Communicative vs material actions: Instrumentality, sociality and comprehensibility

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Abstract

There are several approaches that attempt to relate the action concept to information systems. There are approaches based on Activity Theory, Actor Network Theory, Organisational Semiotics and Language Action Perspective. Within the approaches of Organisational Semiotics and Language Action there is a great interest in the concepts of speech act and communicative action. In the communicative action theory of Habermas, there are fundamental distinctions made between communicative actions and material (instrumental) actions. Sociality and comprehensibility are associated with communicative actions and not with material actions. Instrumentality is associated with material actions and not with communicative actions. These characterisations are analysed and contested. Based on these analyses, an investigation of action types related to information systems has been pursued. The approach for Information System Actability has been used as a framework. Three different usage situations of information systems have been investigated and characterised: Interactive, automatic and consequential usage situations. An example of home care service is used as an illustration.

1 Introduction

Research on information systems relies on some pre-understanding of what kind of phenomenon an information system is. This pre-understanding can be kept implicit

during the research process. Also, explicit definitions and characterisations can be made.

There are several approaches that emphasise the action character of information systems. One example is Activity Theory (Engeström, 1987). Scholars inspired by Activity Theory emphasise that information technology should support human actions and activities (e.g. Kuutti, 1996; and others in Nardi, 1996a). This is also what is emphasised by Norman (1998) when he speaks of "activity-based computing". In the tradition of Activity Theory, information technology is described as a supportive instrument (tool) for human action. People perform actions in activities and IT artefacts give them support (Nardi, 1996b). Scholars following Actor Network Theory - ANT (of Latour, 1992) go one step further. In an ANT view of IT, such systems are interpreted to be acting (e.g. Walsham, 1997; Holmström, 2000). The character of such action seems however not to be explicitly conceptualised within the ANT tradition. Turning to the the traditions of Organisational Semiotics (e.g Stamper, 2001; Liu, 2000) and Language Action (e.g. Goldkuhl & Lyytinen, 1982; Winograd & Flores, 1986) one finds an answer to this question. Within these traditions the concepts of speech act and communicative action have been put forth as a key to our understanding of information systems in organisations. The inspiration comes from speech act theory (Austin, 1962; Searle, 1969) and communicative action theory (Habermas, 1984).

In the Theory of Communicative Action by Habermas (1984), the character of and the rationality connected with communicative actions are described and distinguished from these corresponding aspects of material (instrumental) actions. In a typology of action, Habermas (ibid:285) distinguishes between communicative, strategic and instrumental action. The concept of communicative action seems to be very important to analyse in relation to information systems. This has also been done in works within the language action tradition; some of them mentioned above, other examples are Dietz & Widderhoven (1991), Ljungberg & Holm (1996), Verharen (1997), Erikssson (1999) and Schoop (1999).

All these analyses seem to rely on the interpreted differences between communicative and material actions. There are obvious differences between these classes of action. But there are also similarities, since they are subclasses of action. For further understanding of information systems and their usages, there is a need for further exploration of the concept of communicative action. But there is also a need to explore the concept of material action. Information systems are supposed to support actions of material kind; this is one argument to look closer at material action. Another argument is that through looking at differences and similarities between material and communicative actions, we can learn more about the nature of communicative actions and see how applicable this concept is when relating it to information systems.

The purpose of this paper is to make an inquiry into the action concept; especially an inquiry of differences and similarities between material and communicative action types, which is to be seen as theoretical underpinnings of the language action tradition. This inquiry should be seen as work on the theoretical fundaments of information systems. The underlying research question is: What types of actions are usages of information systems?

2 Communicative and material actions

Habermas (1984:285) presents a typology of action. This typology is presented in table 1 below. Habermas distinguishes between nonsocial and social action (a dimension called action situation) and between two different action orientations (towards success vs to reaching understanding). The latter distinction is important in Habermas' theory since it implies a differentiation between strategic and communicative action. This is a controversial issue which can be contested, but which resides outside the purpose and scope of this paper. I will not differentiate between strategic and communicative action the way Habermas does. The two action types of communicative and instrumental action will be addressed in this paper[1].

Action orientation *Action situation*	**Oriented towards success**	**Oriented to reaching understanding**
Nonsocial	Instrumental action	---
Social	Strategic action	Communicative action

Table 1 Habermas' typology of action (from Habermas, 1984:285)

Habermas characterises instrumental action as nonsocial. He defines it in the following way: "We call an action oriented to success instrumental when we consider it under the aspect of following technical rules for action and assess the efficiency of an intervention into a complex of circumstances and events" (ibid). As I understand, Habermas uses the term instrumental for actions, where the actor is aiming at direct material changes and effects in the world. In my discussion I will use the term material action (instead of instrumental action). As will be shown in the next section I claim that *instrumentality* is a general characteristic of action

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[1] A conceptual and terminological note must be made here. I will use the term 'communicative action' with the meaning of 'language act' or 'speech act'. This means that I am not using 'communicative action' in the restricted sense as Habermas does. I have no use in this paper of the kind of habermasian differentiation between strategic and communicative action.

and not restricted to material actions (i.e. what Habermas calls instrumental actions).

In his characterisation of material (instrumental) action, Habermas emphasises the instrumentality of such action. In his discussion of communicative action - its character and rationality - Habermas emphasises *comprehensibility* and *sociality* as decisive contrary to material/instrumental action. I will challenge these characterisations in the following.

I will use a simple ordinary-life example in the discussion[1]. I briefly introduce this example here. It is an example consisting of both communicative and material actions: (1) A communicative act of a woman asking her husband to bring in some firewood: "Would you please bring some firewood. I think it is cold in here". (2) A communicative act of the husband accepting the request. (3) A material act of chopping wood performed by the husband. (4) A material act of the husband bringing the firewood to the wife. (5) A communicative act of the wife thanking the husband for bringing the firewood. (6) A material act of the wife making a fire in the fireplace.

2.1 Instrumentality in actions

In his analysis of action, Habermas refers heavily to Max Weber and his theory of social action (Weber, 1978). The term "instrumental" seems to be brought in from Weber's theory. Weber (ibid) distinguishes between three types of rationality (together constituting "a methodical-rational conduct of life"): 1) Instrumental rationality, 2) rationality of choice and 3) normative rationality (or value rationality)[2]. Instrumental rationality is concerned with choice and construction of means (including the technicality of action) to achieve given ends. The use of the word instrumental is here concerned with the action as means in relation to the intended ends. The whole action - its performance - is considered to be an instrument to arrive at desired effects. I call this "*means-intrumentality*". This is not the only possible interpretation of instrumentality in action. There is at least one other possible interpretation and this one is more restricted and will be described below.

When performing actions - especially many material actions - one may need tools or other artefacts to enable the action. Chopping wood is not possible to perform without an appropriate tool: An axe. Such a tool is an instrument for the performance of action (Engeström, 1987; Norman, 1998; Goldkuhl & Röstlinger, 1998). I call this "*tool-instrumentality*" in order to distinguish it from the broader "means-intrumentality". Tool-instrumentality means that the tool is instrumental in relation to the action. The tool is used in order to perform the action. Means-

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[1] This is done in a wittgensteinan spirit: If we cannot understand the simple, then we will have no chance to understand the more complex.
[2] A discussion on thesse matters can be found in Habermas (1984:168ff).

intrumentality expresses that the action (as means) is instrumental in relation to its ends. The action is performed in order to arrive at the ends. Tool-instrumentality is part of means-intrumentality[1]. Using the tool is a means for performing the action which is a means for arriving at the ends. This implies that there is a means-ends hierarchy working here.

This argument should not be understood as suggesting that the use of a tool (instrument) is something outside the action. One integral aspect of the action is the use of tool. To perform an action is to utilise an instrument in order to produce a result (Goldkuhl & Ågerfalk, 2000).

Chopping wood is a material action. It is aiming at changing some material stuff. Wood is to be transformed into (chopped) firewood. When doing this, there is a need for an external instrument; an axe must be used. It is easy to see that tool-instrumentality is apparent in this example. The axe is an instrument (a tool), which is used when chopping. Chopping wood as an action is a means to arrive at the ends of chopped firewood. The action of chopping wood is means-instrumental to the ends of desired firewood. Both these types of action-instrumentality hold for this example of material action. And I claim that it holds for most other examples also.

How about instrumentality in communicative actions? Habermas is very reluctant to applying instrumental rationality in relation to communicative action. Let us look closer at one example; the wife asking her husband to fetch firewood. There is a clear purpose behind this request; the wife wants some firewood to put in the fireplace. The request is a means to get the firewood. This does not mean that there is an automatic or deterministic relation between the request and the bringing of firewood. The husband must understand the request and accept it. The husband is a human being with a will of his own and an ability to make decisions. Anyhow, the request must be interpreted as a purposive-rational action with a clear intent to influence the husband to fetch firewood. In this sense, the request is a means for influencing the husband to bring some firewood. The influence and its possible consequence (the husband's acceptance) are means for the main purpose of getting some firewood. The request should also be seen as a deliberate action. The wife may have considered other possibilities (means) for getting the firewood, e.g. asking someone else or bringing the firewood herself. This example has shown that means-instrumentality is possible to apply to communicative actions.

How about tool-instrumentality? The wife does not use any external instrument. Instruments for action should however not be limited to external instrument. There might be internal instruments also. In this case one can say that she uses language as an instrument for the performance of her request. Language is not a physical, external instrument. It is an internal (subjective) instrument, but it is of course also

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[1] Habermas seems to be concerned only with means-instrumentality. It is hard to find any discussions about the use of tools in relation to actions.

a social instrument; i.e. it must be intersubjective in order to be useful for communication. The wife must speak a language that the husband understands. This means that there is a tool-instrumentality working also for communicative actions. It is important to note the great difference between language, as a very general kind of instrument, and specialised tools like an axe. Language is general since it may govern an infinite number of communicative actions. Material instruments, like an axe, has a much more restricted breadth of functionality. There are only a limited number of action types which can be governed by a specialised material tool.

In this example there was an oral face-to-face communication. In other types of communication situations, external instruments might be used. We use different devices (as e.g. telephones, fax-machines, computers) to overcome time and distance in communication.

I have shown that there are similarities concerning instrumentality between communicative and material actions. There is however one important difference between these two classes of actions. In the case of material actions, the instrument does not need to be an intersubjectively understood instrument, as is the case with communicative actions and their main instrument (i.e. a common language).

2.2 Sociality in actions

Habermas distinguishes between communicative actions (as being social actions) and instrumental/material actions (as being nonsocial actions). The social character of communicative actions is obvious. But how about the nonsociality of material action? Habermas builds on the famous definition of social action by Weber (1978:4): "That action will be called 'social' which in its meaning as intended by the actor or actors, takes account of the behaviour of others and is thereby oriented in its course". When reading this definition carefully, I claim that it does not say that a social action must be directly addressed towards another human being. An action is social if it takes account of others' behaviour and that the action is adapted to this in its course. A man that chops wood in casual solitude is performing a social action if he performs this according to a request from another person. The chopping of wood is a response to a communicative action performed by another person. The chopping action is performed within a social context of two persons, where the other person has requested a delivery of the chopped firewood. The chopping of wood is part of the husband's fulfilment of the request.

The act of chopping wood should not be interpreted as mere chopping, but as a socially determined action (the grounds are social: a request and a corresponding promise) and socially oriented action (the purpose is partially social: fulfilment of request and promise). I do not of course deny the material character of the action. The husband must have a chopping competence and thus be able to wield an axe. By chopping he is changing the material character of the wood. The performance

of the action itself is nonsocial in the way that one person works alone with "material intervention". But it is important also to accept the social character of such a material action. The chopping of wood is a subact in the husband´s fulfilment of the request. There is another material act following the chopping. The husband carries the firewood and hands it over to his wife. This is a material act of moving some stuff from one place to another. This action is directly addressed to another person. Nothing may be said. The husband is just handing over the firewood. This kind of action is explicitly social, since it is explicitly directed towards another person.

This latter type of material action is even harder to characterise as nonsocial (than the solitary action of chopping). It would be odd to restrict social action to being actions directed towards other persons with use of language or other explicit sign systems. Why should we exclude actions like touching or delivering things from the sphere of social actions? To me the answer is obvious. Such actions are of course social. But even actions which are not directly addressed to other people can also be social as described above. If there are *social grounds* and *social purposes* of material actions, such actions are also social. I claim that this is in full accordance with the quoted definition of social action by Weber.

I even claim that there do not need to be explicit social grounds as a request for a material action to be social. Suppose that there was no request from the wife about firewood. The husband went out chopping with the purpose of bringing some firewood to the wife so she should would not be cold. His bringing of firewood would be a surprise to her. The grounds for the husband's action can be said to be social since he wants to fulfil an anticipated need of another person by his material action. In this case there is no other action (like a request), that is functioning as a incentive for the chopping action. But the chopping action is part of a larger action complex aiming to be a basis for subsequent actions of another person.

My line of argument here has been that material actions (i.e. actions aiming at a change of some material or its location) can in many situations be seen as social actions. Not only communicative actions are social actions. What we do *based on other persons behaviour* is seen as social actions. What we do *directed towards other persons* is seen as social actions. When we characterise an action to be a response to some other person's action or a incentive for some other person's action, then this type of action is social.

Habermas (1984) describes communicative action as one type of *coordination mechanism*. Strategic action, which is performed with the support of power, is another type of coordination mechanism. As I have said earlier I do not make any distinction between communicative and strategic action here. I use "communicative action" as a broad category covering both strategic and non-strategic language actions. Habermas' view is obviously that coordination must be performed by the aid of language. This seems to be an exaggeration of the role of

language. Mintzberg (1979) describes different coordination mechanisms related to organisational action. One of these coordination mechanisms is *mutual adaptation*. In such coordination, two or more actors can adapt their conduct to each others simply by observing the behaviour of the others. Communication can smooth the process but there are situations where it is not needed. Mutual adaptation can mean that material actions performed by several people together are coordinated through observation and subsequent adaptation of the actions. To label such socially adapted actions nonsocial seems to be very inadequate.

It is interesting that coordination seems to be an implicit core issue in the definition of social action by Weber (1978). To "take into account the behaviour of others" in action, means that the actor adapts his action in some respect to others. He coordinates his action to the actions of the others. This adaptation can be made to actions already performed or to actions which are expected to be performed. *Coordination* is simply the *adaptation in action to other persons* and their actions. The husband adapts his action to the wife, more specifically her request. The wife adapts her behaviour to the acceptance made by the husband. She stays in the house waiting until the husband comes back with firewood. If he had rejected her request, then she could have acted otherwise. She could have gone out and fetched firewood by herself.

There are differences between communicative actions and material actions with relation to their social nature. Once again, the character of language is an important difference. The use of language necessitates an *intersubjectivity* between the actors. The *semantic power* of language enables the establishment of deep shared knowledge among the actors. Communicative actions have powers that material actions do not have. Very sophisticated coordination can be achieved by the aid of language in communicative actions. But material actions have there merits in front of communication. One cannot put words in the fireplace and get heat from it. If you put a newspaper in the fireplace, then it is not the function of telling news that you utilise. You use paper as a flammable material.

2.3 Comprehensibility in actions

Habermas (1984) has described a certain type of communicative rationality associated with communicative action. Such rationality is claimed to be different from the classical purposive-rationality of material action. The rationality of communicative actions are described with four types of validity claims: Comprehensibility, truth, sincerity and normative rightness. These four *validity claims*[1] should in principle be raised for every communicative action.

My discussion here will focus on comprehensibility. I will question that comprehensibility should be seen as only a matter of communicative action. I think however that such a critique also holds for sincerity and normative rightness.

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[1] Critique of these claims can be found in Eriksson (1999) and Goldkuhl (2000).

Material actions, when they are social actions, can be evaluated regarding their sincerity (i.e. if they are genuine expressions) or rightness (i.e. if they are in accordance with social norms). It goes however beyond the scope of this paper to perform such an analysis.

I will here concentrate on comprehensiblity. It is obvious that an utterance (i.e. a result of a communivative act) must be comprensible. If the husband does not understand what the wife says, then there is no possiblity for him to act in accordance with what is said. Comprehensiblity as one kind of validity claim seems to be fundamental in relation to the other validity claims in Habermas´ model. An utterance would not be a sign if it was not possible to interpret and understand it. Communicative actions must be possible to comprehend, otherwise they do not fulfil the basic criteria of being communicative. This is however not to say that there always exist an unambiguous and unproblematic relation between what is intended by a sign and how it is interpreted. Misunderstandings occur. People fail to communicate sometimes. And sometimes they are not even aware of failing.

Don´t we need to comprehend other actions also? Is comprehensibility really a feature only associated with communicative actions? Other people´s action might be mysterious to us. But in many situations, when observing other people´s behaviour we understand what they are doing. Their behaviour is *meaningful* to us. I claim that this is fundamental in social action. We want other people´s behaviour to be meaningful to us. This means also that we usually want our own behaviour to be meaningful to other people. If we do not understand what other people do we might get upset, frightened or confused. Actions directed to other persons need to be comprehensible, otherwise the addressee might respond in an inadeqaute way. Actually the most accurate response in such a situation seems to be a question - a request for clarification.

The concept of action relies on meaning. Action is meaningful behaviour according to Weber (1978). This means that comprehensibility - i.e. possibilities to detect meaning - is a generic feature of actions. This cannot be restricted to communicative actions. Even material actions of different types need to be comprehensible. There are of course differences concerning comprehensibility between communicative and material actions. The very idea of communicative actions is a transfer of meaning from one person, through linguistic externalisation, to another person or persons. Material actions directed towards other persons do not bear their meanings in linguistic expressions. Their meanings are not explicit in the same way, but they can of course be easy to interpret from the actions and its context. When the husband brings firewood, this type of action is probably easy for the wife to understand. She remembers their earlier interaction and comprehends his delivery of firewood as a fulfilment of her request and his promise. I do not say that the delivery is only a fulfilment of social obligations in its meaning. It is a material delivery and it must primarily be interpreted as such.

When she sees that he carries firewood in a basket, then she understands that he has done what he said earlier that he would do.

Differences between communicative and material actions in relation to meaning and comprehensibility can be described as follows: A communicative action aims primarily at establishing some change in knowledge[1]; i.e. that some other person gets to know something. A material action aims primarily at establishing some change of material conditions with importance to somebody. This other person must usually understand the change of material conditions, otherwise this material action will not lead to intended effects. The recipient cannot make use of the material conditions if she does not interpret their meaningfulness. If the husband brings something else than the usual firewood, the wife may be be confused. If the husband does not tell the wife that this odd stuff is meant to be put in the fireplace, then she will perhaps not use it for such purpose. She does not interpret his action, which to him is meant as bringing stuff to be burned, as such an action. She interprets it only as the husband is bringing some peculiar stuff to the living-room. A usual way to detect obscure meanings is to ask the other person to describe what they are doing or what they have done. The wife may ask: "Can I use this for burning?". And she will then use it after his confirmation.

All actions directed to other persons have a communicative force. Those actions, which we call communicative, have such a force obviously by its very purpose of communicating meanings. But also material actions directed to other persons have communicative features, as its performance/result is being perceived by the addressee and must thus be interpreted and comprehended. All person-directed actions are "symptomatic", i.e. they are expressions of actor meanings.

2.4 A brief summary

I have used an ordinary-life example above; an example with a wife asking her husband to bring some firewood. This example has been used to illustrate my theses. The request of the wife is a communicative action. This is of course an action which must be *comprensible* in order to be successful. The listener (=the husband) must understand what the wife says. The request is directed towards another person and introduces *social relationships* of certain kinds (request relationships with accompanying expectations). The act of request uses *language as an instrument* for communication. The request as such is an instrument (i.e. a *means*) for the higher purpose of getting something to put in the fire-place. This means that the communicative act of requesting some firewood can be described as comprehensible, social (i.e. building on and introducing social relationships and directed towards other people) and instrumental (i.e. using instrument in order to be performed and being instrumental in order to reach some purposes).

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[1] I use knowledge in a broad sense covering different forms as comprehensions, beliefs, expectations, conclusions etc.

Chopping wood and bringing it to the wife are two acts of a material kind, which are related to each other. The first subact changes the parts of the world (wood) by chopping it. The second subact changes the place of the firewood (from outside to be in reach of the wife). The act of bringing firewood to the wife (performed by the husband) is a material act. Nothing is said, it is only material changes in the world that are brought about. This material act is of course instrumental. The axe is used as an *instrument* to perform the action of chopping. The bringing of firewood is a *means* to fulfil the requst and desire of the wife, i.e. it is instrumental in relation to different purposes. The bringing of firewood to a person, who has requested this, cannot be seen as a non-social action. It is an action *oriented towards another person*. It is an action based on certain social relationships in the situation (a request and expectations from the wife and in this case also a promise from the husband). This delivery action also introduces new *social relationships* between the interacting actors (a relationship of gratitude from the wife). The performance of the act must also be *comprehensible* to the parties. If the husband in some way conceals what he is doing or if he performs the act in a peculiar way or with peculiar results, the wife might be confused about what is going on.

This means that *both communicative and material actions can be described as instrumental, social and comprehensible*. There are of course fundamental differences between these kinds of actions, but this should not hide that we can use instrumentality, sociality and comprehensibility as characterising dimensions in order to describe these different types of action. Sociality and comprehensibility are not to be seen as discriminatory features of communivcative actions. Instrumentality is not to be seen as a discriminatory feature of material actions. They are all descriptive categories for different types of actions - communicative as well as material.

3 An intermediary note on social action and interaction

What has been presented above is a special view on social action, which differs to a large degree from Habermas (1984). I claim that this presented view is more congruent with the early definition of social action made by Weber (1978). It is also inspired by Actor Network Theory of Latour (1992) which has strong arguments to make artefacts (physical things) visible for social action analysis. One main idea is to consider both communicative actions and material actions to be be social actions. An analysis and a generic model of social actions as communicative or material have earlier been presented in Goldkuhl & Ågerfalk (2000).

Most of what have been written about actions seems to take the *interventionist action* as a prototype. I think this goes for many action theorists, like Mead (1938), Weber (1978), von Wright (1971) and Habermas (1984). They all see action as

something externally made to world. The actor intervenes in the world by changing some state. I mean that this also holds for communicative actions as it is described by Habermas (1984). A communicative act is something externalised to the (social) world.

Mead (1938) emphasises sensing and perception as (the first) steps in the action. This is followed by the next step of "manipulation", i.e. changing something externally. This is a possible view. I prefer however to distinguish between these two types of acts, i.e. I will consider them as distinct types of actions even if they many times are closely related[1].

The husband is listening to the wife´s request. After this - and based on his interpretation of her utterance - he performs his communicative action of accepting her request. I consider the reception and perception of the action result (e.g. a request or a delivered basket of firewood) as one type of action. Perception of the world is not something passive occurring to us. Usually we are active and attentive in our perception of the world (Dewey, 1938). There are of course situations where we as humans do not take an initiative for an active perception. Things are exposed to us. We hear something or see something by accident. But even if this is the case a human actor can actively try to make sense of what has been exposed to him, and doing this he performs an *interpretative act*.

Such acts should conceptually be distinguished from the intervening actions described above. The recieving acts are not aiming at making a change in the outer world as is the case with intervening actions. The recieving actions are aiming at making a change in the inner world, we change our understanding of something in the outside world. I introduce a specific terminology for these two types of actions; intervening actions are called *i-actions* and receiving actions are called *r-actions*. Since intervening actions are usually what is meant when using the world "action" I will now and then stick to this type of terminology. Actions and i-actions are often used as synonyms when it is clear from the context.

Reading and listening are examples of r-actions. But also the perception of something brought to us is here seen as an r-action, e.g. when the wife recieves the firewood from her husband. Perhaps she does not do anything overtly. Anyhow this is to be seen as an action performed. This kind of r-action will effect her subsequent actions. If she did not perceive the husband´s delivery of firewood - she was perhaps not in the living room at that moment - then she will perhaps ask her husband if he has brought some firewood when they meet in the kitchen. This question had not been needed if she had perceived the husband´s delivery or was informed about it in some other way.

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[1] I am not denying that perception is an integral part of intervening actions. My point here is that some non-intervening behaviour (like interpreting, receiving) should be seen as a special case of action.

4 Information systems and actions

The analysis above (in sections 2 and 3) has revealed different apects of communicative and material action. It should not be seen as a mere philosophical exercise without pragmatic importance. The discussed action concepts will here be related to information systems. The purpose of the performed inquiry into action ontology is to contribute to an improved conceptual basis for theories concerning information systems and organisations. In this paper I will only pursue a small step in such theory building.

In my introduction (section 1 above) I have mentioned several approaches for relating action aspects to IS. There are approaches based on Activity Theory (AT), Actor Network Theory (ANT), Organisational Semiotics (OS) and Language Action (LA). I will here use an approach from the LA and OS schools: *Information Systems Actability* (ISA), presented by Goldkuhl & Ågerfalk (1998; 2000)[1]. This approach describes clearly different usage/action situations of IS. These three usage situations are:

- Automatic usage situation
- Interactive usage situation
- Consequential usage situation

Different types of actions are related to these different situations, which is described in figure 1. An automatic action is something performed by the computerised IS. A consequential action is something performed by a human (based on information support of the IS). Interactive actions are performed by a human and an IS together.
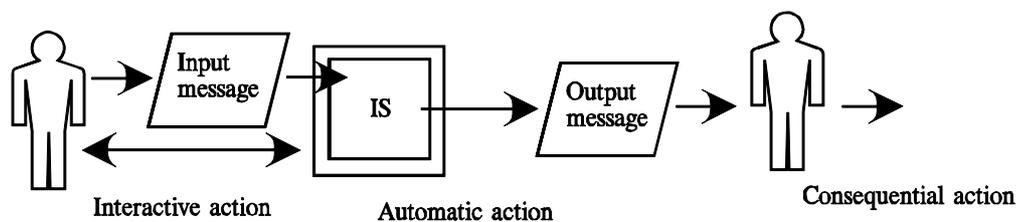

Figure 1 Different actions related to an information system
(from Goldkuhl & Ågerfalk, 2000)

This means that the actability approach combines aspects emphasised by AT (IS as action support) and ANT (IS as action performance). These two approaches are seen as antagonistic in this respect (Nardi, 1996b). In IS Actability these views are reconciled in a dialectical fashion. The IS support aspect is emphasised in consequential and interactive usage situations. The IS action performance aspect is

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[1] Confer also Ågerfalk (1999) and Cronholm et al (1999).

emphasised mainly in automatic usage situations but also in interactive usage situations.

The IS Actability framework also brings in other aspects like human-artefact cooperative action. An interactive usage situation can be seen as a combined performer action, i.e. a human user and a computerised IS performs an action in cooperation. They are both parties in this action performance.

I will go through these three usage situations in more detail below and use the action concepts described in section 2 and 3 above. I will use a simple example from home care service[1] in order to illustrate my analysis. A brief introduction of this example: Home care service consists of home care assistants giving support to elderly people in their homes. The support consists of helping the elders recurrently with dressing, personal hygiene, medicine consumption, simple medical care, food, cleaning and other ordinary activities. Some actions are performed directed to the elder and other actions (like cleaning) are directed to the residence of the elder. The home care assistants use an information system as support for planning, execution and follow up of home care services. The home care service is individualised. This means that different service actions will be performed to different elders. The home care measures to assist one individual can also vary over time. Particular service actions can be needed at one occassion or during a limited period. All these differences must be managed through the IS.

4.1 Interactive usage situations

In the IS Actability framework, interactive usage situations are described through the use of a model of an elementary interaction loop (EIAL); figure 2. Interactive usage situations consist of one or several elementary interactions. Every such elementary interaction consists of three phases: 1) a user action, 2) an IS action and 3) an interpretation by the user.

I will use this EIAL schema for my analysis and application of action concepts. Think of a home care assistant using an IS for planning of home care service. The planning consists of working with weekly and daily schedules. The user action (phase 1 of EIAL) can consist of the home care assistant - in a planning form on the screen - selecting an elder and a service day and registering a particular measure to performed. The IS action (phase 2) is to update the planning schedule (the database[2]) and then confirming this on the screen. In phase 3 the user reads the screen making sure that the measure was registered correct. If it did not seem to be correct - e.g. the home care assistant registered some measure faulty for one particular day, which should instead be registered for a period of time - she can go

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[1] This example is based on an on-going case study; cf e.g Goldkuhl et al (2001). The case is here used only for illustrative purposes. I am not trying to give any empirical evidence.
[2] The IS Actability approach uses the concept of action memory for this; cf Goldkuhl & Ågerfalk (1998; 2000) and other ISA references.

through a new EIAL and correct what was done earlier. Otherwise if she interpreted it as correct she can then make some planning for other elders or some other task; i.e. going through other elementary interactions.

The EIAL consists of three interrelated subactions. Two of these are performed by the user (#1 and #3). One of them is performed by the computerised system (#2). The first act is an communicative act performed by a human being. It is not performed directly to another human being. It is performed with primary direction to the computer system (an artefact). It is however in its extension directed towards other humans. The planning system is to be seen as a system for communication between the different home care assistants working together in a job team. The purpose of the act of registering service measures is that other home care assistants should be influenced to perform such service actions towards the elders. The social character of these planning actions is obvious even if the home care assistant is perfoming her planning work completely alone, i.e. no other persons are present.
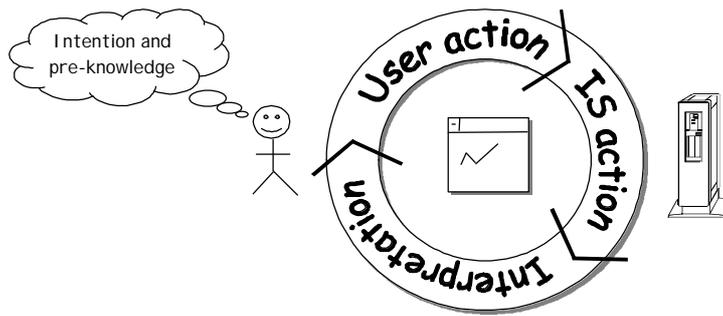

Figure 2 The elementary interaction loop - EIAL (from Ågerfalk, 1999)

The computer system is both an instrument and recipient for performance of the action. The user is utilising the interface of the system in order to perform the registering. The user interface (as an instrument) restricts and directs her actions[1]. What is written is aimed to be put in the system (its planning data base); i.e. the action is directed to system. The user communicates something to the system. As something written it must comprehensible.

The second action is an artefact action. It consists of both of an r-action and an i-action. The artefact (the IS) receives the data input from the user; this is the r-action part. The system then performs something; i.e. making changes in its planning data base (action memory). This should be seen as an i-action. After this

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[1] The IS Actability approach uses the concept of action potential or action repertoire of an IS to describe parts of its functionality; cf Goldkuhl & Ågerfalk (1998; 2000) and other ISA references. It is this repertoire and how it is made visible to the user that directs and restricts the user in her action.

there is a confirmation communicated to the user as a feedback. This last part is a communicative action (i-action), since it is through the use of signs directed towards someone else with comunicative intent. This confirmation must be intelligible to the user, otherwise she will not comprehend it. The whole action is instrumental in the sense that it is performed by an instrument according to its governing rules. The instrument (the IS) does not find out anything by itself to do. All is programmed in advance as typical actions. The IS action is an instantiation of the action repertoire programmed for the system.

The IS action can be seen as social since it is performed as a mediation of the communication from the planning home care assistant to the executing ones. The system adapts its behaviour according to the rules of its program (coming from the design responsible persons) and the data input from the user. The confirmation feedbacked to the user has a clear communicative function. Even if it is an artefact that performs this pre-defined compound action its social character is obvious.

The third action is an r-action. The user is reading the screen. She is using the computer as an instrument for doing this. The point of reading the screen is to make sense of what is communicated. The user must comprehend if the earlier input action (#1) was successful. The user wants to make sure that the correct information will be communicated to her collegues who will perform the service work.

4.2 Automatic usage situations

An automatic usage situation can be desribed as IS performing actions of its own without any intervention or direct surveillance of a human. This includes both internal operations (e.g. calculating, retrieving and storing) and distribution and presentation of results to human users[1].

Computers are good at keeping things in order. The home care IS is, besides planning, also used for the handling of a care journal. If something has happened to an elder worth communicating, it should be registered as a journal note in the computerised care journal. It is important that the home care assistants read the care journal before they go to the elders so they know the current situation for the elders. The information system has an automatic routine for informing the home care assistants about inserted journal notes. After the user has logged into the system, the system will present a list of journal notes that have been written since the user was last logged to the system. She can use this list to select journal notes to read.

The keeping track of journal notes and which users who have read them are automatic actions - performed by the computer (i.e the instrument itself) - with a communicative purpose. These automatic actions have to be done in order to present the list of unread journal notes to the user. This presentation of a journal

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[1] It can also include the transfer of information to other information systems.

note list is a communicative action (i.e. an i-action) directed to the user. It functions as an incentive (and a means) for the user to read the journal notes. This list must of course be comprehensible for the user when she inspects the list (which is an r-action).

For reasons of clarity, this description of automatic usage situation has been contextual. The description involved also consequential actions performed by the user; the reading of journal notes. A more comprehensive description of consequential usage situations follows below.

4.3 Consequential usage situations

A consequential usage situation can be desribed as a human action performed based on information from an IS (Goldkuhl & Ågerfalk, 2000). The human uses some information from the IS and then performs an action. Such consequential action might be communicative or material.

The plans for home care service (within the IS) are used as a basis for performing home care services at the elders. A home care assistant reads (i.e an r-action) - from the screen - the service measures for a particular elder, so she will know what to perform when she arrives at the home of the elder. The service actions performed at the elder´s home are intervening and mainly material. Some communication will of course occur, but the core of the home care is performing material changes (as e.g. lifting the elder, dressing the elder, serving breakfast).

In this case the consequential actions performed by the home care assistant (the user) are material. Even if these actions are mainly material interventions, they are genuinely social. The home care assistant is taking care of - helping - another person. The actions are instrumental (i.e. they are means) for creating a good situation for the elder so he can live his life as normally as possible (which is the end of the home care service). For performance of some service actions, the home care assistant can use external aids (e.g. cleaning equipment). For several actions she will only use her own body as the main instrument. For the elder it is important that the service actions perfomed by the home care assistant are comprehensible. One reason for this is that, as a client of the home care service, the elder should be able to assess what kind of service is delivered.

5 Summary

In this paper I have performed an analysis of the action concept. I have investigated communicative and material actions in relation to descriptive categories as instrumentality, sociality and comprehensibility. I claim that all these categories can be associated to communicative and material actions even if there are important differences between these two types of action. Based on these analyses, an investigation of action types related to information systems has been

pursued. Three different usage situations of information systems have been investigated and characterised: Interactive, automatic and consequential usage situations. The conceptual framework of actions proved to be useful when describing different IS usage situations. This conceptual framework for social actions consists of the following concepts: Instrumentality (means-intrumentality, tool-instrumentality), sociality, comprehensibility, type of influence (material or communicative action), action direction (intervening or receiving) and action performer (human or artefact or human & artefact co-operative action).

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