

# THE PSYCHOLOGY OF COOPERATION - CONSEQUENCES OF DESCRIPTIONS.

*The power of creative dialogues.*

Unni Holand & Thore Danielsen

NTA/RD, FBT, P.O. Box 2806, 9001 Tromsø, Norway.

tel.: +47 83 80150

e-mail: unni@fbt.nta.uninett

or thore@fbt.nta.uninett

## ABSTRACT

This paper contains a discussion on different ways of describing the phenomenon cooperation. These perspectives are in turn used in understanding the descriptions of cooperation as given in different contexts. From one of the perspectives one sees those aspects of cooperation which shows some resemblance with those of a creative dialogue. On the basis of a discussion of these aspects we may give some guidelines for the development of computer-based systems supporting cooperation.

### 1. Aim and scope.

We shall in this paper focus on our *description* of the phenomenon cooperation, which is the object of our research. We believe that the words we use and the descriptions we make, create the objects and thereby also the conditions for our further studies. In a way the descriptions constrain the questions which might be raised and the answers that might be given. But then, we do not believe that it is interesting to evaluate descriptions on correctness, i.e. considering the one way of describing as more correct than others.

In discussing such a wellknown phenomenon as cooperation we find it especially important to raise questions on the way we do the descriptions. We shall therefore in our discussion consider the different descriptions as a result of different perspectives, i.e. ways of looking at cooperation.

We have recognized three potential perspectives, and we shall try to relate them to, potentially different, contexts. We shall in turn give possible consequences of staying with the one or the other perspective. Again, as with descriptions, it is not interesting to discuss whether the one perspective is more correct than the others. We believe that such a discussion would give a false impression of having criteria which can be considered objective. Discussing objectivity is, as we see it, not relevant.

On the other hand, to reject the existense of objective criteria for deciding which perspective are right and which are wrong, does not mean that it is impossible to discuss the properness of the same. Neither does it mean that it is impossible to discuss the advantages and disadvantages of choosing the one perspective compared to the others.

It is within this framework our paper should be seen. And when we give a more thorough discussion on one of the perspectives, this is solely due to our belief on this being the less commonly known, recognized and utilized in our environment. In discussing this perspective, which focus on cooperation as a mutual process with limited strategic and rational reasoning, we shall try to take advantage from what we know about dialogues, and especially creative dialogues.

## 2. On the current use of the concept cooperation.

The way in which man creates his world, both verbally and perceptually, has been discussed in a number of philosophical works. Attempting at presenting the conditions for this thinking could make both Kant (1911), Marx (1956) and Hegel (1845) turn in their graves, or make Piaget (1970), Bateson (1972, 1979) and Watzlawick et al. (1967) and Watzlawick (1984) wish that we left these matters to those who completely grasped the meaning of their works. So let them, instead of us, guide you on such a tour.

What we state is that the nature of the objects and phenomena only to some extent determine the descriptions we give. Our descriptions are as much a result of our choices and our need for projecting ourselves into our environment. The description will then bear evidence of where we stand and what we wish to recognize in the phenomenon we are studying. Admitting that our surroundings, for instance through our descriptions, may be adapted and transformed is one of the things that makes us - as observers - responsible for what we see. Thereby, as von Glasersfeld (1984) reminds us of, our thinking and knowledge is our own responsibility. And our research activities are just as much *constructing* as uncovering the reality.

So when constructing rather than uncovering realities are the basics of scientific work, we ought to step carefully when dealing with such a social and communicative phenomenon as cooperation. There are ever so many ways in describing social phenomena as cooperation, compared to descriptions of physical objects where the empirical association might be recognized as stronger. The conclusion of this is that the phenomenon to be described, cooperation, may be taken as having a larger projective potential. And there exists a multitude of ways to interpret what is observed.

Another reason for taking care when describing cooperation is based on the fact that we are dealing with a well-known and frequently used concept. One may too easily leave out that there exists so many ways of describing the phenomenon. One may also too easily be caught in a trap where one believes that everyone agree on what cooperation is. And since everyone "knows" what it is, one might easily skip all discussions on how to describe the phenomenon.

What people agree on, no matter what their perspectives are, are often descriptions of cooperation as "working or acting together" or "assisting or being willing to assist". These are both phrases very close to entries in any dictionary. But we still feel that there is a need for investigating alternatives to these most oftenly used phrases meant to describe cooperation.

In scientific works we often find descriptions of the phenomenon, causal explanations and recommendations with respect to strategies. However, this has often been done without discussing the description itself. For instance, Durfee et al. (1987, p.30) writes:

"There is no mystery to why people cooperate. Cooperation occurs when each person believes that he or she will benefit more by cooperating than by acting in some other way. Similarly, groups of people will cooperate for their mutual benefit: businesses cooperate to increase profits, and nations cooperate in part to improve security (...). In such situations, the cooperating *agents*, be they individuals or groups, only cooperate to improve their own self-interests. The prevalence of cooperation in human society, and in the world in general, indicates that there are many ways that selfish agents can interact for their mutual benefit."

This reflects a perspective on cooperation, without giving this explicitly, which serve as the main condition for the rest of their discussion. And in our interpretation, this main condition is the idea of cooperation as an activity where the main element is the individual participants quest for personal profit. What we here try to convey, is that a satisfactory cooperation seems to be a question of whether some final, and possibly personal, goals have been reached. By giving such a description, one may not be aware of the possibility that also the creative process itself might give the participants a feeling of satisfaction. Cooperation is exclusively seen as some strategic mean for reaching the requested final goal.

But then, such a perspective is both legitimate and often very plausible. What we miss is a discussion on the possible pros and cons of such a perspective. We would also have appreciated a judgement of the consequences such a perspective might have on the further study of causality and the internal structures of cooperating groups.

We do recognize that Durfee et al. (ibid.) seems somewhat concerned about the state of the art for the research on cooperation. This is for instance shown in:

"Despite its prevalence, however, cooperation is still a poorly understood phenomenon."

But maybe this urge for concern is a result of leaving out relevant discussions on the descriptions chosen, as we indicated above. It seems as if Durfee et al. make their description on the basis of self-interest as the active element of cooperation. If this is a legitimate interpretation, then the cooperating system could appear as a collection of autonomous entities (participants) without attaching enough importance to the process which constitutes the cooperation.

The individuality and independence which is attributed to the entities of the system (the participants) may lead to a situation where the mutual dependency between the same is overlooked. This dependency is not primarily of a personal character. But what we focus on is the relation between the entities of the systems. These entities may only exist through the descriptions of such relations. The entities are attributes of the relations, and not vice versa. For example, an airplane might be described as a system where first and second class are chosen as entities. Most oftenly the description of these two entities is given as a set of traits for the two. By describing mere traits of the entities one is lead to believe that they may exist on an independent basis with these traits. But the only meaningful description, as we see it, would be to start out with the relation, in this case the differences, between the two. It is only through these differences they exist as entities, in this case 1. and 2. class.

A number of the scientific contributions within the CSCW-framework take, as far as we can see, a similar stand as Durfee. This is a perspective concentrating on the participant with less emphasis on the relation which brings him into existence. We both know and respect some of the arguments supporting the choice of this perspective. But we regret that these descriptions contain so little reflection on the perspective itself. Examples are Cindio et al. (1988); Pankoke-Babatz et al. (1989); Bowers et al. (1988) and Winograd (1986); Greif et al. (1986); and Malone et al. (1987). Maybe these works should have contained a discussion on the perspective chosen and of the description of the phenomenon they deal with, which is what we understand as cooperation.

### 3. Cooperation: three different perspectives.

"...contrary to general belief, order and chaos are not objective truths, but - like so many other things in life - determined by the perspective of the observer."

Watzlawick, 1976, p. 57.

It has occurred to us that people tend to put different interpretations into utterings like "he did not seem to be interested in cooperation" or "I do not believe I will find it worthwhile cooperating with her". In situations where these are put forth you may find people tense and edgy, and often they would describe their feelings as "not getting it their way". The impression this may have on observers is that cooperation is based on solving disagreements and conflicts. But this may be viewed as only one of the possible perspectives on cooperation. A shift in perspective of cooperation is exemplified in a dialog given in Steier & Smith (1985, p.3):

"I once was very involved with the labor movement and saw things in terms of conflict and the importance of coalition building, confrontation and negotiation. Then (...) I started learning about what I'd describe as a managerial perspective - delineation of tasks, allocation of responsibility, coordination, etc."

This change in perspective is essential for the understanding of what cooperation might be seen as. And this should remind us that the description itself has impact on how one treats the phenomenon.

Surely it could be interesting to discuss the reasons for this change in perspective given in Steier (ibid.). Is this change caused by research and a new understanding, or does it reflect that one abandons some radical views for the sake of a laidback lifestyle. Steier says "some callous person might wonder if this is the early onset on a midlife crisis" (ibid.). We hope that this is not the one and only relevant explanation of this change.

Before we continue on a presentation of the different perspectives on cooperation and the possible relations among these, we should stress that we are aware of the danger of simplifying matters beyond "an imaginary critical point" and that our descriptions might be taken as idealizations of a reality where any persons view is best described as a mixture of our different perspectives.

#### The first perspective: strategy.

When observers describe cooperation as seen from the first perspective they describe the participants as stating their position very clearly, and the arguments which the participants give are seen as an attempt at strengthening what they claim to be correct in some sense. The observer would also suggest that the ultimate result of the groups discussions and negotiations should be a specific product or a specific statement, e.g. an agreement concerning office hours and the employees rights and duties. In the description we also find the process of stating positions explained as a confrontation between the participants. As conflicts are recognized, they tend to be described as solved through some process of negotiation. Such a process is often seen as some participant trying to persuade the others that his position is the correct one by attempting to put his statement in other words, or some participant trying to make the others "give in".

Any disagreement and difference in views expressed in the cooperating group, will tend to be described as a conflict. And when such conflicts are recognized, the observer will often see some of the participants trying to build coalitions so that their positions - which they may describe as being close - stand a better chance against the others. Seen from this perspective the cooperation tends to be described as a quest for power. And those who are in power may be described as using the appropriate strategic tools or ways of expressing themselves, to enforce negotiations to turn more into their direction.

### The second perspective: coordination.

From a second perspective cooperation is described as a method for a group to solve some joint problem or perform a common task. The observer often see the process of cooperation as based on a sharing of, among all participants involved, the responsibility for reaching the goal. He refers to the result of the task in question, or the problem to be solved, as a product. Seen from this perspective the observer would only to some extent find it relevant to describe the participants as reasoning about whether the task in question should be solved by them. Instead the observer would focus on whether the already defined goal is reached or not.

The observer would also take for granted that the participants in all their doing are primarily rational. This presupposition of rationality makes it attempting to refer to coordination as one of the main issues in cooperation.

### The third perspective: reflections and creativity.

Our third perspective is the one where cooperation is interpreted as a group process where the partners are encouraged to contemplate and reflect on matters being discussed. The observer will make a description where the suggestion for solutions and views expressed by all parties are recognized and looked after. They are all described as of potentially equal interest. The observer would also describe the participants as being well aware of the importance of both their own and their cooperating partners contributions in the process. But, in doing this, the participants are also described as recognizing the possibility of contributions being interpreted differently by different partners. Still these contributions are regarded as a common material.

A description given from the third perspective try to focus on the process itself. The observer will, in addition, attempt at not seeing the participants as unchangeable and autonomous entities of the system, but more as products of the processes they take part in. These assumptions might make it easier for the observer to recognize the participants potential for undergoing changes.

Finally, as the observer focuses on the participants recognition of the possible different interpretations of the common material, he will be reminded of his own role as interpreter and describer. This makes the observer part of this process and any other phenomenon he chooses to describe.

## **4. Contexts for understanding the concept cooperation.**

Given these three different ways of describing cooperation, we may recognize different contexts in which these descriptions may interpreted and understood. A difference in perspectives on cooperation may, as we have shown, affect the observers description. In addition, as far as the participants from time to time observe their own and their partners behaviour, it will also affect themselves as participants and cooperation itself. We shall in the following try to shed some light on a few such contexts.

### *4.1 Historical / chronological context.*

Most certainly, you are all more or less familiar with a chronological perspective on a description of cooperation. The description of cooperation as strategic behaviour was the most prominent a few decades ago, whereas it now seems to have faded somewhat into the background. At that time, the ability to take a stand and to stick with it through all criticism raised was very much favoured. One did also, at that time, favour a persons capability of acting strategically. These aspects were all paid very much attention to whenever the cooperative work and the persons participation was described.

All this worked very well for some time, until one found to appreciate the notion of working as teams and the potential pay-off of such arrangements. Cooperation was at that time described as a process where one as individual, and as a member of a team, should pledge oneself to a joint

task. The techniques for working as a team evolved, which in turn made more complex tasks and problems possible, and the necessity of *coordination* grew stronger. As contributions from the participants were coordinated, so were the search for joint interests and the quest for a goal based on the benefit of the community (group). This quest was, however, often based on tasks which were defined by some instance external to the group.

During later years we have more frequently seen a search for a perspective where both the individual creative activity and the personal experiences are given a stronger attention and a better chance to survive. Each person's history and experiences is seen as valuable, partly due to the potential implications of differences in these. And one tries to increase the possibility for each individual to present his views, but - at the same time - always bearing in mind that these views expressed are one out of many.

#### *4.2 The societal parts context.*

Some may find it reasonable to attach the perspectives to different parts of the society. Our first perspective could in such a way be recognized as potentially covering a diversity of political activities. These are processes where opposition, often based on a materialistic foundation, is emphasized. The arguments used throughout the process, and the reason for using them, have their basis in statements put down by some political party or organization. They may also be said to conform with more well-established norms or points of view shared among a number of persons in the community.

The second perspective, where we see coordination as a main feature, could easily be used as a description of cooperation within the modern trade and industry. The trend within modern economic life is to involve the organization as a whole and all its members in a cooperative manner. Both blue collar workers and management participate in for instance discussions on efficiency, environment etc. with the aim of sustaining and increasing the enthusiasm for one's work. Cooperation is often described as getting all employees to pull together towards some idealistic world description or some joint goal. One of the consequences of such a description is that antagonism between professional bodies becomes less visible.

In a societal context we find our third perspective, where we focus on reflection, most commonly regarded as some ideal and not something which might easily come true. Examples of activities or environments where this perspective on cooperation is employed are rather rare. However, we believe that one within academic environments aim at this ideal more than what seems to be achieved so far. This perspective is possible very much in line with the academic ideal.

#### *4.3 The research context.*

Well, I've got 20:20 vision  
I can see that for myself.

Rory Gallagher.

So far we have seen how we in two different contexts may find the three different descriptions of cooperation as given above. Let us now move to a third possible context, the research domain. This domain may be viewed as a context of a partly different character than the former contexts, but we find it relevant also for this domain to look at the different perspectives on cooperation.

Before doing that, we should remind you of our basic assumption: that we ourselves create our reality through our perceptual organization and our verbal behaviour, i.e. our observation and our description. Subsequently, we have given three potential descriptions of cooperation; 1) focusing on strategy, 2) focusing on coordination, and 3) focusing on creativity. And through the discussion on the latter of these three perspectives, we found that studying cooperation as a phenomenon itself is done through cooperation with, and through a dialogue with, the phenomenon. We also believe this to be true for the study of any object of research. We will in

the following visualize exactly this by making scientific work the object to be described. We will along with this explore the consequences of using each of the three perspectives. This means questioning the observers relation to his object of research, and the localization he chooses.

For the description of cooperation we found that using the *first perspective* would result in focusing on the strategic behaviour of the participants, their conflicts and their communication as negotiation. If we regard the observer as an actor within the scientific domain, one might say that the observer is positioned within the system he is studying. His tries through the descriptions to reflect the views of the participants. However, this is not presented as subjective, but more like a true observation of an empirical phenomenon.

But if the scientist in his work tries to give descriptions from the *second perspective*, which focuses on coordination, he will be found to have taken a different position. This is the perspective where one tries to study the system from the outside. The observer sees himself as external to the system, and as a neutral observer without any influence on the system. In doing this, he regards the system as closed, and he himself does not take part in the process. Contrary to the former perspective, we find attempts at a description of the relations between the entities of the system, and a study on the mutual cause and effect. The behaviour of any entity would always be analyzed as a function of the behaviour of other entities.

Another change in position is found if the scientist tries to give descriptions from the *third perspective*. A consequence of describing cooperation from this perspective was, as we have shown, a focusing on the creativity in interactions and the diversity of interpretations. The position which the scientist tries to reach is neither within the system or on the outside of the system. We find the observer recognizing that purely by observing and describing he enlarges the system. We could describe this as him, along with the original system, embodying a new system. He does not recognize himself as giving unbiased reports from specific autonomous entities within the system. Neither does he find himself as an external body which might objectively reflect the relations which the system is said to be consisting of. Instead he takes part in a new system where a new dialogue is found. His own interpretations and expressions undergoes a continuous reformulation through his dialogue with his object of research, the system.

But all this is due to the belief that we ourselves create our world through our descriptions. If this is not considered as a potentially fruitful condition, then all of the above discussion on cooperation within the research context would have to be taken as being irrelevant. You may leave us here if this is your position.

## 5. Reflections on the creative dialogue.

We have through our presentation of the three descriptions of cooperation aimed at stressing the differences which might appear as a consequence of what we try to achieve, and thereby describe, by the phenomenon. The above descriptions should in principle be adequate for the very same or similar situations. Because it is through our description that different aspects turns out as more important than others. We do not claim that the descriptions are independent of the ongoing process. But rather, when the descriptions are given, what turns out as more important is our own responsibility.

We might say that the phenomenon is a result of our dialogue with the same. There is an infinite change of turns between those stimuli the phenomenon "echoes to the surrounding world" - and those which we read, our interpretation of these stimuli, our conceptualization of the same and the consequences this interpretation has on the understanding of the phenomenon.

Furthermore, we believe it is valuable to use the dialogue as a metaphor in our description of cooperation, because by doing this, aspects which we find important becomes vividly appearant. This means that the dialogue may be used as a metaphor for (1) our, i.e. the

describers, relation to the phenomenon, and (2) as a metaphor for the understanding of interactions in cooperation.

Our next challenge would then be to describe the elements of a naturalized dialogue, i.e. a dialogue where no technical tools are used. This description could then show us some important aspects of creative cooperation.

#### Number of participants.

We are firstly concerned with the number of persons participating in the cooperation. The concept dialogue reflects conversational situations involving two persons. And it is important to recognize that a conversation involving more than two persons would be far more complex, and contain other aspects than what the study of a dyadic relation could envisage. But anyway, we still believe the dialogue could serve as a basis in discussions on cooperation. Although there is an increased complexity given in expanding the number of participants beyond two, we find that a number of important aspects of cooperation might be visualized through a discussion of the dialogue.

#### Creativity.

By designating dialogues as creative we express that we will leave out those where the main task or aim is a confirmation of some established viewpoint. We will also leave out those conversations which concentrate on pure information exchange. Instead we focus on the mutual reflection and the creating of new knowledge.

#### Context.

Our third perspective has important impact on a discussion of contexts. And with such a need for discussing contexts from a new perspective, this will imply undertaking a task more demanding and comprehensive than we may do here. It will not be a discussion on the relevance of given contexts, but a discussion on how to describe and understand contexts.

#### Change of turn.

One of the most appalling aspects of dialogues is the change of turns between the participants contributions. This makes studying the contributions (the turns) as isolated units rather meaningless if the aim is to study the dialogue. This is also true if the reason given for the study is meaning, intention, strategy, control etc. The contributions may be taken as representing only minor parts of a larger whole. This differs from traditional text-analysis where the object of research has been a continuous flow originating in one single source.

#### Incompleteness.

We will question the adequacy of discussing completeness and incompleteness in a dialogue. But if it is considered interesting, one should at least be able to describe each contribution, i.e. each turn, as incomplete. Each participant should in this sense be allowed to expect that the others do not always demand that his contributions should be complete and worked out thoroughly. This also requires that he is able to tolerate his own incompleteness. This means that he regards any of his turns as mere contributions to a common material subject to reworking, and not regard these as his property but as elements of the dialogue. This implies the participants mutual responsibility for both his own and the others contributions.

#### Interpretation.

From the above, we find the process of interpretation as of major importance. If one regards ones contributions as incomplete, one will also have to recognize the necessity of the others interpretation. And the possibility of different interpretations would primarily be regarded as a resource and not as a problem. Controversely, when considering monologues, spoken or

written, we often find the speaker being annoyed of the possibility for "misunderstanding", i.e. the listeners have an alternative interpretation of the contribution. This "misunderstanding" would in a creative dialogue be regarded as valuable. And it should be obvious that both the verbal and non-verbal communication is subject to interpretation.

### Similarity and Difference.

We could find it attempting to present expectations to the participants in a creative dialogue. And in recognizing the value of incompleteness and a diversity of interpretations, we would have appreciated that the participant could use this as an opportunity for bringing forth new contributions. The ability to reformulation would then turn out as an important resource. The reason behind reformulations should not be a need for refutation of the others statement. Instead it should be meant to forward the ongoing dialogue.

To achieve this we believe that the following two matters are important. Firstly, the participants should be assisted in making positive reformulations which is somewhat in accordance with the basis of the dialogue partners statement. Some would refer to this as staying with the topic, holding a coherent conversation or basing the responses not solely on ones own premises. The reformulations could be taken as showing some similarity with the original statements.

Secondly, the reformulations would have to be different enough to make the dialogue moving onwards. A response should in this sense not be too similar to its stimulus, but should put forth new material. Merely repeating the stimulus could be interpreted as not understanding the statement at all.

The participants should therefore be given the possibility of producing contributions which are both similar enough and different enough.

### Topic.

The concept topic is used rather frequently when describing communication in general, and especially dialogues. However, we believe that focusing too narrowly on topics could easily restrict the possibility for reformulations of verbal statements in general and especially the problems discussed. We should note that the mere use of topic as a concept might introduce problems. Even when analysing highly structured discourses we may find inconsistency in what is to be regarded as topics. It may be found feasible to give descriptions of networks of topics and not only refer to single topics.

When studying creative dialogues one has to keep in mind that topics may be seen as different and may be described in different manners. A closed definition of topic might restrict the participants in their behaviour. It is very important to have the possibility of approaching a topic from different angles.

### Meta-comments.

Another important aspect of creative dialogues is the possibility for presenting comments or contributions on several different logical levels. The possibility to, metaphorically speaking, step out of the ongoing discourse and make comments on other aspects of the discourse is highly important. This might be utterings which frequently are referred to as meta-comments (a comment on a higher logical level), or utterings of a more "technical" nature (a comment on some lower logical level).

We have here sought to look at different aspects of naturalized dialogues. Maybe these should be more seriously taken care of in the design of media meant to assist cooperation.

## 6. Computer support for the creative process.

But then, what are our demands towards a tool meant to support cooperation if we to a larger extent should focus on some of the aspects of creativity? The following discussion may be seen as our first attempt at giving requirements towards computer-based tools supporting cooperation. Since we concentrate on the support needed if dialogues - and especially creative dialogues - are the main issues in cooperation, our discussion will be closest to the third perspective. But the discussion is not exclusively as given from the third perspective, since the same aspects may be present in descriptions in line with the two other descriptions as well.

Our requirements should be seen as a minimal set. This implies that no single requirement could be left unsupported without causing larger effects on quality of service from the computer-based systems. Adversely, fulfilling any single requirement would not be sufficient for supporting cooperation from the third perspective.

The requirements towards computer-based systems are for the following discussion in most cases given as a comparison with the functionality given in existing tools supporting cooperation.

### The cooperating group - a network.

One of the basic requirements on our tool would have to be the support of communication among a network of persons cooperating. In such a network of persons there may exist and may be established- if not existing - a path for communicating between any two members of the group. If we consider existing computer-based systems we find the possibilities for establishing such networks where anyone may communicate to anyone within the group, more easily available in the pure transport-oriented tools - as e.g. computer-based systems for mail handling - than in the more sophisticated tools supporting the management of groups. This is due to the fact that group definitions, which might be given when using the more sophisticated tools, also embodies a complete description of all potential paths of communication for the whole group. We do not advocate returning to pure computer-based mail-systems, but rather ask for a support of more dynamic group definitions.

The system supporting cooperation as described by the third perspective should therefore primarily refer to the relations - the potential paths for communicating - between the participants, and through these give a description of the participants themselves.

### The continuous process.

The process of cooperation is considered as continuous. This means that any interrupt or diversion, which not is considered as part of the process, is recognized as having effects on the same. If the computer-based system does not cater for and support the given interrupt, it should at least note that the interrupt took place and try to catch the nature of the interrupt. And this should be visible to the group as a whole. This is contrary to the very frequently used closed-world assumption. We know that some designers of computer-based systems will regard this as pure hairsplitting since they might prove that their computer-based system is capable of recognizing whether someone is present or not, has been interrupted or not etc. But there is a difference in whether it is the computer-based system which recognizes the event, and then reasons about it, without using this newly established knowledge during the rest of the process, or if it is the group which is informed about the event and then reason about it.

### Surveillance and control in the cooperative process.

Any act of surveillance or attempt at controlling the cooperative process would be in conflict to the main idea and focus of the third perspective. This differs from for instance the second perspective where a description of a cooperative process more easily could include some coordinator which relays some of the communication within the process. The third perspective requires support for dialogues between any two members of the group at any time.

Surveillance is the process of taking down all or some parts of the process and the exchange of information with the aim of utilizing it in some power-game. For the third perspective there is a need for the support of gathering and displaying as much as possible to all persons. They would then be observers entering into a dialogue with the phenomenon cooperation itself (see above).

#### Contexts as boundaries for processes.

Tools for communication and cooperation built during the later years are often based on the recognition of context as a description of the world in which communication and cooperation takes place. But as soon as one has settled down for contexts, these are sought minimized in order to make a language for describing contexts formally as little complex as possible. It seems like there has been established a tradition in building computer-based tools where complexity is avoided on the background of fear of the not-computable.

This is accompanied by the use of context as a synonym to specific processes and situations which most people, including the computer scientists, have experienced and are able to comprehend. When context is used as a synonym for meeting, conference, job procedure, task and other situations it becomes a strait jacket in which the creative part of communication and cooperation suffers a silent death. But then again, a meeting might be the context at some stage for someone involved in a cooperative process. But the context can be seen as something far more than the meeting, and as having different levels.

#### On the use of and sharing of sources.

In describing cooperation as a creative dialogue it is interesting to reflect on to which extent the participants share for instance sources and background literature. A computer-based system supporting this would therefore have to support a high degree of data- and file-sharing, and possibly some advanced data management procedures as e.g. dictionary, directory services, library services etc.

It is equally important for the participants to grasp some of the differences in the ways one has described the usage of sources, the understanding of the same and the associations they have nourished. Again, we focus on the description. This makes these differences in descriptions into features of the relation between the entities of the system.

#### What's a subject? - What's a title?

As we have seen, nearly all context descriptions which in the existing computer-based systems are used for cooperative processes, refers to some specific type of situation (meeting, conference etc.) or some specific task which has to be performed (the writing of a report, the planning of a date for a next meeting etc.). This restricted view on context is then used by the computer-based systems as a reference to the cooperative process by using the "name" of the context as a reference to all data stored for the process. This will normally imply that the topic discussed is to be known by this name, and this name alone throughout the whole process. When looking at cooperation as a dialogue the participants may, to a larger extent, be described as recognizing a diversity of interpretations of the process itself, we may find that they use several "names" of the cooperative process - or if you like, the names of the games. A computer-based system should therefore be capable of mapping alternative names and titles into the reference to the information stored for this process.

#### Communicating on different levels.

The third perspective opens up for descriptions of contributions which comment on other interactions. In the course of cooperation the participants may be described as both communicating something, i.e. discussing some matters to be dealt with through the cooperation, and described as discussing what they are discussing, i.e. meta-communicating. So if a computer-based system is to support such a cooperative element it has to distinguish between communication

and interactions on different levels. This should be given as attributes of the relation between the participants interacting.

## 7. Concluding remarks.

The consequence of our discussion, and if this is in line with the third perspective, should be that the above is what we would like to emphasize when describing this part of the world. Our discussion is not a description of how the world objectively is, was or is going to be.

Our discussion will also reflect our wish to establish some awareness with respect to what may be gained from describing cooperation as ongoing creative dialogues. We should on this foundation very much appreciate a multitude of descriptions of cooperation. We quite strongly believe that this will lead to a closer study of aspects of cooperation which necessarily has to be understood when considering computer-based tools for cooperative work. Otherwise we will only find computer-based systems supporting the two former perspectives, and these may impose constraints and restrictions on cooperation where elements of the third perspective are needed.

If we in our design of tools for CSCW "forget" whatever we learned from the creative dialogues, the outcome of this may be a feeling of cooperation working smoothly and satisfactory with supporting tools built around the two first perspectives. The preservation of established behaviour and the stagnation is not recognized, and in the long run we find the participants turning out less creative. The outcome may also be that, in due time, the users find the tools delivered as less appropriate and covering less of their needs than expected. They find the tools restricting and not taking care of their ways of cooperation which is based on creativity.

No wonder why the next computer revolution is that far away.

## Acknowledgements.

We would especially like to thank Jon Martin Sundet, the Psychology Department, University of Oslo, for his genuine interest in this paper and his comments on earlier versions of it.

I could see from within  
Both my partner and I -  
We would fall, we would spin  
Through the cooperative sky.  
But then I suddenly found  
I was moving around.  
I was you, I was I  
But then again none, 'cause  
I was looking at both from beyond.

## References.

- Bateson, G. (1972). *Steps to an ecology of mind*. Ballantine Books, New York.
- Bateson, G. (1979). *Mind and nature. A necessary unity*. Fontana, Glasgow.
- Bowers, J., Churcher, J. & Roberts, T. (1988). Structuring computer-mediated communication in COSMOS. In: Speth, R. (ed.) *Research into networks and distributed applications*. North-Holland, Amsterdam.
- De Cindio, F., De Michelis, G. & Simone, C. (1988). Computer-based tools in the language/action perspective. In: Speth, R. (ed.) *Research into networks and distributed applications*. North-Holland, Amsterdam.
- Durfee, E.H., Lesser, V.R. & Corkill, D.D. (1987). Cooperation through communication in a distributed problem solving network. In: Huhns, M. (ed.) *Distributed Artificial Intelligence*. Pitman, London.
- Greif, I. & Sarin, S. (1986). Data sharing in group work. In: Greif, I. (ed.) *Proceedings CSCW'86*. Austin.
- Hegel, G.W.F. (1845). *Hegel's philosophy of mind*. Oxford University Press, Oxford, 1971.
- Kant, I. (1911). *Kritik der reinen Vernunft..* 2nd ed. *Werke*, Vol. 3, Königliche Preussische Akademie der Wissenschaften, Berlin.
- Malone, T.W., Grant, K.R., Turbak, F.A., Brobst, S.A. & Cohen, M.D. (1987). Intelligent information-sharing systems. In: *Communication of the ACM*, vol. 30, no 5, May 1987.
- Marx, K. (1956). *Selected writings*. MacGraw-Hill, New York.
- Pankoke-Babatz, U. (ed.) (1989). *Computer based group communication. The AMIGO activity model*. Ellis Horwood, London.
- Piaget, J. (1970). *Structuralism*. Basic Books, New York, 1970.
- Steier, F. & Smith, K.K. (1985). Organizations and second order cybernetics. In: *Journal of strategic and systemic therapies*. Winter 1985.
- von Glasersfeld, E. (1984). An introduction to radical constructivism. In: Watzlawick, P. (ed.) *The invented reality*. W.W.Norton & Co., London.
- Watzlawick, P., Beavin, J., Jackson, D.D. (1967). *The pragmatics of human communication*. W.W.Norton & Co., London.
- Watzlawick, P. (ed.) (1984). *The invented reality*. W.W.Norton & Co., London.
- Winograd, T. (1986). A language perspective on the design of cooperative work. In: Greif, I. (ed.) *Proceedings CSCW'86*. Austin.

