

Some Reflections about Virtual Organisations

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Abstract

One problem that arises with virtual organisations is to keep coherence. Electronic communication should not only be available but also be moderated. This is shown for email as well as for Internet-based voice communication in two different case studies: a co-operative university seminar between two countries and a commercial qualification project with participants from all over Germany. The problem of process design in virtual organisations is addressed. A way of establishing continuous negotiation processes for trading with behaviours, values and rules is given. Different contexts and views of technology are offered as a means for understanding the observed phenomena.

Keywords: virtual organisations, coherence, processes of negotiation, Internet technology, electronic media.

BRT Keywords: AA01, AD0518, AI0102, AI0104, AI08, AH, BD02, D, DD02, FD0102, HA07, HA0802, HA0808, HA1101.

Introduction

In this paper we will address the problem of coherence of virtual organizations. We feel that this is of prominent importance: other than in traditional organizations meaning has to be constructed and communicated explicitly.

We will present our observations about two projects. One is situated in a university context. The other takes place in a commercial context. Both have used Internet technology to form some kind of virtual organisation. In those case studies we have focussed on social and informational aspects, especially those which deal with intra-organisational concerns.

The first one is situated in a university context. A seminar was held in co-operation between the University of Hamburg, Germany, and the University of Zurich, Switzerland. Students from Zurich and Hamburg had to work together in small groups. Other students had formed groups supporting the chosen technology.

Regarding the university seminar, our intention was to establish an international form of a virtual seminar which will be available repeatedly. In addition, we wanted to explore the status of broadly available Internet technology and the Internet. Both aspects were essential to select the tools supporting different kinds of teaching and learning situations.

The second case study is an ongoing project. People of different organisations

work together improving their qualification. Therefore they use Internet technology to communicate in the time between meetings and make their communication permanent.

As far as the commercial project is concerned we are motivated by the fact that we can observe a professional business training in combination with Internet-based technology and their applicability on qualification improvement. The so-called DLW-Project (the abbreviation stands for the name of the company) is focussed on systemic approaches for organisational development. To support this two-year training course we have implemented virtual discussion groups. The participants working together in project groups come from all over Germany. Because of this there was a strong need for establishing a permanent infrastructure of communication between them. While the project paces on, Internet-based communication and the documentation is evaluated.

Next we would like to tell why the application of the qualitative research approach to the given field is useful. First of all, there has been a computer science seminar which was held using computer science technology. We strongly believe that the change from „only“ technology to media is more than a noticeable one. Secondly, we have established the use of Internet discussion groups in a commercial project between people from different companies. From our perspective it is necessary to look at the effects of virtual organisations in more detail. Thirdly, information technology itself has been used and will have effects on the "social systems" (cf. Luhmann 1984). We believe that this is worth looking at. From our point of view the qualitative research approach is more suitable to give answers to the above mentioned aspects than a quantitative one.

The goal of this paper is to give a better understanding of two specific points. On one hand there are different forces involved in virtual organisations keeping them tight together. On the other hand there is an interplay between technology on one side and social relations on the other. This will be demonstrated by the two case studies.

Regarding our results we have learned that joint events are useful to initiate social processes. Furthermore we experienced that we need to establish times and spaces for regularly reflecting on behaviour. It became clear that information technology has not been forced onto the sidelines yet. It is necessary to make the used technology as invisible as possible. Last but not least we found that responsibility in general relates to the coherent forces in virtual organizations.

First we present our understanding of organizations and virtual organizations. Secondly we address the problem of coherence which arises when coping with virtual organizations. This is shown by example with two case studies. In those studies we experienced that the problem of process design seems to be an immanent one. The following sections therefore deals with aspects of synchronisation. In addition we recognized the importance of permanent processes of negotiating a mutual consensus of values. This is described in the next section. In the following chapter we discuss possibilities of establishing such continuous negotiation processes. To show that the first section gives three different views on technology. In the second section we present some answers on the basis of our experiences. The third chapter sums up the lessons we have learned from our projects. It also gives a short view to future research.

In total we will present our observations and hope they help in understanding the effects that keep virtual organisations tightened together.

Virtual Organisations

To approach the term "virtual organisation" we will try to explain our perspective on organisations first. According to Probst (1990) we have to distinguish between three different meanings of organisation:

- a creative action to create a structure, processes and a system-related order;
- a context which makes the state of a system as the result of this creative process visible for its members in form of structure and culture;
- a social institution in form of a structured entity.

In the context presented here, we focus on organisations as so-called social systems which do not consist of people but of communication (cf. Luhmann 1984). According to Luhmann a mutual meaningful orientation of reciprocally understandable action forms the fundamental basis for mutual interactions. Therefore meaning becomes a central regulative criterion of the social system by means of which it observes its environment. Its cognition, history and identity enable the system to communicate and act.

As shown by Morgan (1986), the communication capacity of an organisation leads to different images of organisation. One way of looking at organisations is to understand them as social systems in a field of conflict between permanence and change. Accordingly organisations follow the logic of continuous change. We feel that this seems to be an adequate view of virtual organisations.

From an intra-organisational perspective we also see organisations as a means for achieving the diverse aims of their members (cf. Weick 1979). Simon et al. (1992) have developed this concept and new ideas of the Systems Theory (cf. v. Bertalanffy 1951) as well as epistemological concepts (cf. Bateson 1972, v. Foerster 1985) of the so-called Radical Constructivism further to a model of "Radical market economy". This model describes each human interaction as a form of market economy. Correspondingly human behaviour can be looked at as goods which are distinguished, characterised, evaluated and exchanged.

So far many definitions have been brought up trying to define the term virtual organisation. To clarify what we mean when talking about virtual organisations in this context we follow the definition of Picot et al. (1996). They see virtual organisations as distributed organisational units supported and connected by information technology, which take part in a coordinated, shared business process. A number of differently organised actors rally around so-called professional nuclei. Each nucleus itself can be assembled out of organisational units which work together without drawing strict borderlines and even independent of time and space (cf. Picot et al. 1996).

In this context the term "virtual" means that these organisations open up a wide range of possibilities and choices, a potential for actions, respectively. They achieve this by orientating themselves by the available resources (their own and those of their environment). However, a definition in the sense of "artificial" or "unreal" seems to be rather problematic.

When we talk about virtual organisations below, we have in mind network-organisations as well as organisations with increasingly blurred boundaries as well as their organisational process (cf. Picot et al. 1998). What they have in common is the use of existing resources for broadening their range of choices and actions.

Coherence of Virtual Organisations

When looking at virtual organisations we observe certain problems. The main problem we are dealing with is the question why it is so difficult to keep a virtual organisation tight together. Even when we give access to a vast number of communication technologies there has to be a meaningful context of use. We even consider these technologies as part of the problem not of the solution.

Therefore it is essential for those who are planning and developing virtual organisations to gain a comprehensive understanding about the conflicting forces which in sum define the coherence of virtual organisations. In order to make this more explicit we will describe the observed case studies in more detail.

The Virtual Internet Seminar Case Study

As far as the Internet seminar is concerned, we had no significant communication between the two involved countries until the first so-called synchronous meeting. In this meeting an audio and a chat link between the two universities were used to give direct communication between students from Hamburg to students from Zurich. Although every student had access to web, email, news, chat, voice and whiteboards, before this first meeting had a major impact on the seminar itself. Emails addressed to the installed mailing list were not answered by anyone. Voice or chat communication via Internet was only used by very few people.

Students in Hamburg were divided into two groups: the seminar and the project. In the project group technology was to be installed, evaluated and maintained to make the seminar communication possible. In the seminar group students from Hamburg and Zurich had to form smaller groups and produce a hyper-paper in each group. Two explicitly synchronous meetings were planned. The first was to give the students the opportunity to introduce themselves and the task they work on. The second meeting was located after the review and therefore offered the possibility to talk about their results.

To make the two meetings possible we had to work hard on technology. Products for different kinds of communication (mail, web, news, chat, voice, whiteboard, video) were evaluated (see swt5 for details) and prepared for testing. On a special whole-day workshop students wrote some kind of director's script which helped testing the use of the selected technology. On the day of the meeting dedicated computers were used for two simultaneous connections between Hamburg and Zurich. One connection was established for administrative matters. On this computer chat, mail and file-transfer were used. The other computer was connected to a video beamer projecting the whiteboard and the web-browser on a large screen. It also ran the voice communication software. Both the web-browser and the whiteboard were shared with Zurich. The whiteboard was used to present slides as well as to show pictures of the person talking.

The DLW-Project Case Study

The aim of the organisational development training programme is to enable participants in their daily working context to deal with complex, not directly controllable social systems. Therefore, there is a strong need for transferring the single parts of the curriculum into the concrete fields of practice of the participants. This can be seen in the structure of the course.

The course takes two years. In basic workshops it teaches theoretical and methodological knowledge (Systems Theory, Constructivism, systemic descriptions of organisations, process orientation, methods of systemic interventions etc.). Small groups will work on three course projects in which they will accompany the project initiator as reflecting teams and advisors.

The evaluation of the different steps of these projects takes place on so-called moderated reflection days the additional task of which is to define future theoretical and methodological topics. These topics will then be offered in so-called deepening workshops.

To achieve a maximum scope of development, the goal of this layered course structure is keeping the interplay between course contents and daily practice alive. Moreover an external evaluation of the course effects in the fields of practice of the participants is intended. By means of this construction the success of the transfer of knowledge will not be arbitrary but become one of the main aims of the course.

The course structure requires a great deal of interaction and communication among the participants (e.g. advisory team of the course projects) as well as among trainers and participants. The goal of the Internet setting is to make the necessary structures available. Therefore five electronic discussion groups have been started which can be used by the participants via Internet.

As a medium the Internet makes it possible to link the diverse reflections of interactions in various ways. At the same time it is a medium which is new in such an organisational development training context. It offers new chances for discovering unknown territory in the field of organisations and expanding one's own inner map in the reflection processes.

Another purpose of making use of the Internet infrastructure is improving the time economy of the training programme. Furthermore, we hope that the regular use of the electronic discussion groups as a means of preparing the course meetings will lead to a less tight time schedule of the meetings. Because of this not so much time needs to be spend on informing one another about the current state of each project during the meetings.

Application of Qualitative Research

In order to gain a better understanding of the coherence of virtual organizations we applied a qualitative research design (cf. Flick 1995). During synchronous internet-based meetings we made video and audio recordings. We used journals to document our observations during discussions. All of them were useful sources to reflect our role in the research process. Discussion groups and email lists were made permanent and available by means of web services. The same technology was used to provide access to shared documents. Videos are made available through digital sequences and video logs. Audio tapes are transcribed for later evaluation.

With reference to the reflection of our role the problem of 'going native' is regularly addressed by discussing and interpreting video sequences. Journal entries are reviewed repeatedly. In addition to that supervision and coaching is used. The reflection of this process leads to continuous revisions of our hypotheses and changes in the design of future sessions.

The Problem of Process Design in Virtual Organisations

Our observation in both projects was up to now that pace and speed of negotiation processes are very important factors within virtual organisations. Because of the different locations members of the virtual organisation are located at, decisions are made with the speed of each location. This leads to different speeds of development and therefore makes it very hard to synchronise locations. Sometimes it even makes common decision making impossible.

- We believe that electronic media have their own intrinsic speed (e.g. email, news, web). This has got a relevant impact on the pace of negotiation.
- Moreover, we observed that the success of establishing a virtual organisation depends on the existence of a mutual understanding about the goals of co-operation on the one hand and about the applicable rules of the game on the other hand.
- Furthermore, noticeable progress can be observed if all members of the virtual organisation share a mutual experience. If such a mutual experience is missing, a regular constructive co-operation between the members of the organisation becomes less possible.

In the DLW-Project, for example, we observed that even though the electronic discussion groups were supplied in advance, they were first used regularly six months later. The reasons being diverse agreements between course trainers and participants concerning their use as well as the fact that one project group finally decided to try a virtual Internet conference.

Similar experiences could be made during the Internet seminar: In this case, too, a co-operation across the borders could only be reached *after* the first synchronous meeting. Until then the co-operation was limited to local groups and can even be considered rather sporadic.

In addition, we found that making decisions with the help of electronic media makes it even harder than with personal contact (face-to-face). The more strategic the decision is the less electronic media are chosen or used for the decision making process.

The main question we would like to ask therefore is: How can we establish virtual organisations and help them to exist for a long period of time? It might also be helpful to look at the question the other way round: What do we have to do to run a virtual organisation into a disaster effectively?

Why do Virtual Organisations need more Attention?

As shown before, virtual organisations need a meaningful orientation, which is permanently reconstructed by means of continuous processes of negotiating a mutual consensus of values. This consensus of values is the basis for mutual actions in the sense of the organisation. It is expressed by a common language, mutually accepted rules as well as by reciprocal trust in the members of the organisation. At the same time it allows patterns of descriptions about implicit social actions in the daily routine of organisations. Therefore, we see this permanent negotiation of the consensus of values as an essential basis for a successful co-operation.

Virtual organisations, however, run the risk that its members do not negotiate enough about a mutual consensus of values. If such a negotiation process does not take place continuously, the boundary of meaning of the organisation will be destroyed and as a consequence the organisation itself: Its members emigrate to other places in order to organise other means for achieving their personal aims.

In order to deepen our understanding of these phenomena, which can be observed in virtual organisations very distinctly, we think that the model of "Radical market economy" as presented by Simon et al. (1992) provides appropriate (means of) descriptions. At the same time it directs the observer's attention to the level of concrete action.

In the centre of their considerations there is the thesis, that each action implies trade (the German term "handeln" in the following quote "Wer handelt, der handelt" implies both meanings). This means that behaviour can be seen as an object of exchange: behaviour is being exchanged between the involved trading partners, but each of them has his own private and non-convertible currency as well as a personal account for each trading partner (cf. Simon et al. 1992). In particular, value can be ascribed not only to actions but also to non-actions. In some cases the quality of an interaction can consist in the fact that particular actions are avoided.

Furthermore, evaluation and exchange of behaviour are intensely connected to the processes of reality construction of the social system (cf. Floyd et al. 1992). Goods are only those which are recognised by the social system. On the other hand, goods which are not recognised cannot be traded since they are not ascribed any value. The central question is which party exerts influence on the pricing for certain forms of behaviour in a concrete situation.

In the case studies presented here asymmetrical and symmetrical relations could be distinguished and observed:

- Asymmetrical relations, for example, could be observed between trainers and participants, between technical task forces and seminar participants and also between the sites Hamburg as a provider of technology and Zurich as a user of technology.
- Symmetrical relations existed among participants, project groups and among trainers and organisers, but also between Zurich and Hamburg with respect to organisation and content of the seminar.

With regard to the model presented above, coherence of virtual organisations is established because of the fact that the diverse trading processes between the participants take place in a flow balance: on the whole the permanent give and take within the borders of the organisation remains balanced. In those cases where trading relations become permanently asymmetrical, the affected communication runs the risk of being aborted.

As a consequence we feel that it is important to supply virtual organisations with resources which help establishing such negotiation processes permanently in the organisation.

Establishing Continuous Negotiation Processes for Trading with Behaviours, Values and Rules

After having discussed the problem of coherence of virtual organisations in the previous chapter, we would like to make a few suggestions regarding how to successfully establish such processes.

An important realisation from our experiences is that technology should not be the primary object of consideration, if virtual organisations are to be successfully established. Instead, emphasis should be put on the establishment of permanent and institutionalised negotiation processes since these can be called the backbone of the

continuous reconstruction of the consensus of values.

The Triple Role of Technology

In our opinion technology should rather be seen as a means for supporting the process of establishment and maintenance of virtual organisations. As an available selection of communication media technology offers a new design space but also (unfortunately) poses secondary problems that have to be dealt with.

At this point we would like to emphasize that we see three different roles of technology:

First, technology as technology: in this paper and in the two settings as well we look at technology with the aim of understanding and coping with technology itself.

Second, technology as medium: we have used technology as a communication medium in different ways (e.g. synchronous vs. asynchronous). Although it works most of the time Internet technology is not only successful but brings problems as well.

Third, technology enables virtual organisations: only since the availability of Internet communication technology virtual organisations could be established. Seminars between Hamburg and Zurich could not be possible without Internet technology. Communication between the members of the DLW-Project would have been reduced to the face-to-face meetings and / or regional meetings. Regional aspects (e.g. driving distance) would have played a bigger role when deciding on who will attend the project.

How to Establish such Negotiation Processes?

The central question now is how such negotiation processes can be established and maintained permanently. Here are some ideas:

First of all, it proved to be a good decision to have a process moderator in both cases presented above. His / her primary task is the support of such negotiation processes: She / he is responsible for the observation of the communication and interaction processes of the virtual organisation and moderates, if necessary, arising conflicts and organisational challenges. He / she also checks whether the participants stick to the rules and makes sure that these rules are revised regularly by including them in the negotiation process. Furthermore, the process moderator ensures that attention is paid to the different paces of the involved organisational units. Within the different organisational units as well as among them he / she cultivates a climate of adequate awareness of implicit actions.

Additionally, regular reflection workshops can be helpful for virtual organisations since many negotiation processes, which are daily routine in stationary organisations and which are carried out implicitly, cannot be applied (or only with great difficulty) to virtual organisations. Such regular reflections can be moderated in an effective and useful way by means of modern methods of systemic organisational development, such as reflecting teams, quality circles or "sensor" teams (cf. Doppler / Lauterburg 1994).

Our experiences also show that electronic media can only support negotiation processes to a limited extent. For this reason, important negotiation processes should not be carried out in virtual space. The more important the decision is, the more important is the quality of the place where the decision is supposed to be negotiated.

By means of a corresponding organisation of place and time of such negotiation processes, the risk that the value consensus is only negotiated initially and sometimes rather superficially can be diminished. Instead, the permanent reconstruction of the

consensus of values will be ensured.

This way, it can be prevented that meaning as an orientational, mutual work basis for virtual organisations is lost.

Lessons Learned and Future Work

What did we learn up to now?

First of all, we learned that a social event should be initiated in order to make the individuals become a team or group. A mutual vision or event has the potential of uniting people across the boundaries of time and space.

Secondly, we learned to establish times and spaces in order to regularly reflect on and negotiate forms of behaviour, values and rules of the virtual organisation. These negotiation processes should be conducted with great care and awareness of all participants.

Thirdly, we found out a lot about the context-related adequacy of media use. For example, we think that email lists are not suitable for the development of a mutual knowledge basis since they address too broadly. As long as emails are not directly addressed to a concrete person, they cannot be used for an effective delegation of tasks. Moreover, we observed that participants tend to group personal communication around electronic communication. In some situations the communication medium used (e.g. chat) was replaced by a medium which offered more possibilities for expressing meaning (e.g. telephone). Finally, it became obvious that even Internet-based voice communication requires a lot of coordination work. These difficulties show that information technology has not been forced onto the sidelines yet, so that smooth communication becomes possible.

Fourthly, we realised that one goal should be trying to make the used technology as invisible as possible in order to be able to concentrate on content instead of technology. This is usually more difficult than expected. Nowadays available information technology only enables the user to approximate natural communication situations in rudimentary manner. In our opinion this will not change substantially in the future. Instead, we should select electronic media carefully.

Fifthly, we learned how important it is to clearly appoint responsible persons for technical affairs. Only by means of this was it possible for us to put up the necessary communication infrastructure for the Internet seminar within strict time limitations, for example. Other aspects of delegation are the appointment of moderators (for each site) and the development of a director's script as a fallback position for synchronous meetings.

Furthermore, we have identified a number of questions to be answered in the future. Here we want to give some examples of future work.

Christiane Floyd et al. have founded a project called "Knowledge Co-Construction" to be part of the project "Information" which will take place at the "Internationale Frauenuniversität (*ifu*)" (international women's university) within the Expo 2000 in Hannover, Germany. To prepare this activity Wolf-Gideon Bleek and Christiane Floyd are now making concepts for a new seminar in the upcoming winter-term at the University of Hamburg. This will provide an opportunity for evaluating our findings and making additional observations in this field. As part of the *ifu* we will then offer infrastructure and computer tools to form and found virtual organisations in the forthcoming project in *ifu* 2000.

In this context we like to address the following three points:

- First, which role has the process moderator to fulfil? Should he / she be more involved in problem solving processes? Should he / she actually moderate processes of conflict resolution?
- Second, we propose that decisions mediated with electronic media might be influenced in a negative way. We would like to keep an eye on that.
- Third, what kind of impact do seminars or other types of teaching have by means of synchronous media?

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