consist of an evaluation of the knowledge cohesion. This means how the different knowledge parts are related to each other and that there is a meaningful and logical consistency.

### **External theoretical grounding**

In external theoretical grounding we are dealing with external warrants for the action knowledge. We are justifying the action knowledge with knowledge that is considered external in relation to the action knowledge. There might be established theories that we use for this external grounding. External theoretical grounding can consist of conceptual grounding, value grounding and explanatory grounding.

### **Summary of grounding processes**

I summarise the three different grounding processes below with their different subprocesses:

- Internal grounding
  - knowledge reconstruction
  - conceptual grounding
  - value grounding
  - evaluation of knowledge cohesion
- External theoretical grounding
  - conceptual grounding
  - value grounding
  - explanatory grounding
- Empirical grounding
  - application and observation grounding

## 6 DEVELOPMENT OF ACTION KNOWLEDGE AS GROUNDED KNOWLEDGE

The grounding of the knowledge (i.e. the justification of it by claiming its validities) is not totally separated from the generation of knowledge. In some knowledge traditions a clear link between the "context of discovery" and the "context of justification" has been asserted. One example is the Grounded Theory approach with the strong claim that theory must be generated on the basis of empirical data and not from pre-formulated hypotheses and other preconceptions (Glasser & Strauss, 1967).

The generation of action knowledge (which has a clear link to a practice field) will often emerge through the practitioners' continuous application of former action knowledge in their institutionalised actions. The development of action knowledge seems to be interwoven with the performance of action. Such knowledge can however be taken for granted and there will be no explicit grounding. The question I want to raise within the GAK concept is development of *grounded action knowledge* (not just action knowledge taken for granted). Or to put in another way: How can generation and grounding be performed in a way to strengthen the different validities of action knowledge?

I follow the division between action knowledge, other knowledge of theoretical character and empirical observations (cf figure 2 above). Three types of empirical generation can be distinguished. 1) The continuous emergence of action knowledge from practice, as mentioned above, is of course one form of knowledge generation which must be acknowledged. But this *tacit induction* of action rules is not the only form. 2) Such action rules can be made explicit through an active reconstruction and articulation (Goldkuhl & Lyytinen, 1984; Rolf, 1995). I here call such a reconstructive process an *articulate induction*. This means that successful actions are identified, reconstructed and made explicit as action rules. 3) Already explicit action knowledge can also be modified through the application of it. Practical experiences can be used as a basis for change of action knowledge (*explicit modification*).

Contrary to the inductive ways for knowledge generation from the empirical, there can be a *deduction from external theories*. In such cases general theories are used as a basis for "drawing conclusions" which are added to the body of action knowledge. Outside general knowledge is translated and incorporated into the action knowledge. The deduction from external theories should not be seen just as a process of logical derivation. General theories can be used in a more creative way as sources for inspiration.

Action knowledge can be developed without any specific inspiration from outside sources. I call this "*inside development*" which can include a continuous knowledge refinement or an introduction of new ideas/constructs. What is pure inside development and not made with any inspiration from outside (from practical experiences or general knowledge) will of course be problematic to judge in many situations. My purpose here is however to construct some ideal types as a basis for our understanding of the generation and grounding of action knowledge. I have summarised the different ideal types in a table below (figure 4).

I mentioned Grounded Theory (GT) above as one approach for generating knowledge with a strong emphasis on induction. How is GT related to GAK? GT is one strategy for generation and grounding of knowledge which can fit into the multifaceted GAK concept. GAK acknowledges the possibility and the importance of working with an empirically inductive

approach. But at the same time GAK stresses the importance of a more holistic approach shifting between induction and deduction and incorporating other elements as well (found in figure 4 and the text above).

	<b>Generation</b>	<b>Validity control</b>
The level of action knowledge as such	<b><i>Inside development:</i></b> Continuous refinement or idea based design introducing new constructs	<b><i>Internal grounding:</i></b> Reconstruction of action knowledge and its background knowledge; conceptual and value grounding; evaluation of knowledge cohesion
The level of other knowledge	<b><i>Deduction:</i></b> Derivation from outside theory including values, categories and explanations	<b><i>External theoretical grounding:</i></b> Grounding in values, categories/definitions and explanations
Empirical level	<b><i>Tacit induction:</i></b> Emergence of tacit action rules based on experiences <b><i>Articulate induction:</i></b> Reconstruction of action rules from practice <b><i>Explicit modification:</i></b> Changes made based on application and observation	<b><i>Empirical grounding:</i></b> Based on application of action rules and observation of actions and effects

Figure 4 Grounding of Action Knowledge: Shifting focus

## 7 CONCLUSIONS

Action knowledge is knowledge often taken for granted and closely tied to action. I do not in general question the practical coupling of this knowledge and that people must have confidence for such knowledge in their actions. I think this a necessary starting point for analysis of action knowledge, but we cannot stop there letting the knowledge be "sleeping" in its implicit and action oriented form. The acknowledgement of these features of action knowledge does not mean that we should accept that action knowledge always should stay on this relatively implicit level. I do not claim that action knowledge always should be scrutinized and transformed into explicit knowledge. However to be more confident in using action knowledge there is need for justifying such knowledge; and the development of action knowledge cannot always be made in silence. I argue that it is important that action knowledge should be grounded and that development of action knowledge should be performed in close relationship with grounding of such a knowledge.

Grounding of Action Knowledge (GAK) is a concept for creating and evolving action knowledge. It is a concept that transcends such knowledge as purely taken for granted and only tied to action. The development of *grounded action knowledge* should

- be performed with recurrent efforts for knowledge improvement
- be based on empirical studies concerning its application

- include reconstruction and evaluation of its own background knowledge
- include the connection of it to other knowledge sources (as e.g. general theories)
- be performed with explicit grounding in different types of knowledge (empirical, conceptual, explanatory and value grounding)
- alternate focus on generation and justification of knowledge
- alternate focus on the action knowledge itself, empirical knowledge concerning its application and other knowledge of theoretical character

The concept Grounding of Action Knowledge can be applied on itself; i.e. one can use the principles of GAK to ground GAK. Parts of a theoretical knowledge grounding (including internal grounding) has been performed in this paper (cf also Goldkuhl, 1993). The concept of GAK has been used in several research studies concerning development of methods and action oriented theories for organisational and information systems change. These studies can be seen as empirical grounding of the GAK concept; see e.g. Eriksson (1994), Lind (1996), Christiansson (1998) and Axelsson (1998). These studies show the importance of working in the proposed focus shifting way and making different knowledge grounds explicit. It is beyond the scope of my paper here to go into any detail evaluating these and other applications of the GAK concept. In several aspects I have refined my initial GAK concept with inspiration of these research studies applying GAK.

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