Innovation in Action — the development of a simulator and a group

Benedicte Biørnstad

Master of Philosophy in Psychology

Department of Psychology, University of Oslo

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Abstract

Motivated by the challenge of combining psychological theories and methods with high-tech gaming and simulating technology, a project was carried out to develop a simulator that could train people in the skill of negotiation. An analysis of the existing theory, interviews with experienced negotiators and observations of negotiation in action formed the basis for a User Centred Design process. Through the application of Contextual Design methods, traditional qualitative methods, and a Usability test, this process has currently resulted in the overall design of a training program and an early design prototype. This work is described in the following document. As well as this a review of central existing theories on group development was carried out. This review concluded with a suggestion to pair Systematising Person-Group Relations (SPGR) with Action Research methods for further research. Finally, a study was carried out using these methods, showing that SPGR and Action Research provide rich and valuable data on group development.
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Simulating Skills
—exploring skill development through the design of a game-based training simulator

Benedicte Biørnstad
Kjell-Are Furnes
Paul Andreas Lundeby
Ina Kook Rambøl
Kjell-Morten Bratsberg Thorsen

*Department of Psychology, University of Oslo, Norway*
Preface

This document is the end result of a research project conducted by five master’s students in Psychology. As individuals we were united by the common wish to use the thesis as an opportunity to produce something other than the traditional research we had worked on earlier in our academic careers. We saw a need for a more practical approach to research within the field of Industrial and Organisational Psychology at the University of Oslo, a need we strongly wanted to address. Doing research that would apply psychological theory to an everyday work situation was something that was important to us, as well as developing a product that could benefit an end-user.

There are many areas where this type of research is needed but seldom carried out, which served as an inspiration for us. It is not difficult to speculate as to at least one of the reasons why this type of research is so seldom done. The level of innate insecurity is high, demanding that any researcher throws him/herself out into the unknown without a safety net. For us this knowledge served not as a hindrance but as something exhilarating. Knowing that we would be able to carry out exploratory research and break new ground within our academic field was an inspiration to all of us. In addition to breaking new ground theoretically, embarking on this journey as a group was an innovation in itself. We knew that this would allow us to acquire skills within the area of teamwork and at the same time to develop and grow as individuals.

In the document “Simulating Skills—exploring skill development through the design of a game-based training simulator” the group’s work is described, giving a detailed picture of both what we did, how we did it, and why we chose the methods we did. The document is divided into two, with the first section detailing our activities in chronological order. In the spirit of Action Research this part is important in order to fully comprehend our focus on the procedural aspects of our work. The processes were in and of themselves considered part of our project and therefore explaining them is of central importance. The second part of the document is dedicated to presenting the methods we used in the development of our product. The User Centred Design process that was gone through is described, as well as the methodological choices we made throughout the project period.
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From idea to simulator

Initiating the project

On February 8., 2006 a group of seven master’s students were presented with an idea for a possible master thesis project at a meeting at the Department of Psychology, University of Oslo. Associate professor Thomas Hoff initiated this gathering, having met the students through his work as a lecturer in Work- and Organizational Psychology on the master’s degree. At the meeting he presented the concept of developing a game-based work simulator founded on relevant psychological theory, through User Centred Design methods¹. On the basis of this raw sketch six of the students committed themselves within a few weeks to this project, and formed the group MOP (Master Oppgave Prosjektet)². During this spring the students met regularly as MOP in addition to finishing their obligatory courses in Work- and Organizational Psychology and Quantitative- and Qualitative Methods. The students met again after summer break and early that autumn we decided to change our name to Simoveo, which is the name of the group today.

At the first meeting we were presented with the idea of developing a work simulator based on gaming technology. The question in focus was whether it would be possible to combine high-tech simulating technology with basic organisational theory, cognitive psychology and human factors. In his presentation Hoff used as examples large international companies as potential users of such a simulator. It was suggested that the simulator could be sold to the end users in the different firms. After extensive simulator training the employees would develop skills they could use in their professional lives. This concept was presented both as a research project and as a potential business idea.

Three ideas as to the content of the simulator were introduced; negotiation technique, decision making, and conflict management. At the group meetings of spring 2006 additional ideas were developed and worked on. The concept of making a simulator in order to learn or practice on different skills was the foundation for the group’s further work on developing and brainstorming new ideas. Spanning as wide and broad as possible the group wanted to

¹ These methods are described in a later section of this document.
² The group was later reduced to five students and this will be elaborated on later in this document.
explore the academic and business potential of the different ideas and also explore the excitement the different ideas evoked in the group.

Additionally and in parallel with developing different ideas concerning the simulator, the group members started to orientate themselves towards different areas of individual focus. This process started off with a workshop in mid-April 2006 where the group members were invited to reflect upon their possible future roles in the project. Three main focus areas were outlined; business, management, and sales; design and development; and the theoretical and scientific content of the simulator. This workshop put focus on important topics and aggregated questions that the group had to spend time discussing and working on during this spring. It was important to decide what roles the different members should have, and how and in what ways the different group members could complement each other. Should the different theses be dependent or independent of each other, dependent or independent of the product? Who wanted to write about what? The dynamics of this process developed over time. The result of this is reflected in the individual sections of the theses.

Deciding on an idea

The group had its first official meeting in the middle of August. We picked up on the work we had started before the summer break and continued the process of developing ideas for the simulator and individual suggestions for master’s theses. (For a detailed plan of our work, see Appendix A.)

During the summer the University had made a decision to allocate one of its rooms to innovation, and they put this room at our disposal for the duration of the project. The innovation lab contained working areas for all of the group members, presentation and technical equipment, as well as plenty of wall space suitable for our creative processes.

A workshop was arranged in order to focus on the process aspects of the groups’ work. It was important to reach a decision concerning the roles of the different members of the project, as well as spending time on deciding on rules for intra-group interaction. In order to facilitate this work, our focus was to compose a group statement that included this information as well as decision-making protocols, visions and future goals.

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3 An illustration of the importance of the walls will be given in a later section of this document.
In the process of developing ideas for the content of the simulator, the group made a list of different criteria regarding the development of the simulator. Our goal was to attempt to develop a product within an area that would not be considered controversial in the sense that psychological theory would be used to take advantage of or manipulate specific groups. In addition, the developed product needed to be firmly grounded in academic theory. The project had to be manageable within the scope of the project period and within the existing knowledge in the group and/or the knowledge within the reach of the group for instance through the network of personal contacts of each group member. It had to be manageable regarding technology as well, and the use of technology should be looked upon as valuable in itself. There also had to exist a demand in the marketplace for the simulator and a potential for profit. Additionally, it was important for the group to carry out a project we believed in and one on a topic we considered fun. We wanted the project to be meaningful both for each of the group’s members but also serve a greater purpose. The reason for this list was to ensure that we at all times focused on what we regarded as important and that we continuously included these reflections in our work.

As already mentioned, the group had taken on a broad perspective and aimed widely in their work on developing ideas for the simulator. To this end the group had several brainstorming sessions where lists of potential ideas for the simulator were the end product. From this list, that at one point contained over twenty ideas, the group considered each idea thoroughly in order to eliminate the ones that were of least interest. This elimination process resulted in a list of eight ideas. At one point it was decided that the group should split into three teams and rotate the different ideas between them. Inspired by parallel design (Nielsen, 1994), this was carried out to expand on the different ideas as effectively as possible, and also to avoid anyone having personal favourites. In order for the different teams to inform each other about the different findings and developments of ideas, the group had dedicated meetings where we all gathered and new material was presented, evaluated and elaborated on with pros and cons. The different ideas were also evaluated against the list of criteria already mentioned. The goal of this process was to eliminate ideas or try to incorporate parts of the eliminated ideas into new ones. The core activity was consolidating ideas with the ultimate aim of ending up with three main ideas. These three would represent an aggregate of the best of the whole pool.
At the same time as the group developed the different ideas they continuously consulted research literature and different references and Internet sites in order to find out what had already been done in the different areas and on the different topics. This included a presentation of a similar project conducted by a research group in the U.S. (Aldrich, 2004).

In parallel with the work detailed above, each group member worked on his or her individual project description that was to be handed in mid-September. The members presented their outlines to each other in order to coordinate their writings with the group.

Early in September, three weeks into the semester, the group was reduced from six to five members as one of the students decided to quit the project. It was then up to the rest of the group to make a decision on which one of the three remaining ideas to move forward with. A panel of in-house experts was invited to give us input on the remaining ideas and comment on which of the three was the one with the greatest potential. The panel’s evaluation coincided with the evaluations of the group itself, and when choosing which of the three ideas to develop, the decision fell unanimously on the negotiation simulator. Developing a negotiation simulator was from now on the main focus of the groups work.

*Exploring the idea*

Different topics and questions emerged as the group started working on the negotiation idea. Important questions were how many users should be able to play the game simultaneously—one or many users at the same time, whether the user(s) should be alone in the game or interact with some of the other users in order to achieve a common goal or not, or just play against the machine, or perhaps both? The group discussed the possibility of making different versions of the negotiation game implementing different alternatives to the issues that were discussed. Additionally the question regarding whether we should have one or more moderators and the degree of their involvement, was addressed. We also focused on what the main learning outcome of the simulator training would be, and brainstormed ideas regarding the best technical solutions. As well as that, we decided to implement some of the most promising features of one of the other ideas that we had already eliminated. Our aim was to implement as much psychological theory as possible both in the simulator itself and in the training course package.
The group then repeated the successful method of dividing itself into smaller groups in order to work on different topics regarding simulation and negotiation in parallel. One group focused on negotiation and explored the literature in order to gain an overview of the main theories and research. The other group researched the topic of simulation and learning effects of using simulators in training. An extensive literature search was needed in order to gather information about these topics. Evaluating these searches as well as identifying literature of particular interest was focused on (Aldrich, 2005; Allen, 2003; Balachandra, Bordone, Menkel-Meadow, Ringstrom, & Sarath, 2005; Bazerman, Max H., 2006; Cohen, 2002; Dreyfus & Dreyfus, 1986; Florea, Boyer, Brown, Butler, Hernandez, Weir, Meng, Johnson, Lima, & Mayall, 2003; Gentner, Loewenstein, & Thompson, 2003; Gillespie, Thompson, Loewenstein, & Gentner, 1999; Hunsaker, Whitney, & Hunsaker, 1983; Poole, 2004; Quinn, 2005; Reeves, Wellman, & Grosof, 2002; Reilly, 2005; Schweitzer & DeChurch, 2001; Stark, Fam, Waller, & Tian, 2005; Suchman, 1987; Vecchi, Hasselt, & Romano, 2005; Watkins, 1999). Several books were also summarised in presentations, in an attempt to discover the overreaching themes and directions within negotiation (Bazerman, M. H. & Neale, 1992; Fisher, R. & Ury, 1981; Karass, 1970; Kochan & Lipsky, 2003; Kremenyuk, 2002; Marsh, 1984; Plous, 1993; Pruitt, 1981; Raiffa, 1982; , 2002; Rubin & Brown, 1975; Steele, Murphy, & Russill, 1989; Thompson, L. L., 2001; Von Neumann & Morgenstern, 1953; Walton & McKersie, 1991). The results of these searches were presented to the group with the aim of keeping all the members fully apprised of each other’s findings. Several presentations were held by the group members, for instance on the topic of the McGill Negotiation Simulator used at the University in Canadian by the same name (Ross, Pollman, Perry, Welty, & Jones, 2001; Roston, 1994) and articles or books considered to be of particular interest to the group at the stage we were; trying to introduce ourselves quickly to the central themes in negotiation research (Boven & Thompson, 2003; Brett & Gelfand, 2004; Loewenstein & Thompson, 2000; McAndrew & Phillips, 2005; Nadler, Thompson, & Boven, 2003; Poitras & Bowen, 2002; Shapiro, 2002; Thompson, L., 1990a; , 1990b). Literature searches, reading and updating on articles, books and journals were part of ongoing processes that involved all members of the group.

As well as familiarising ourselves with the literature we needed to get to know the future users of the simulator. In accordance with the User Centred Design paradigm, we carried out a workshop in order to define our typical user. Our target user was defined as male/female and of 25 to 45 years of age. Nationality would be primarily Norwegian and he/she would
speak both Norwegian and English, having completed high school. His/her field of occupation would be as a professional, primarily but not exclusively within the field of advertising, consulting, telecoms, accounting, law, sales, media, IT, or human relations. The relevant segments would be management, employees and even whole departments. Regarding experience with the domain of negotiation, the user would not need to have any academic background and could have varying practical experience. In the area of technological skills the user would need some basic computer skills and need to be familiar with the Windows and/or Macintosh interface. S/he would not need experience with games.

When it comes to the motivation for wanting to use the simulator, our main group of users would most likely participate in order to learn skills they consider to be useful and important. Some participants, however, would be there because their employers would send them. The group had a discussion regarding how to best balance the pure entertainment effect of playing a game with the seriousness of a scientifically developed training device, and consequently how to best ensure an optimal learning effect combining these two. All these needed to be continuously taken into consideration at all times during the development process. Additionally the group decided not to develop a game that necessitated a heavy manual in order for the user to master it—we wanted a game the user could simply sit down and start playing with minimal instruction.

This focus on the user made it necessary for us to consider the marketplace. We considered whether our end-user was in a position were he/she would be interested in, and willing to pay for, a product such as ours. We investigated whether similar products in the area of simulators already existed and found very few that could even be said to resemble what we were developing. At the same time we looked into different training alternatives in the area of negotiation. Here we found that there were many different alternatives, although most of them seemed to be different versions of the same idea. In most cases lecturing about the topic of negotiation was interspersed with group exercises and role-playing activities. We considered our product to be different enough from these that there could be a market for it.

*The contours of a simulator emerge*

At the end of September the group started planning and making the necessary preparations in order to conduct interviews with professional negotiators. This was done in order to gain
access to practical information that would complement the theoretical information the group already had. The interviews were carried out over a period of six weeks. This included identifying potential participants, recruiting them, developing an interview guide, and analysing the results⁴.

The group had to consider whether the design of the project would call for an application to the ethical committee REK, in order to get an approval of our research. However, we found this not to be necessary. The primary reasons for this were that the research would not target any vulnerable groups, and would not entail misleading or manipulating the participants. The decision was made in close cooperation with academic advisors. This process lead us to be more aware of this topic area and spend a substantial amount of time developing detailed consent forms as well as briefing and debriefing the participants thoroughly.

In addition to looking at literature on the topic of negotiation the group decided it was important to immerse ourselves in gaming. To this end the group obtained an X-box game console, taking time to familiarise ourselves with the different types of game categories available. We got a hold of the simulator game developed by Aldrich and his colleagues based on their research mentioned earlier. It was our goal that the whole group would familiarize itself with this game. As well as this we had a workshop with an avid Internet gamer in order to gain insight into massive multiplayer online role-playing games (MMORPGs) that are gaining ground globally.

Over a period of a few days the members had presentations for each other of the different individual literature reviews⁵ and at the same time did a recap of the knowledge the group had on negotiation theory and research, gaming-, simulation- and learning theory.

January 2007 started off with a period of design and paper prototyping based on the findings of the interviews conducted in November 2006, in accordance with User Centred Design

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⁴ For details see the specific section later on in this document
⁵ These literature reviews are a compulsory activity in the master’s degree, and must be approved in order to successfully complete the degree. It is expected that the students hand in approximately 40 pages detailing the literature that makes up the theoretical background for their theses. These documents are considered separate from the thesis and are therefore not included in this document. The literature reviews were to be handed in at the beginning of December.
(Beyer & Holtzblatt, 1997; Faulkner, 2000; Nielsen, 1994). The group worked on designing low-tech parts of the simulator and simultaneously wrote scenarios in order to be able to test the usability of some main ideas. The result of this work was a cardboard mock-up. Using this mock-up, the group conducted a series of Usability tests that provided useful feedback. At the same time, a second period of data collection was prepared. This was an observational inquiry into how professionals actually negotiate. In the same way as our earlier experimental enquiries this entailed designing the experiment from scratch, with participant recruitment, script development and data analysis⁶.

⁶ Both of these experiments are detailed in specific sections later on in this document
Development through User Centred Design

Two iterations of development

A premise for this project was that the simulator should be developed through User Centred Design methods. We based our analysis and design process on *Human-centered design processes for interactive systems* (ISO-13407), which describes four phases in an iterative and incremental development process (fig. 1): Understand and specify the context of use, specify the user and organizational requirements, produce design solutions, and finally evaluate designs against requirements. The four phases are repeated in an iterative process until the result of the evaluation phase is that the design fulfils the requirements.

![Fig. 1: The Human-centered design process for interactive systems. Reproduced from ISO-13407](image)

Within this framework, we based our activities on general methods from Usability Engineering (Faulkner, 2000; Nielsen, 1994) and, to a greater extent, on specific techniques from Contextual Design (Beyer & Holtzblatt, 1997). Contextual Design (CD) is an approach to User Centred Design, developed and refined over many years as a response to difficulties faced when working with design teams. Our reason for choosing CD was mainly that it offers specific techniques for analysing user data for the purpose of design, as well as an approach to the entire design process. We wanted to gather data about how people negotiate and base our design on this, so CD was a natural choice. In such an analysis, where the goal is well-grounded ideas for design, and not statistical significance or external validity, CD is better suited than more conventional research methods. Furthermore, CD is developed with teamwork in mind, and the results of its analysis and design methods are both produced and presented in ways that supports collaboration—its artefacts are mostly large and tangible. We also considered other methods, like Cognitive Work Analysis (Vicente, 1999), but we saw CD better suited for an innovative group effort like ours.
We considered that a project of this size could not be completed within one year, but we planned to get through at least two iterations. In this section, each of these two iterations is described\(^7\). Within each of the iterations the activities of the four main phases are outlined, as well as descriptions of the different techniques we used.

**First iteration**

*Understand and specify the context of use*

We discussed three possible ways of getting data from negotiations. In CD, data are gathered from the context of use through the technique Contextual Inquiry, where members from the design team observe the relevant tasks being done and ask questions to understand what the involved people do and why. In our case, this would imply that we had to get access to real life negotiations, or we could also set up our own constructed sessions with experienced negotiators as participants. The third possibility was to conduct more conventional interviews where we got negotiators to tell us about their experiences.

At this point, we concluded that it would be better for us to get access to negotiators for interviews than asking to observe them. Also, conventional interviews could give us a broader understanding of the topic, and a chance to compare the views of real life negotiators with the theories we have found through literature search. We could instead consider doing observations in the next iteration.

*Getting participants.* The process of getting participants for the interview started with a brainstorming session with the purpose of mapping potential negotiators. This mapping was done without any form of restriction such as availability, status or such of the participants, and the list contained names of lawyers, brokers, politicians, peace mediators, and representatives from both unions and employer organisations, some of whom were well known figures in Norway. The only requirement for getting on the preliminary list was that they had negotiations as an integrated part of their work. We composed a joint e-mail that we sent out to a group of the people on the list, made up of the professionals that we considered most attractive. The e-mail gave a brief description of the project we wanted them to

\(^7\) To clarify, the iterations mentioned here are full iterations around the cycle of *The Human-centered design process for interactive systems* (ISO-13407), not the design–test cycles mentioned in literature on Usability Engineering (Faulkner, 2000; Nielsen, 1994), which are a part of the *Produce design solutions* phase.
participate in. Of the 35 professionals we e-mailed, 26 were willing to take part in our study. We got almost only positive feedback, and those who did not participate did not do so more as a result of other obligations than lack of interest.

**Preparing the interviews.** The interview was designed and conducted using several methods, such as Contextual Interview and Cognitive Interviews, along with suggestions from qualitative methods in general. We worked out some overall goals and lay down a plan for the structure of the interview to ensure that we touched upon all the different aspects of the predefined goals. This was a dynamic process were both the overall plan for the interview was embedded, but also more specific questions. The interview guide (see Appendix B) went through several rounds of testing and critical evaluation by the different group members. On the one hand we wanted the questions to be as broad as possible in order for the participant to freely express their thoughts on the topics without being tied to a specific context or without being lead by us. On the other hand the questions had to be specific to the degree that they gave us information that was not solely on a meta-level, but include details on topics we wanted to explore further. This is the reason we selected a method that included a semi-structured interview.

We prepared an interview guide that started with a section constructed with the purpose of “warming” up the participants, and to put them in the right state of mind for reflecting on their overall relationship to negotiations. Here we included questions on their background in terms of negotiation experience, their overall education, and what the participants found interesting and intriguing by negotiations, but we also wanted them to give us their definition of negotiations. Our reasoning behind asking them for their definition was to be able to find potential differences between the definitions provided by theory and the definitions provided by experience, and therefore have a more applied approach to negotiations. Through this we would also be better able to understand the interviewees’ background and point of view.

Contextual Inquiry inspired the next section of the interview guide. As we obviously would not be able to observe negotiations in an interview, we included a question instructing the participants to visualize and verbalize a newly experienced negotiation they had participated in, and to be as detailed and specific as possible. In the next step, the participants would “walk us through” the negotiation all over again, equally detailed and specific, but this time with the perspective of another participant. This technique was influenced by the Cognitive
Interview (Memon, 1999), with the intention of getting as close as possible to actual negotiation experiences. Our role as interviewers would be to ask questions on what they did and why, to get to details on how they negotiated, as we would have done in a Contextual Inquiry.

The next section of the interview guide focused on the participants’ own reflections on different areas of negotiations such as – in your opinion, does there exist a core in negotiations? Along with – are different strategies used deliberately? These questions were broad and non-specific in order to encourage them to think freely on these topics without facing the risk of anchoring the participants to any specific mindset.

The next questions in the guide encouraged the participant to continuously reflect on negotiations per se, exploring their thoughts and experience concerning group size/group composition and the use of mediators in a negotiation. The final section concerned whether or not negotiations can be taught, with questions such as - what makes a good negotiator? Are there in your opinion expert negotiators? Do you consider yourself an expert? These questions were included in order for us to get the participants to reflect on the questions as to whether or not it is possible, or to what extent it is fruitful to combine theory with practice.

We did one pilot interview in order to ensure the logical structure, and to get some feedback on questions that the participant had a hard time understanding. This input lead to some small adjustments to the original interview guide.

**Conducting the interviews.** The interviews were conducted “on site” at the interviewees’ work place, with two interviewers. The latter was done to ensure a natural flow, to minimize the risk for interviewer errors, and to be better suited to ask follow-up questions. These two interviewers alternated between asking the questions so that when there was a change in interviewer there was also a change in the topic or focus in the interview. The interviews lasted for about one hour, and the few times the interview exceeded this length, we asked the participants if it was ok for us to finish the interview. Every interview was, for several reasons, recorded after getting the participants consent. First, we wanted to be able to go back and listen to the tapes in order to for us to clear up any potentially misunderstandings. Second, taping gave us the ability to fully direct our attention toward the participant without being
preoccupied with taking notes. Finally, recording ensured us a degree of detail richness we otherwise would not get by simply taking notes.

At the start of the interview the participants were given general instructions where we repeated the reason we wanted to interview them. They were told that we already had a theoretical approach to the study of negotiation, and that we wanted a more applied approach. We then tried to put the interview in a broader context in order to make them understand that we were interested in their input in light of their practical experiences with negotiations. We told them we were not interested in testing their knowledge or comparing their knowledge to any of the other interviewees’. This was done to put the interviewees at ease and lessen any possible evaluation anxiety.

According to proper conduct regarding ethical issues, we then informed the participant that they were free to terminate the interview at any point without any explanation, and that we, if they allowed us, would tape the interview. Finally we asked them to sign a document to this effect.

This way of conducting an interview demanded that the participants were able to verbalize different settings and to walk us through a negotiation setting they had been in recently. Our participants displayed this ability in various degrees—some had little to say, while some talked mostly in general terms about what they usually did in negotiations. In addition, this way of conducting an interview required, to a great extent, that the participant was conscious about his or her own negotiation skills, and further that they felt secure enough to reveal their thoughts on the various topics to us. Many of our participants were able to do just that, to be specific, and they were eager to share their experiences with us.

After the interview was completed we debriefed the participants, told those who were interested more thoroughly about the project, and opened up for any questions they might have. Finally, we asked the participant if it was ok for us to contact them again for follow up questions. This gave us the opportunity to maintain the good relationship we had established, and have access to participants at a later occasion. We also followed up the participants through e-mail, thanking for their participation.
Analysing data. After conducting all interviews, data was analysed in order to use it in the design process. CD proposes two conjunct techniques for this: Interpretation Sessions and Consolidation Sessions. In the former, each interview is analysed individually and summarised in several models and a list of key statements. Through Consolidation Sessions, all interviews are compared, leading to models expressing commonalities across interviews and an Affinity Diagram where all key statements from all interviews are grouped and structured hierarchically to give a comprehensible picture of the data.

In the spirit of CD—the design team using the method is encouraged to adapt the techniques as needed in its design process. We decided to use two of CD’s models to analyse our interviews, namely the Sequence Model—in our case used to describe the steps taken through a negotiation, and the Culture Model—describing the actors involved and their influences and attitudes towards each other.

We started out with an Interpretation Session of the first of 26 interviews with the entire group present, as is recommended in CD. One group member talked us through the interview, two asked questions, one wrote down key statements, and one drew models. This first session with the whole group was an important way of getting everyone familiar with this method of working, but we could see that it would not be an efficient way of analysing all of our interviews. On the other hand, an important effect of using this technique is to let all team members get an insight into and a common interpretation of all interviews. Our solution to this was to do Interpretation Sessions in the dyads that had conducted each interview, and then present the models and the key statements to the entire group.

After writing our individual Literature Reviews, we started up the teamwork again with Consolidation Sessions in the beginning of December. Our first task was to organise all key statements from the Interpretation Sessions on our walls in an Affinity Diagram.

Fig. 2: Grouping statements  
Fig. 3: Summarising groups in one sentence
We printed out all the key statements and glued them onto post-its, and then tried to find those that said something similar about negotiation and put them up on the wall together (fig. 2). As groups of statements were formed, we wrote green post-its that summarised each group in one sentence (fig. 3). We then organised these groups again under orange post-its with questions that the green post-its answered (fig. 4). Finally, we organised groups of orange post-its under blue post-its, which named the theme of the groups (fig. 5). As an example, the blue post-it named “Trust” spanned the orange post-its “What part does trust play in negotiations?”, “How to create trust?”, and “[What are the] preconditions for creating trust?”. Under the second one of these were the following green post-its: “Show that you understand your opponent”, “Show that you are willing to find a solution”, “You can expose yourself to build trust”, “Clarity can promote trust”, and “It is not always possible to create trust”. And under these were the original key statements from the interviews that led us to create this hierarchy.

Our initial goal was to do this rather quickly—CD recommends doing it in one or two days because this process can be taxing on the group when drawn out over a longer period of time. But with more than 1500 key statements, many of these rather general or fuzzy, and only five people to organise them, the process lasted for eight working days. This was an intense process that gave us a good foundation for the design process as well as an intimate understanding of the interviews (fig. 6).
The next three days were spent on consolidating the Sequence and Culture Models. Similarities in the accounts of negotiations given by the different participants in the interviews resulted in a consolidated Sequence Model (fig. 7). The Culture Models were a bit harder, as the different negotiations involved very different configurations of people and groups, but we managed to condense and combine these into one Cultural Model (fig. 8).

Specify the user and organisational requirements

At this point we had the Affinity Diagram on our walls, as a picture of what our interviews had revealed about negotiation, the Sequence Model describing the general phases and steps in negotiations, and the Cultural Model showing the influences and attitudes that may exist between persons and groups involved in negotiations. Together these formed a description of the main aspects of the field we were going to develop a simulation of, and were therefore a set of requirements for our simulator. We also had the user profile created earlier.

In addition, each team member made a list of requirements for his or her area of focus, and this resulted in a tentative list of requirements to be explicated in the further process.

Produce design solutions

Design. This phase of the process involved creatively producing design solutions as a response to the data we had gathered. We continued to use the methods proposed in Contextual Design, in which the next step is to create a common vision for how our simulator and training course could be. In CD, a “vision” is a drawing of the product to be designed and the way it would be used. The focus is not on details, and the overall picture is drawn in simple sketches. It is important in CD not to design a product only, but to design a new way of working, and that should be reflected in the vision. In our case, we were not just designing
a simulator, but a new way of learning to negotiate, and our vision should include the design of the simulator and the entire training course.

We started by “walking the wall” (Beyer & Holtzblatt, 1997, p. 275), i.e. going through the hierarchy of the Affinity Diagram to remind ourselves of what we had found. As we got ideas or questions from the data, we wrote them on post-its and put them next to the data that had triggered them. We did the same with the Sequence and Culture Models.

Then we went through the ideas and wrote a list of the most central ones. With these ideas as starting points we drew different visions of the simulator and training course. We brainstormed and drew sketches on a board. Some visions incorporated several ideas, while others were based on only one. When all ideas had been drawn out, we went through them again, writing positive and negative aspects for each of our 27 different visions.

Our next task was to incorporate these into a common vision. In fact, it was decided to make two visions—one for the training course and one for the interaction with the simulator. As suggested by CD, we tried to combine conflicting visions by using the positive aspects from both instead of picking one vision over the other. For example, in one vision a training course included several different negotiation exercises based on the same scenario, and would then allow us to use this scenario as a theme for the day, where the participants could really get into their roles of for instance being employees of an imaginary firm, wearing t-shirts with the firm’s logo etc. On the other hand, we had a vision that made a point out of having different scenarios for each negotiation exercise, to give us more flexibility in tailoring scenarios to the specific learning outcomes of each exercise. Instead of choosing one of these, our common vision consisted of independent negotiation exercises, to give us the flexibility of the second vision, while at the same time allowing us to make a set of exercises that fit together as a theme course as in the first vision.

The next step in Contextual Design is to draw out storyboards based on the vision. A storyboard is in essence a sequence of drawings visualising one possible trajectory through the system being designed. We wanted to get through at least two iterations before the end of the project period, and at this point in the project we knew we were running short on time. Therefore, we decided to do only one storyboard on the simulator to elaborate on our vision and generate more specifics for a Usability test. We also chose to focus on the simulator and
not the entire training course to limit our focus in the first test. We spent the next two days on this, with an imagined case of an employee negotiating a contract with his potential new boss. We drew the interaction between a user and the simulator as it could play out in this scenario like a cartoon, where each frame represented an action from the user or a response from the simulator. At each frame we asked ourselves what actions the users might take, how to make the interaction natural, and how the simulator would respond. We tried to incorporate several of the ideas from our common vision, and ran into issues that we had not thought of in the visioning process and also came up with solutions to a lot of them.

After only one storyboard session we had a sketch of a user interface for the simulator and a much clearer idea of how the interaction could work, and we decided to make this the object of a usability test.

Usability test. Since our first prototype was more concerned with the user interface than with the simulated negotiation, we reasoned that it was not important for the participants to have any formal negotiation experience, and we recruited five master students for a usability test. This was considered a large enough sample to discover usability problems and to get an impression of whether the participants understood the general concept. Again our aim was to generate inputs to the design process, not to design an experiment with validity or statistical significance in mind.

We spent the day before the test making a cardboard prototype of the simulator interface as we saw it at this point. The prototype consisted of a main screen showing the opponent on the other side of a table, and a smaller screen with controls and buttons for interacting with the simulator. The screens were going to be touch screens, so the user would interact by pushing the controls directly, as opposed to using for instance a mouse, a keyboard, or a stylus.

The prototype was based on a scenario similar to the one in the storyboard, where the user was to negotiate a contract with a potential employer. We wrote a script for the test (see Appendix C), and in order to limit the number of sentences and interface parts we had to prepare, we chose a set sequence of events through the negotiation. We printed out the sentences of the possible dialog and other interface parts, and glued them onto cards.
As the prototype was made out of paper, one of the team members would have to act as the “computer” and manipulate the prototype in response to the participants’ actions—a technique known as “Wizard of Oz” (Faulkner, 2000). The participants would be instructed to treat the mock-up in front of them as an actual computer screen.

Before the test, we conducted a pilot test with one of our team members, who had had limited contact with the mock-up, as the test subject, both to test the script and the mock-up and give the test leader and the one acting as the computer a chance to practice.

We used a very simple test setup. The participants were presented with the prototype in a room with a table and a video camera, and in the adjacent room the team members not conducting the test observed the events on a TV screen while taking notes of the problems discovered and other interesting incidents. The tests were recorded so that we could look at the tests later, if needed.

After an introduction, each participant was shown the screens and asked to tell us what they thought of the screens and what they believed they could do with them. They were then asked to use them as they would have had it been a finished computer-based simulator (fig. 9). Most participants hesitated in the beginning, but after a little while, they pressed the buttons on the control screen and waited with interest while the “computer” laid out the interface parts representing the response of the simulator. In accordance with User Centred Design methods, they were continuously asked to think out loud and explain their actions and reasoning as well as they could. At each point in the dialog they would tell us what they wanted to do, complete that action, or if they sketched out an action that had not been completed in the mock-up, the test leader sitting next to them would direct them to the choices that had been prepared.

The test gave us the impression that our design worked rather well—the participants quickly understood what was going on and how they could manipulate the interface, except for some confusion with minor parts of the interface. Also, it seemed that they got an experience of
having a conversation with the virtual opponent in the prototype, but they reported that the conversation was too much to the point—they wanted to involve more small talk with the opponent. This is a potential by-product of us not having had the opportunity to develop all the alternative statements the participants could choose.

_Evaluate designs against requirements_

This first iteration through the design process was ended on February 2, 2007 with an evaluation of our design against the requirements. We first went through the requirements we had written down for our different focus areas. For most of these we were either on track or at a place in the development where the requirement was not relevant, but we saw that we sooner or later would have to specify what the learning outcomes for the simulator and training course should be. We had implicit learning outcomes, but needed to get more specific and concrete in order to have a set of intended outcomes to evaluate against.

We also went through the Affinity Diagram, Sequence Model and Cultural Model, to see if there where central issues we had overlooked this far. We made a list of some topics that we would have to include when continuing the design in the second iteration.

This marked the end of the first iteration, with the conclusions from the above evaluation, the results from the usability test, and the current design of the simulator as outputs to the next iteration.

_Second iteration_

In the second iteration, we worked with three issues in parallel; preparations for an inquiry to observe negotiation in action, further design based on the inputs from iteration 1, and investigations on the business aspects of our project.

_Understand and specify the context of use_

In the second iteration we wanted to get access to, or arrange, a situation that would allow us to observe how professionals negotiate in practice. Through the interview data in the first iteration we had a substantial amount of information on how they represented their own negotiation skills in an interview, making it interesting for us to observe this behaviour as well. Also, the interviews had given us an overall picture and a framework for the simulator
and training course, and now we wanted to fill this with more detailed data to base our simulation on.

Through planning this observation as part of an inquiry that also included a dialogue with the professionals about their behaviour we hoped to gain an even deeper insight into negotiation. Therefore the goal of the experiment became to design a method that would allow us to observe the professionals while they negotiated, and then follow that up with a Contextual Inquiry session.

Getting participants. It became clear early on in this process that in order to get as much information from the participants as possible the inquiry would take quite some time to conduct. Because of this the group decided to aim to conduct at least two sessions, each including two participants and lasting for about three hours. This meant finding professional participants that would put themselves at our disposal for three hours, allow us to film them as well as observe them while they negotiated something that we set up, and then let us interview them separately while taking them through the video of their negotiation. In the earlier interviews we had asked the participants if they would consider helping us in the future, and almost all of them had eagerly agreed. Three weeks before the inquiry we sent out questions to those that had agreed asking them whether they would be able to contribute their time, being specific about the time it took and what dates were scheduled. The immediate response was good in that two professionals volunteered to participate, which meant that we had one session covered. Two other professionals replied that they were unavailable but could find someone with experience similar to their own from their own organisation that could take their place. This meant that we had reached the goal of at least two sessions.

Of the four professionals we recruited two were women and two were men. Based on their schedules each session ended up pairing one male participant with one female participant. They were all professionals in the field of negotiation, spending a majority of their workday honing their skills in the area, within law or unions.

Preparing the inquiry. Having a place in which to conduct this experiment was important. Even though the office at the University of Oslo could have been used, we approached NetLife Research; a usability company we knew had a lab in which this type of activity could more easily be carried out. They were kind enough to let us use their lab and offices for the
entire experiment, which meant that we had the use of a lab in which the participants could negotiate while being videotaped, an adjoining room where the group could observe the negotiation on a TV, and two areas in which the participants could be briefed before each negotiation session (see script in Appendix D). In addition, the lab and offices are centrally located, making them easy for the participants to find.

Keeping in mind that the central focus of the inquiry was to observe negotiation behaviour it was important to the group to identify a subject matter that would bias or skew the results as little as possible. In order to find this subject matter for them to negotiate about we conducted searches in published literature. The goal was to identify potential negotiation scenarios that would allow the participants to feel that they were negotiating something meaningful while at the same time keeping the subject matter within an area that was equally unusual for them—we wanted to attempt to create a level playing field for the participants. Through literature searches conducted earlier in the project, as well as new ones, we were able to find 3–4 different articles that included clear descriptions of the scenarios that had been used as well as information about how they had been introduced and what tools the participants had been given (Gelfand, Higgins, Nishii, Raver, Dominguez, Murakami, Yamaguchi, & Toyama, 2002; Thompson, L., 1990a; 1990b; Thompson, L. & Hastie, 1990). The tools that were most useful to us in order to replicate the use of a scenario was the pay-off schedule; the tables the participants were given to illustrate their most desirable outcomes. In the source literature the scenarios had been used for differing purposes, purposes that left the scenarios secondary to what was being investigated. This gave us reason to believe that the scenarios could be used without impacting the experiment, giving us an experimental setting where we could simply observe the negotiation itself.

From the group of scenarios we had found, we considered two of them to be best suited for the experiment. Due to the fact that all of the scenarios were taken from source literature that was in English and had been used in the U.S. it was important to have situations that could most easily be transferred to Norway. For example some of the scenarios we found had issues that we considered would have been too hard for the participants to relate to, focusing on American commodities brokering, while another introduced the participants to aliens on a different planet (Boven & Thompson, 2003; Mannix & Neale, 1993). Therefore, based on our understanding of the scenarios we attempted to select the scenarios we felt the participants would understand most easily. The scenario we decided to use in the first exercise in order to
familiarise the participants with the method and each other was a negotiation of an employment contract between an employer and a potential employee. This scenario gave the participants five categories to negotiate. The second and main negotiation that would form the basis for the contextual interview, was based on the purchase of a car, and included the car-salesman and the potential buyer. In this scenario there were eight categories to negotiate. The reason for choosing two scenarios was that one of them would be a scenario the participants could practice with, something which would make it possible to increase the quality of the data collected in the contextual interview following the second negotiation. Having selected the scenarios we translated the pay-off schedules and wrote the scripts that we were to follow (see Appendix D). After we had finished the scripts and the pay-off schedules we piloted the observation and the contextual interview. The pilot lead to some minor changes to the scripts, but more importantly served as a rehearsal for the group, helping us become more prepared for the sessions with the professional participants.

**Conducting the inquiry.** On the two evenings when the sessions were held, a dedicated group member guided each participant through the evening. In this way we made the participants feel a little more secure, something which was considered important in case they were inexperienced with an experimental setting or with being filmed. The participants were introduced to the group and each other first and then briefed by “their” group member. They were shown the rooms they would be in for the brief/debrief and the negotiations, as well as seeing the observation room from which the group would observe them negotiating. This was done in order to put them at ease with the situation. In addition, the participants were given a standard consent form to sign, detailing their participation as well as their right to terminate the experiment at any time and without giving any explanation. In both negotiations the participants were given time limits in order to motivate them to reach an agreement. After the first negotiation, which the entire group observed from the adjoining room, the participants were debriefed by “their” group member, and again briefed for the next negotiation. When the second negotiation was finished, the participants were taken through the film of that negotiation separately, each with “their” person and one other group member. In this way we were able to carry out the contextual interview successfully, making sure that the participants both felt debriefed and gave us an insight into their motivations and thoughts throughout the negotiation. Before the participants left we gave them a small gift as a thank-you for participating as well as the source articles for the scenarios, so that they would be able to see examples of how other research had been conducted. The day after the experiment the
participants were sent a follow-up e-mail repeating our thanks and making sure that they knew they could ask us about the experiment or their participation if they should have questions at a later date.

Both the participants and the group seemed to enjoy the evening, as well as considering it a useful and educational experience. Some of the participants had situations were they were surprised by their own or their opponent’s behaviour, and this was an area we had to ensure that they felt debriefed on. However, the main impression was that they enjoyed themselves, forgetting the cameras within minutes of the negotiations starting. It was clear that some of the participants felt more competitive than others, and most of them were also concerned with the self-development they could gain from the experience.

The participants seemed to embrace their characters, easily becoming the car-salesman or potential employee. It also seemed as though each participant may have incorporated aspects of their beliefs about the role they had into their behaviour, and the group had a discussion when the observations were done as to whether that affected their behaviour in the negotiation. If the goal in this observation had been the reliability and validity of the experimental results we could have repeated the experiment and this time run the contextual interview on several of the scenarios, capturing the participants’ experiences across situations were they had differing roles.

Analyzing data. In comparison with the earlier interviews, the data collected through this inquiry was much more concrete, just as we had anticipated, and we got more detailed and clear data about what actually happens in a negotiation situation. Both the data collected through the Contextual Inquiries as well as the wealth of impressions and knowledge the group gained through the observations will be put to use in the further development of the negotiation simulator.

As in the first iteration, we did Interpretation Sessions to analyse the data. First, the team members that had conducted the different Contextual Inquiries went through them, extracting key statements and drawing Sequence and Cultural Models. These were then presented to the entire team, before we went on combining them through Consolidation Sessions. The statements from all four participants were recorded on post-its and added to the existing Affinity Diagram. At a later stage of development this Affinity Diagram will be re-evaluated.
using these last results, refining the diagram yet again and confirming its existence as a living, changing tool for the product development.

Produce design solutions

Parallel with the preparations for the inquiry, some team members continued on the design of the simulator with the inputs from the first iteration. As mentioned, the first iteration had ended with an Affinity Diagram, two models, a vision, a storyboard based on this vision, a prototype, and inputs from a usability test, and in the evaluation we had written down some issues that we wanted to go deeper into in this second iteration. We started a new storyboard to investigate these issues as well as test some new ideas based on the results from the usability test.

In short, we worked with the storyboard just as we had done in the first iteration, but now we wanted to look at a slightly more complicated scenario, one that involved more issues than last time, so the process took a lot more time and we had longer discussions about each issue. We also felt that we generated more questions than we solved, but through this process we pinpointed a lot of challenges with our design that we did not see when we drew the visions. Some of these challenges were simply choices we had to make, while others were problems with our design that needed to be solved for our simulator to work. At this point in the project we recorded these issues in order to discuss them with the rest of the team later.

Wrap up of the second iteration

The second iteration was not completed in the time we had available in our project period, and the rest of the process will be continued if and when the project acquires further funding.

The design part of our project ended with a vision and a prototype of a training simulator for learning to negotiate, grounded in theories on negotiations, interviews with negotiators, and observations of negotiation in practice, and tested on potential users. This also includes a vision of a complete training course based on this simulator. Furthermore, the Affinity Diagram, the Sequence Model, and the Cultural Model will be an important foundation for further development of both the simulator and the training course.
Final thoughts

After having worked with this project over the course of two semesters it is clear to us that our expectations of what the year would include were somewhat correct. However, it would never have been possible for us to fathom the enormity of what we have been able to accomplish, both in our user-centred design process and as a group. This method has allowed us to gather and analyse data from our area of interest in a way that extracts information that is well grounded and rich in detail. This has provided us with an excellent starting point for the creative processes and a solid foundation for development of the product. In addition, the incremental approach has allowed us to immediately incorporate feedback from the user into the design process.

As a group, we have also experienced development. As individuals none of us could have foreseen how much we would mature as a group and perhaps as importantly how much we would learn as individuals. Working as intensively as we have done cannot be compared to anything any of us have done earlier, even in full-time jobs. This has demanded of us a greater insight into our own behaviour and ourselves than anything else could have, and through this we have grown.

We have been able to take the product development far enough to see the contours of a proper product, one an end-user could sincerely benefit from. The feedback we have gotten from the end-users we have been in contact with has been more positive that we could ever have hoped for, confirming our belief in the need for the product, and the product itself. Based on this it is our genuine hope that this work can continue.
References


## Appendix A

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Appendix B

Intervjuguide til bruk ved samtaler med Forhandlingsfolk

Intro:
Takk for at du har tatt deg tid til en prat med oss. Som studenter har vi kunnskap om forhandling gjennom det fagbøker kan formidle. Samtidig oppleves det intuitivt at forhandling er en kunst som beherskes på sitt beste ved/gjennom å samle seg erfaring. Vi er i gang med et hovedoppgaveprosjekt der vi skal skive om forhandling, og vi ønsker med dette å få førstehåndsliga (ekspertise)kunnskap og erfaring med hva nettopp du opplever å være essensen i forhandling. (det kan tenkes at noen av spørsmålene virker som om de gjentas, men dette er for å sikre at vi dekker alt vi kan).

Dataene vi samler inn i dette intervjuet vil bli anonymisert, de vil bli oppbevart etter gjeldende forskrifter sikkert, og de vil ikke brukes senere til andre formål i andre sammenhenger.

Er du komfortable med at vi bruker båndopptager under intervjuet? Dette er for at vi bedre skal være i stand til å dokumentere gangen i samtalen og alt som blir sagt. Opptakene vil bli destruert før slutten av prosjektet vårt (dvs. mai 2007). Dersom du ikke er komfortabel med båndopptaker er dette naturligvis helt i orden.

Du står i tillegg fritt til på et hvilket som helst tidspunkt, å trekke deg fra intervjuet uten å måtte oppgi noen grunn, og be om at båndopptageren stoppes og at dataene destrueres.

Før vi begynner kunne du tenke deg å signere på et informert samtykke der du bekrefter at du har blitt informert om hva som skal foregå, hvordan dataene vil bli behandlet, og at du er blitt fortalt at du på et hvilket som helst tidspunkt kan velge å trekke deg fra intervjuet, eller be om at båndopptageren stanses og dataene destrueres?

1) I hvor mange år har forhandling vært en del av ditt arbeid?

2) Og primært innenfor hvilket felt?

3) Hva er, i følge deg, forhandling, kunne du definert det?
4) Hva liker du ved forhandling?

5) Tenk på en konkret forhandlingssituasjon du selv har vært i nylig:
   a. Beskriv hvordan du forberedte deg, hva du tenkte på i forkant av forhandlingen
   b. rapporter alt, fortell hele situasjonen, ta med så mange detaljer som mulig
   c. beskriv situasjonen fra et annet synspunkt enn ditt eget

6) Vil du si at det er mulig å snakke om en kjerne i forhandling? Finnes det ulike komponenter/en struktur/matrice?
   a. Hvis ja; hva tror du denne består av? Hvis du kunne beskrive kjernen i en hvilken som helst forhandlings-situasjon med kjerne begreper, hvilke ord/begreper ville disse være?
   b. Hvis nei; hvorfor ikke?

7) I hvor stor grad tar parter i en forhandling bevisst i bruk ulike strategier?
   a. Hvilke strategier har du erfart?
   b. Gjør det da forhandlingssituasjonen forutsigbar?
   c. Kan du beskrive et eksempel på dette?

8) Har du en fast forhandlingsstrategi?
   a. En plan eller et format eller noen rammer som du alltid bruker?
   b. Baserer du deg på noen former for teorier/metoder/strategier?

9) Innledningsvis sa vi at studenter kjenner forhandling gjennom teori og bøker de har lest, og i innledning til veldig mange av disse bøkene kommer man med utsagnet: ”Alle forhandler vi med hverandre hele tiden”? Er du enig i denne påstanden?
   a. Hvorfor?
   b. Hva er det da som skiller de ulike situasjonene fra hverandre?
      (Egeninteresser/fellesinteresser/økonomiske interesser/andre hensyn?
      Usikkerhet/kontroll/makt/historie (har man forhandlet sammen før/mot hverandre før, hvor godt kjenner man hverandre osv.).)
10) Hva er dine erfaringer med gruppessammensetning i forhold til:
   a. Gruppestørrelse
   b. Antall (forhandlings)parter
   c. Bruk av megler

11) Hva gjør (noen til) en god forhandler? (egenskaper/trekk/personlighet)

12) Anser du deg selv for å være en god forhandler? Ville du anse deg selv som en ekspert?
   a. Hvis ja; hvorfor, og hva vil du si at disse egenskapene består i?
   b. Hvis nei; hvorfor ikke, og hvordan vil du i så fall definere ekspertisekunnskap om forhandlig? Kjenner du noen andre du heller ville karakterisere på denne måten?

13) Kan man lære noen til å bli en god forhandler?

Da er vi ferdige for i dag. Hvordan synes du at det gikk? (Gi personen anledning til å snakke om opplevelsen, en aldri så liten debrief).

Kunne du tenke deg å stille til nytt intervjude som det skulle bli aktuelt? Eller bli kontaktet på en annen måte om vi har flere spørsmål?

Og kunne du tenke deg å stille til et eventuelt eksperiment dersom det blir nødvendig? Vi tenker oss da å invitere deg til å være en aktør i en forhandlingssituasjon der vi vil observere i den grad det lar seg gjøre, en virkelighetsnær forhandlingssituasjon med andre forhandlere. Disse seansene vil bli videotapet. Dersom du kunne tenke deg å delta i en slik situasjon, kontakter vi deg med ytterligere informasjon når tidspunktet nærmer seg.

Tusen takk for hjelpen! Ha en fin dag!
Appendix C

Script—brukertest 1. februar

[Video er av, prototypen ligger ikke framme]

Introduksjon

Hei og velkommen! Takk for at du tar deg tid!
Dette er en del av masteroppgaven vår. Vi holder på å utvikle en simulator for å lære forhandling, og dette er første test av hvordan det kan bli. Vi baserer utviklingen på psykologiske prinsipper og er veldig opptatt av å ha brukere med i hele utviklingen. Akkurat nå er vi midt i utviklingen, så det du kommer til å få se er litt halvferdig og enkelt, men det er meningen fordi du kan komme med innspill som vi kan ta med videre i prosessen. Det betyr for din del at du må bruke en god porsjon fantasi og innlevelsesevne og prøve å se for deg hvordan dette vil være som en ferdig simulator.
Evaluering vil ta ca. en halv time.

Kjell-Morten sin rolle: fungerer som datamaskin, prøv å lat som om han ikke er der 😊
Vi kommer til å filme dette, slik at vi i gruppen kan gå tilbake og se senere. Vi vil ikke vise dette for noen utenfor gruppen, og noen av dem sitter ved siden av og observerer nå…
Så må du lese og signere denne consent-formen, for å bekrefte at dette er i orden for deg og at du har blitt informert om at du kan trekke deg når som helst.

[Video på]

Intervju

1. Hvilken erfaring har du med data-/tv-spill?
2. Hvis nei, du har aldri spilt noen sånne spill i det hele tatt?
3. Hvis ja, hva spiller du? Og hvor mye spiller du?
5. Hva forstår du med begrepet "forhandling”?
6. Har du noen erfaring med forhandling? I så fall hva og hvor mye?
Oppgaver


Har du noen spørsmål før vi begynner?
Er du høyre- eller venstrehendt?

Førsteinntrykk

1. Hvis du ser for deg at dette er bildet på to dataskjermer, hva er ditt første inntrykk?
2. Disse skjermene skal være touch-screen (forklar hvis nødvendig), og tanken er at det som er uthevet på skissen kan trykkes på. Hva tror du du kan gjøre her? Hva tror du vil skje om du trykker på de forskjellige?
3. Vil du umiddelbart kunne tenke deg forskjellen på bruken av disse to skjermene?

Scenario


Vi har ikke laget alle valgene, så noen ganger kommer vi til å be deg velge noe annet, det vi har forberedt.
Da setter vi i gang:

[Klistre opp første snakkeboble: “Hva slags avtale ser du for deg?”]
Kan du si noe om hva som skjedde nå?
Se for deg at du nå skal begynne å forhandle. Hva ville du begynt med?
Kan du fortelle at du ønsker deg 450.000 i lønn gjennom simulatoren? (“Jeg ønsker meg 450.000,-”)
Hva tror du skjedde nå?
Kan du si at du kan jobbe 42 timers uke? (“Jeg kan jobbe 42 timers uke.”)
Hva er det det nå forhandles om/hva er det som er på bordet? (450 000 og 42 timer)
[Legg på “Da må du bringe noe mer til forhandlingen.”]
Kan du si at du kan gå ned til 425.000 i lønn, men at du da vil ha en ekstra ferieuke? (“Jeg kan gå med på 425.000,-, men jeg ønsker meg én ekstra ferieuke.”)
   (Ghoste knappen med lønn)
Hva skjedde nå?
(Du ønsker å binde setningene sammen…?)
   (“Jeg kan gå med på 425.000,-, men jeg ønsker meg én ekstra ferieuke.”)
[Legg på: “Det er en avtale det høres ut som jeg kan leve med. Er vi da enige?”]
Kan du si at du godtar avtalen?
(Legg på: ”Jeg godtar denne avtalen”)
[Legg på: “Velkommen til oss”]

Debrief
Hva synes du?
Hva er inntrykkene dine av skissen?
Det som kommer til å skje nå er at vi skal teste noen flere som deg, så vil vi videreutvikle skisse og prøve å inkorporere dine innspill så godt vi kan…
Tusen takk for hjelpen!!
Appendix D

*Eksperiment forhandlingssimulering uke 8, 2007*

*Jobbsøker/selger*

Velkommen og takk for at du tar deg tid til å delta på dette, det betyr mye for oss!! Det som nå skal skje er at jeg skal gi deg informasjon om det vi skal gjøre i dag, ca de neste 3 timene. Du skal altså forhandle med NAVN som du nettopp møtte, i et forhandlingsromm der det er satt opp to kameraer som gjør at vi kan observere dere. Dere vil bli presentert to forskjellige forhandlingsscenarier, det første vil være litt kortere enn det andre. Temaene vil også være forskjellige, men strukturen vil kanskje likne hverandre. Scenariene vil bli presentert hver for seg av meg, først det ene, så etter at dere har forhandlet det ferdig, det andre og du vil få muligheten til å stille meg spørsmål om innholdet før du begynner forhandlingen. Gruppen og jeg kommer til å sitte i et annet rom og se på, og samtidig tar vi det opp slik at vi i etterkant kan se på det sammen med deg og snakke om hva som skjedde.

Høres dette greit ut, har du noen spørsmål med en gang?

Her er en samtykkeerklæring på dette…

*Scenario 1:*

Hensikten med dette eksperimentet er å se på forhandlingsatferd. Du kommer til å forhandle med en annen i en oppgave der det er fem punkter som må avklares. I dette scenariet er du en jobbsøker hos Firmax og skal i ansettelsesmøte hos din potensielle sjef, NAVN. Tenk på at det er denne rollen du har når du går inn i forhandlingen. Som den gode jobbsøker du er har du gjort deg noen tanker om dine prioriteringer og de vil du straks se i en payoff oversikt (interesse oversikt).

Payoff oversikten (interesse oversikt) viser alle de forskjellige måter avtalen kan nås på, i tillegg til å gi en oversikt over hvor mange poeng du får for å oppnå hvert alternative resultat. Målet ditt er å få så mange poeng som mulig, men om dere ikke når en avtale i løpet av 25 minutter avslutter vi scenariet og dere vil begge få 0 poeng. Payoff oversikten er oversatt fra engelsk og det kan tenkes at noen av beløpene/begrepene virker sære på grunn av dette, men prøv å bruk dem allikevel 😊
NAVN får den samme instruksjonen som du får nå, men vil ha noen andre interesser enn deg, noe som vil reflekteres i hans/hennes payoff oversikt. Derfor er det viktig at du ikke viser din til han/henne også. 

Spørsmål?

(gi ark)

Ta en titt på oversikten (gi 2 min til det)

Quiz for å sjekke om de skjønner payoff oversikt:

1. Kan du kort forklare kategoriene du ser?
2. Hva er det du får mest poeng for?
3. Hva er det du får minst poeng for?
4. Hva er ditt ideelle resultat?
5. Hvis du skulle forberedt deg og hadde dine vanlige ressurser tilgjengelig for deg, hva hadde du gjort nå? (noter)

Fint! Da skal du få møte din potensielle arbeidsgiver 😊 (pass på at de har med seg oversikten)
Alle 4 møtes foran forhandlingsrommet, de to ledes inn og Ina viser dem hvor kameraene står, Benedicte peker på vann/kjeks/evt. annen info.

Da kommer vi tilbake når tiden er ute. Lykke til!

25min senere...

FPene tas tilbake til hvert sitt rom og roses. Vi skal snakke mer om dette etter at neste scenario er ferdig, men hvordan synes du dette gikk? (KORT, noter)

Gi tom oversikt

Her ser du en tom payoff oversikt som likner på den som ble gitt deg på begynnelse av denne øvelsen. Nå vil vi gjerne at du skriver inn tallene i denne oversikten for å fortelle oss hvordan
du tror NAVN sin oversikt så ut. Du kan bruke din egen oversikt når du skriver inn i den under. Det eneste hintet vi kan gi deg er at det laveste tallet på oversikten deres er 0 og det høyeste er 400.

Fint, da går vi videre til neste scenario.

*Scenario 2:*

Hensikten med dette eksperimentet er å se på forhandlingsatferd. Du kommer til å forhandle med en annen i en oppgave der det er åtte punkter som må avklares. I dette scenariet er du en bilsselger hos BESTPRISBILER og vil gjerne selge en bil til, NAVN. Tenk på at det er denne rollen du har når du går inn i forhandlingen. Som den gode bilsselger du er har du gjort deg noen tanker om dine prioriteringer og de vil du straks se i en payoff oversikt (interesse oversikt).

Payoff oversikten viser alle de forskjellige måter avtalen kan nås på, i tillegg til å gi en oversikt over hvor mange poeng du får for å oppnå hvert alternative resultat. Målet ditt er å få så mange poeng som mulig, men om dere ikke når en avtale i løpet av 35 minutter avslutter vi scenariet og dere vil begge få 0 poeng. Payoff oversikten er oversatt fra engelsk og det kan tenkes at noen av beløpene/begrepene virker sære på grunn av dette, men prøv å bruk dem allikevel ☺

NAVN får den samme instruksjonen som du får nå, men vil ha noen andre interesser enn deg, noe som vil reflekteres i hans/hennes payoff oversikt. Derfor er det viktig at du ikke viser din til han/henne også.

Spørsmål?

*(gi ark)*

Ta en titt på oversikten *(gi 2 min til det)*

*Quiz for å sjekke om de skjønner payoff oversikt:*
1. Kan du kort forklare kategoriene du ser?
2. Hva er det du får mest poeng for?
3. Hva er det du får minst poeng for?
4. Hva er ditt ideelle resultat?
5. Hvis du skulle forberedt deg og hadde dine vanlige ressurser tilgjengelig for deg, hva hadde du gjort nå? (*noter*)

Fint! Da skal du få møte kunden din 😊 (*pass på at de har med seg oversikten*)

*Alle 4 møtes foran forhandlingsrommet*

Da kommer vi tilbake når tiden er ute. Lykke til!

*35min senere...*

_Fpene vises observasjonsrommet og hilser på guttene igjen deretter tas de tilbake til hvert sitt rom og roses_. Vi skal snakke mer om dette straks, men hvordan synes du dette gikk? (*KORT, noter*)

_Gi tom oversikt_

Nedenfor er en tom payoff oversikt som likner på den som ble gitt deg på begynnelsen av denne øvelsen. Nå vil vi gjerne at du skriver inn tallene i denne oversikten for å fortelle oss hvordan du tror NAVN sin oversikt så ut. Du kan bruke din egen oversikt når du skriver inn i den under. Det eneste hintet jeg kan gi deg er at det laveste tallet på oversikten deres er – 6000 og det høyeste er 4000.

Fint! Det var de scenariene vi har forberedt, nå vil du få muligheten til å se gjennom opptaket sammen med Paul/KM og meg og samtidig snakke litt mer om hva du tenkte underveis.

Spørsmål? Vil du ha mer å drikke osv?
Arbeidsgiver/kjøper

Velkommen og takk for at du tar deg tid til å delta på dette, det betyr mye for oss!! Det som nå skal skje er at jeg skal gi deg informasjon om det vi skal gjøre i dag, ca de neste 3 timene. Du skal altså forhandle med NAVN som du nettopp møtte, i et forhandlingsromm der det er satt opp to kamraer som gjør at vi kan observere dere. Dere vil bli presentert to forskjellige forhandlingsscenarier, det første vil være litt kortere enn det andre. Temaene vil også være forskjellige, men strukturen vil kanskje likne hverandre. Scenariene vil bli presentert hver for seg av meg, først det ene, så etter at dere har forhandlet det ferdig, det andre og du vil få muligheten til å stille meg spørsmål om innholdet før du begynner forhandlingen. Gruppen og jeg kommer til å sitte i et annet rom og se på, og samtidig tar vi det opp slik at vi i etterkant kan se på det sammen med deg og snakke om hva som skjedde.

Høres dette greit ut, har du noen spørsmål med en gang?

Her er en samtykkeerklæring på dette…

Scenario 1:
Hensikten med dette eksperimentet er å se på forhandlingsatferd. Du kommer til å forhandle med en annen i en oppgave der det er fem punkter som må avklares. I dette scenariet er du en personalsjef hos Firmax og skal i ansettelsesmøte med en potensiell medarbeider, NAVN. Tenk på at det er denne rollen du har når du går inn i forhandlingen. Som den gode personalsjef du er har du gjort deg noen tanker om dine prioriteringer og de vil du få utdelt i en payoff oversikt (interesse oversikt).

Payoff oversikten viser alle de forskjellige måter avtalen kan nås på, i tillegg til å gi en oversikt over hvor mange poeng du får for å oppnå hvert alternative resultat. Målet ditt er å få så mange poeng som mulig, men om dere ikke når en avtale i løpet av 25 minutter avslutter vi scenariet og dere vil begge få 0 poeng. Payoff oversikten er oversatt fra engelsk og det kan tenkes at noen av beløpene/begrepene virker sære på grunn av dette, men prøv å bruk dem allikevel 😊

NAVN får den samme instruksjonen som du får nå, men vil ha noen andre interesser enn deg, noe som vil reflekteres i hans/hennes payoff oversikt. Derfor er det viktig at du ikke viser din til han/henne også.
Spørsmål?

(gi ark)

Ta en titt på oversikten (gi 2 min til det)

Quiz for å sjekke om de skjønner payoff oversikt:

6. Kan du kort forklare kategoriene du ser?
7. Hva er det du får mest poeng for?
8. Hva er det du får minst poeng for?
9. Hva er ditt ideelle resultat?
10. Hvis du skulle forberedt deg og hadde dine vanlige ressurser tilgjengelig for deg, hva hadde du gjort nå? (noter)

Fint! Da skal du få møte din potensielle medarbeider ☺ (pass på at de har med seg oversikten) Alle 4 møtes foran forhandlingsrommet, de to ledes inn og Ina viser dem hvor kameraene står, Benedicte peker på vann/kjeks/evt. annen info.

Da kommer vi tilbake når tiden er ute. Lykke til!

25min senere...

FPene tas tilbake til hvert sitt rom og roses. Vi skal snakke mer om dette etter at neste scenario er ferdig, men hvordan synes du dette gikk? (KORT, noter)

Gi tom oversikt

Her ser du en tom payoff oversikt som likner på den som ble gitt deg på begynnelse av denne øvelsen. Nå vil vi gjøre at du skriver inn tallene i denne oversikten for å fortelle oss hvordan du tror NAVN sin oversikt så ut. Du kan bruke din egen oversikt når du skriver inn i den under. Det eneste hintet vi kan gi deg er at det laveste tallet på oversikten deres er 0 og det høyeste er 400.
Fint, da går vi videre til neste scenario.

**Scenario 2:**

Hensikten med dette eksperimentet er å se på forhandlingsatferd. Du kommer til å forhandle med en annen i en oppgave der det er åtte punkter som må avklares. I dette scenariet er du interessert i å kjøpe en ny bil og snakker med en *NAV* hos *BESTPRISBILER*. Tenk på at det er denne rollen du har når du går inn i forhandlingen. Som den gode kjøper du er har du gjort deg noen tanker om dine prioriteringer og de vil du se i en payoff oversikt (interesse oversikt) straks.

Payoff oversikten viser alle de forskjellige måter avtalen kan nås på, i tillegg til å gi en oversikt over hvor mange poeng du får for å oppnå hvert alternative resultat. Målet ditt er å få så mange poeng som mulig, men om dere ikke når en avtale i løpet av 35 minutter avslutter vi scenariet og dere vil begge få 0 poeng. Payoff oversikten er oversatt fra engelsk og det kan tenkes at noen av beløpene/begrepene virker sære på grunn av dette, men prøv å bruk dem allikevel 😊

*NAV* får den samme instruksjonen som du får nå, men vil ha noen andre interesser enn deg, noe som vil reflekteres i hans/hennes payoff oversikt. Derfor er det viktig at du ikke viser din til han/henne også.

Spørsmål?

*(gi ark)*

Ta en titt på oversikten *(gi 2 min til det)*

*Quiz for å sjekke om de skjønner payoff oversikt:*

6. Kan du kort forklare kategoriene du ser?
7. Hva er det du får mest poeng for?
8. Hva er det du får minst poeng for?
9. Hva er ditt ideelle resultat?
10. Hvis du skulle forberedt deg og hadde dine vanlige ressurser tilgjengelig for deg, hva hadde du gjort nå? (noter)

Fint! Da skal du få møte bilselgeren (pass på at de har med seg oversikten)

Alle 4 møtes foran forhandlingsrommet

Da kommer vi tilbake når tiden er ute. Lykke til!

35min senere...

Fpene vises observasjonsrommet og hilser på guttene igjen deretter tas de tilbake til hvert sitt rom og roses. Vi skal snakke mer om dette etter at neste scenario er ferdig, men hvordan synes du dette gikk? (KORT, noter)

Gi tom oversikt

Nedenfor er en tom payoff oversikt som likner på den som ble gitt deg på begynnelse av denne øvelsen. Nå vil vi gjerne at du skriver inn tallene i denne oversikten for å fortelle oss hvordan du tror NAVNs sin oversikt så ut. Du kan bruke din egen oversikt når du skriver inn i den under. Det eneste hintet jeg kan gi deg er at det laveste tallet på oversikten deres er – 6000 og det høyeste er 4000.

Fint! Det var de scenariene vi har forberedt, nå vil du få muligheten til å se gjennom opptaket sammen med Paul/KM og meg og samtidig snakke litt mer om hva du tenkte underveis.

Spørsmål? Vil du ha mer å drikke osv?
Understanding groups – a review of models

Benedicte Biørnstad

Department of Psychology, University of Oslo, Norway

Abstract

A number of different theories exist whose purpose it is to enable us to better understand groups. Previous research has attempted to argue for the use of specific role types, sequential phases, time dependency and task dependency as ways in which to classify and understand groups. This paper presents a review of a selection of this previous research and outlines areas where improvements could be useful. A more comprehensive theory, Systematising Person-Group Relations (SPGR), is presented. A suggestion for further research is to pair SPGR with Action Research enabling researchers to thoroughly document group behaviour, and through that, add valuable knowledge to the field.

Using groups in organisations or teams as a way to organise the workforce is not a new idea. It has been found that not only is grouping employees convenient for an organisational map, but also that it is a fundamental way of coordinating work within an organisation (Devine, Clayton, Philips, Dunford, & Melner, 1999; Mintzberg, 1983). As organisations become more focused on cost-efficiency and less hierarchical, they are beginning to rely more and more on groups of people to carry out tasks (Chidambaram & Bostrom, 1996). In a situation that requires a combination of skills, experiences and judgement a team will get better results than several separate individuals (Katzenbach & Smith, 1993). Throughout the years, a great many theories of groups and how they work have been put forward by different researchers (Hill & Gruner, 1973, in Chang, Duck, & Bordia, 2006; Devine et al., 1999). These theories of groups have covered a vast range of different areas including general theories of group development, group relationality, cohesiveness, changes in their primary concerns as a group, group communication, group efficiency and many more (Brown & Miller, 2000; Chang et al., 2006; Hare, L. R. & O’Neill, 2000; Keyton, 2000). So far there has been little consensus in these different theories, and they have received intense scrutiny (Chidambaram & Bostrom,
However, what they all have in common is a sincere wish to gain some kind of insight into what it is that makes groups an entity unlike any other. Attempting to gain an understanding of this propensity and its manifestations can lead to a better understanding of the individual itself. For this reason it has been of interest to research how people are impacted by, relate to, and change within the different constellations in which they live their everyday lives, as this can allow us to learn more about the individuals themselves (Arnold, Silvester, Patterson, Roberston, Cooper, & Burnes, 2005).

This review will describe some of the central theories being used in the assessment of groups. The presentation of theories will follow a discussion of the definition of a group. Further, different theories on stages and mechanisms of group behaviour will be discussed. Finally, how to pair SPGR with Action Research in order to carry out future research will be presented.

**Defining groups**

Due to the wealth of research in this area it is important to start any review by giving a definition of what is meant by “group” as well as a description of the context in which such a constellation is found. The definitions can be as broad as one detailing a distinction between aggregates of people and a psychological group (Pennington, 2002), where the first is a collection of unrelated people and the second a number of people who interact with each other, are aware of each other, and consider themselves to belong together. Definitions can also be specific, arguing for a distinction between the use of group and team, using team to describe a sort of elite group (Sjøvold, 2006b) while others describe the difference between them with more detail, saying that all teams are groups but not all groups are teams (Hare, A. P., 1992). It is clear that even at this level the study of groups is complex. Sorting through the differing definitions alone could form the basis of further research, and therefore, for the purpose of this review, a group is defined as being: “*three or more individuals who have a common goal and work together in order to reach this goal*” (Sjøvold, 2006b, p. 17). This definition has two important features, namely size and goals. The reason for specifying in the definition that two individuals working together, could be counted as a dyad, stems from research done in the 1950s, and entails among other things particular closeness between the two individuals (Simmel, 1955). When the third person joined them it could be counted as a triad, a constellation so different from a dyad that they could not be lumped together (ibid.).
The mention of a goal is as a gathering feature. No matter how clearly defined the goal is, it gathers the members of the group together and gives them direction, and through this a growing feeling of mutual interdependency (Sjøvold, 2006b). As well as this definition in two parts it is important to note that due to the fact that a clear difference in the definition of groups and teams has yet to be presented in a persuasive manner it is considered that the terms can be used interchangeably without it being misleading (ibid.).

The fact that there exists such a wealth of research on the topic, and that such a discussion on definitions is necessary before embarking on further research is a small sign that something happens to individuals when they gather together in a group. This helps to support the argument that the treatment of groups as a separate entity, not just a collection of individuals, can give valuable insight into human behaviour, something which is supported by the principles of nonsummativity and wholeness (Renz & Gregg, 2000). The principle of nonsummativity outlines that a system is different than the sum of its parts (ibid.). According to this principle it is not possible to add up the parts of the system in order to understand the whole. Given that an individual acting on its own behaves differently than s/he does as a member of a group, and changes behaviour depending on which group s/he is a member of, one cannot assume that the group will always behave as a sum of the individuals within it (Renz & Gregg, 2000). The principle of wholeness states that every part of the system has such a strong relationship with every other part that a change in a particular part causes a change in all the other parts in the system (Hall & Fagen, 1975, in Renz & Gregg, 2000). Groups are characterised by wholeness. Therefore, a single change in for instance a group member, will bring change to every member of the group (Renz & Gregg, 2000). This supports the idea that group processes themselves are phenomena that are worthy of study and consideration (Mills, 1984).

**Theoretical approaches to group development**

When looking for theories that attempt to gain a greater understanding of the individuals in a group setting, Belbin’s theory of team roles is one that is frequently used (Belbin, 1981 in Fisher, S. G., Hunter, & Macrossen, 2001). This theory argues that there are certain criteria that must be fulfilled in order to create an effective collection of people and that in order to
fulfil these criteria the team should be made up of people who inhabit eight different roles (list below from McCrimmon, 1995).

1. Shaper: aggressive achiever to help drive the team into action
2. Plant: thoughtful innovator to provide creative ideas
3. Monitor-evaluator: critically thinking devil’s advocate to query feasibility
4. Implementer: hard worker to take practical, efficient action
5. Team worker: socially skilled harmoniser to defuse conflict
6. Coordinator: facilitator to organise the efforts of others
7. Completer-finisher: detailed follower-through to tie up loose ends
8. Resource investigator: outgoing explorer to liaise outside the team

This is not to say that there needs to be eight members in a team, but that the individuals who make up the group need to discharge all of these roles (Fisher, S. G. et al., 2001). Although this opens up for the idea that an individual can inhabit more than one of the roles, it still necessitates the categorisation of the team members into the roles, for there is no other way be sure that all eight are covered. In a work situation any organisation needs to make every effort to ensure that all the roles are represented in their working groups (ibid.). This theory is dependent on the ability to define an individual’s behaviour into a certain category that is consistent over time as well as being consistent across that individual’s participation in different groups. Using this theory in practice requires that the group members are introduced not only to the different roles, but to which roles they inhabit, and perhaps even which roles they have a tendency to inhabit. It is not hard to envision that this knowledge can affect an individual’s future behaviour. Furthermore, it can be argued that this knowledge of roles can lead to an expectation in the individual that they will behave in accordance with their role at all times (McCrimmon, 1995). This type of classification could lead to individuals, as well as whole groups, existing in a restrictive environment, where each person only behaves within their perceived role. Should they at any point feel tempted to step outside their role they may feel group pressure or even pressure from within themselves to avoid this situation (ibid.). In practice, the conclusion must be that even if one can readily argue for the existence of roles within groups, it is much more difficult to argue for the value of placing individuals in those roles. It seems more intuitive that this placement will hinder individuals and undermine their 

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1 In later research a ninth role was added to Belbin’s model, namely the specialist: technical expert to supply specialised knowledge (McCrimmon, 1995).
innate ability to develop and evolve, and that no argument of increased efficiency in predetermined roles can trump the importance of allowing a group to find its feet on its own terms.

Some would counter these assertions with other models such as Tuckman’s model of the stages of small-group development presented in 1965. This model, still widely used, does nothing to classify the individual within the group but argues that groups go through five linear different stages (Tuckman & Jensen, 1977). The stages are called forming, storming, norming, performing and adjourning (Tuckman, 1965, in Pennington, 2002, p. 71; Tuckman & Jensen, 1977, p. 462) and argued to be linear and sequential (Akrivou, Boyatzis, & McLeod, 2006). In short the forming stage entails the group members spending time getting acquainted with each other, finding out about each others’ backgrounds and personalities, and setting down basic rules and structures to work by. These aspects, the structure, rules and understanding of the task are often the basis for entering the second stage, storming, where conflicts arise within the group (Pennington, 2002). Norming is the stage when the group members experience a sense of cohesiveness, and this is followed by the performing stage where the group starts working on the tasks set them. The final stage was added some years later and termed adjourning, it is most likely to occur in groups that have a specific purpose and once that purpose is achieved, disband (Pennington, 2002). This model goes on to argue that all groups go through all the stages for some amount of time, but the time spent at each stage can differ. In order to get a positive result for its work each group must go through and complete each stage successfully, and not doing so will most likely lead the group to disbanding (Pennington, 2002).

Unlike Belbin, Tuckman does not force each group member into a mould of expected behaviour. However, the group is still expected to go through a series of very specific phases and failure to account for each of them is directly related to how likely the group is to disband, and therefore fail. Where Belbin restricts each member within a strictly defined area of behaviour, Tuckman restricts the group’s plenary behaviour. It is difficult to imagine that this kind of sequential linearity could possibly fit all groups, and according to the large number of critics it does not (Sjøvold, 2006b). Although Tuckman’s model is appealing in its structure and simplicity, research has indicated that not only do groups not necessarily go through all the stages, they don’t necessarily go through them one at a time or in the order specified (George & Jones, 2005).
Another theory focusing on sequential phases is one put forward by Agazarian and adapted from Bennis & Shepard’s systems framework (Agazarian & Gantt, 2003). Here there are three phases: the Authority Phase, the Intimacy Phase and the Interdependent Work Phase. In each of these phases there are conflicts that arise forcing the system to address them and manage them, and through that forming them into a working group. In the first phase the major focus is on the issue of power and authority, making this phase have a competitive and political climate (ibid.). In the second phase the focus is on the members’ relationships with each other, and these relationships become more important to them than those with authority. In order to move on to the next phase the group must accept their differences as valuable resources (ibid.). In the final phase the group starts focusing on their context, after having focused on the group for the first two phases. In this phase the group can use its resources to relate to the work task at hand (Agazarian & Gantt, 2003). This theory has been presented with substantial support and research on clinical groups has been done that also supports it. However, although this theory may have many positive arguments on its side, this does not change the fact that in group development it is hard to believe in sequential phases, no matter how roomy they seem.

A model that seems to move on from classification into roles or sequential phases is one that has been argued to be dependent on time (Sjøvold, 2006b). This model, the temporal processes in group interaction and performance model (TIP) argues that it is not sequentiality but time that is central to a groups’ development (McGrath, 1991, in Sjøvold, 2006b). This theory states that it is the time the groups have at their disposal that will help them to decide which mode they choose to go into, and that not all groups go into the modes in the same order, or use the same modes (Sjøvold, 2006b). The modes in TIP are as follows: Inception where the group gathers and establishes social contact, accepting that interaction is desirable and necessary. This is followed by technical problem solving/choice of means where the group selects their methods and means in order to reach their goal. Then the mode conflict resolution arrives, reminiscent of the storming stage in Tuckman’s model. Finally the project execution mode is gone through where the groups’ task is solved, the groups works efficiently and gets the job done (ibid.). Later research by McGrath has stayed with the idea of groups going through modes, deciding themselves when to use which mode, and possibly going through two modes concurrently (Arrow, McGrath, & Berdahl, 2000). Although each of McGrath’s modes is reminiscent of one of the stages in Tuckman’s model it is important to
focus not on this but on the fundamental difference in perspective. McGrath argues vehemently that groups need not go through all the modes, and if they do go through them, they need not go through them in any particular order (Sjøvold, 2006b). The only modes that are expected in a group are the first and last, but the others only appear if and when they are needed, for shorter periods of time and if the group deems them necessary to go through (ibid.). It is, however, difficult to ignore the lingering feeling of sequentiality that exists in this model as well.

Another way of looking at groups was put forward by Bales and was based on the idea that when groups came together to work, they fluctuated between solving two types of problems. This theory is called Interaction Process Analysis (IPA) (Bales, 1950, in Pennington, 2002). The first of these is the task-related behaviours that enable the group to reach its goals, and the second socio-emotional behaviours which are concerned with methods that will ensure good interpersonal interaction between the group members, leaving them with positive feelings and wanting to work with one another (Pennington, 2002). According to this theory the group will throughout its lifetime fluctuate between these two, and Bales saw this as a more constant and ongoing process than the models detailed above (Sjøvold, 2006b). It is only through this fluctuation that groups can be efficient and effective throughout their life-span (Sjøvold, 2006b). This contrasts with the Tuckman model because the Tuckman model argues that once the group has gone through the stage focusing on the socio-emotional aspects, they are done with it. Bales argues that there must be a balance between these two, so that after a time spent focused on the task-related questions the group will focus on the socio-emotional aspects for a time and vice versa (Sjøvold, 2006b). However, Bales argues that these two cannot be focused on simultaneously and therefore the best way for a group to develop and work is through a rapid change between the one and the other (ibid.). As well as that these changes are best if they are not too large a size of effect in each case, if the size of the effect is too great the polarisation can be too hard to handle and take too much energy out of the group (ibid.). This is the reason why groups made up of people with very well-defined roles often struggle and underlines the fact that balance is the optimum state for a group. In reaching a balance the group will be flexible enough to always be able to function at a high level no matter the situation (ibid.). However, this also leads to the idea that with this kind of fluctuation and balance in mind a good group cannot be assembled with people that have very different role preferences in the hope that they will compliment each other (ibid.).
IPA was initially developed in order to better understand and study the development and behaviour in groups that come together in order to achieve a specific task, and gives the researcher tools to use in order to carry this out. There is a collection of observational parameters which make it possible for the observer to register aspects of the groups’ behaviour (Pennington, 2002). IPA also provided the basis for Bales’ next theory, SYMLOG (Pennington, 2002). SYMLOG stands for a System for the Multiple Level Observation of Groups and is a system for the study of groups (Bales & Cohen, 1979). This system was developed with the intention of making a particular group easier to understand, and was made to be applied to any natural group. SYMLOG enables this through providing a variety of standardised observational and rating tools that make it possible for the researcher or observer to gain an understanding of a particular group even if the opportunities of making technical observations are limited (Bales & Cohen, 1979; Lawrence & Wiswell, 1993). When it was introduced SYMLOG was the most comprehensive new theoretical perspective in a number of years (Hare, A. P., Blumberg, Davies, & Kent, 1994). It introduced the thought that interpersonal behaviour could be understood in terms of a three dimensional space, and when each of these dimensions in turn were divided into three the result was 26 different types of individual personalities or group roles that could be observed or tracked in a group (Hare, A. P., 1992). Although both IPA and SYMLOG are useful tools that give insight into how a group functions throughout its lifespan, they are still quite complex tools that take a substantial amount of time to learn and apply, they are labour intensive as well as being demanding (Arrow et al., 2000). In addition this theory tends to focus on the methods of interaction, not the content of the interaction and although the theories present ways of identifying certain issues within groups, they do not necessarily present possible solutions (Arrow et al., 2000). For instance it is suggested that groups made up of people with set role preferences, and through those maybe very different personal qualities, will struggle more with the balance needed to produce at a high level, but details of a solution to this problem are not given.

In order to move on from these it is possible to look at a theory that considers groups to be complex systems requiring complex theories to explain them, namely AGIL. This theory was put forward by Parsons in the 1950s, and similarly to TIP, is based on the idea that groups function in different phases throughout their development (Sjøvold, 2006b). It goes on

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2 AGIL is named for the functions in the theory
to say that which phase the group is in is determined by factors within the group, the nature of the task and of course the requirements of the environment (ibid.). This theory focuses on the concept that there are four functions that a group must fulfil in order to survive (Hare, A. P., 1996; Mills, 1984; Sjøvold, 2006b): The group must be able to generate the skills and resources necessary to reach the group goal, called adaptation, and the group must also be able to exercise a sufficient amount of control over their membership in order to coordinate the use of resources and members’ roles to reach their common goal, termed goal-attainment. In addition the group needs rules that make it possible for the group to coordinate their activity as well as having a feeling of solidarity that enables them to stay together and complete their task leading to integration, and finally all the members of the group need to have a common identity and be committed to the values of the group, called latent pattern maintenance and tension management/latency. These functions work in such a way that one of them is more dominant in the group at any time. This does not mean that the other functions disappear or are completely latent, but that one influences the group more than the other three (Hare, A. P., 1992). The way in which the other three functions appear in the group is affected by the dominant function (Sjøvold, 2006b).

This theory gives more room for the differences that exist between groups, and those that exist between different groups the individual s/he is in. AGIL allows the group to move seamlessly from one function to the other, simply commenting on how it is likely that the group will behave when one or the other function is most dominant. Unlike the other three theories mentioned earlier AGIL does not constrain the group members, or the entire group, and is not best seen in hindsight, as for instance Tuckman’s model often is. This makes Parsons’ theory a more credible and comprehensive one, however, it stills leaves a little to be desired when it comes to practical application (Sjøvold, 2006b).

**Systematising Person-Group Relations**

Through this presentation of different theories it becomes evident that it is difficult to find a theory that does not attempt to force the group into a pattern it does not necessarily fit into. Although one group seems to fit into one theory, a new group comes along and fits into a completely contradictory theory (Sjøvold, 2006b). The more complicated models give more leeway so that more groups will fit, and they can therefore to some extent explain more than others, however, these theories still leave something to be desired (ibid.). At the same time, it
must be said that the existing theories have more issues in common than those that separate
them, and through looking at these, perhaps it is possible to move on from them.

If one considers that fact that the differing theories all agree that in order to develop in the
best way and function well in the long-term a group requires elements from differing areas of
behaviour, it is possible to apply this in the research. This operation results in three
overarching categories that can be termed control, opposition and nurture (Sjøvold, 2006b):
where control includes behaviour that advances goals and problem-solving, efficient routines
and level headedness, opposition includes behaviour that advances corrections, breaks in
conventional behaviour, criticism and new approaches, and nurture includes behaviour that
advances relationships, togetherness, empathy and creativity. If one further considers in more
detail the specific recurring behaviour of the group or individual member research reports
behaviour across groups that falls into six clusters (ibid.). These clusters of behaviour have
been systematised in the Systematising the Person-Group Relation model (SPGR) and are
called (Sjøvold, 2006b; , in print):

- Control (C): structure, logic, authority
- Opposition (O): criticism, rebellion
- Nurture (N): caring, social orientation, openness
- Dependency (D): loyalty, conformity, submission
- Synergy (S): engagement, constructive goal-oriented teamwork
- Withdrawal (W): passive resistance

The top four clusters are reminiscent of the situational functions in AGIL, while in the bottom
two synergy is seen in strong and flexible groups (Sjøvold, 2006b). These six clusters make
up the six elements that are part of the SPGR model.

In order to gain a deeper understanding of the SPGR model it is possible to start off by
looking at the four clusters of basic functions. These clusters can also be illustrated in a
model pairing them off into dimensions and group development happens when the functions
in the dimensions are kept in balance in the way figure 1 illustrates (Sjøvold, 2006b).
Each of these functions supports an aspect the group cannot work without (ibid.)\(^3\):

- **Nurture**: this function is easily spotted when the social relationships are being established and nurtured. People who often find themselves in this category are friendly, considerate and open.

- **Dependency**: this is apparent in a group that is adjusting to the rules they have set up for their work together as well as getting down to work. People operating in this category are seen as being logical and objective, trying to focus on the task at hand in a rational manner.

- **Opposition**: this function is clear in a group that is using its energy to solve any problems or disagreements between the different members of a group.

- **Control**: a group dominated by this function has accepted the common rules and methods for working and is focusing on producing results. People who often find themselves in this category are seen by the group as being inflexible, overly interested in the correct way of going about the work.

These functions do not work in a sequential or modal fashion. They are functions that the group members, or indeed the entire group, may have for a time before moving on to one of the other functions, only to return to the initial function later on at some point. These elements or functions do not come in any particular order, nor are the predictable, but they are measurable and cover to a great extent the behaviour seen in groups.

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\(^3\) For more information about these functions please refer to Appendix A
In order to capture the development of the group of people SPGR uses the term maturity. A mature group is one where all the basic functions are seen in equal measures and where all the different group members are able to operate within them equally well (Sjøvold, 2006b). In the opposite case a more immature group is more likely to get stuck in one of the functions, as are the single group members. However, it is important to note that this may not influence the groups’ ability to be effective or its efficiency. An immature group may be just as effective and efficient as a mature group; this depends on the nature of the task (ibid.). At the withdrawal end the group is more immature, with little common identity or shared commitment, while at the synergy end, the group experiences a higher level of common identity and learning as well as actively seeking knowledge. When experiencing synergy the group members are all able to operate in all the basic functions and fluctuate between them at a great speed, leading them to be free of any specific roles (ibid.). This balance in the basic functions creates a movement that in turn creates a spiral towards a higher maturity and synergy. This is a reversible process, moving the group between maturity/synergy and immaturity/withdrawal (see figure 2).

![Figure 2: The synergy/withdrawal axis (Sjøvold, 2006b)](image)

The balance aspect in this theory is very important – it leads the group to constantly change between the different basic functions, encouraging them to challenge themselves and their own limits (Sjøvold, 2006b). At the same time as this balance sounds invigorating and leads the group to maturity and synergy, it is a balance it may be frightening to lose. If a group finds itself losing its balance it may sink into a common operation of one of the functions.
(ibid.). However, through this theory and the understanding it may bring, they have a real chance of regaining their balance and resuming their development.

When using SPGR it is also possible to use different types of observational and rating tools, enabling the researcher to record their own observations as well as tools that enable the groups’ members to rate their own and their colleagues' behaviour. The use of tools such as these may not be a new idea, but the tools in SPGR have been made easier to understand and are therefore easier to use. The fact that the SPGR model is not only comprehensive but also includes useful tools is very important. This makes it possible not only for researchers to understand a group’s development, but for the group to gain an understanding of itself, and through this understanding a way of developing itself, not only being developed.

In order to illustrate the groups’ results, be they based on their own reports or the researcher’s observations, SPGR provides a figure such as figure 3 (Sjøvold, 2006a). This makes it possible to better understand which function a group member is operating within, as well as making it possible to see the group members in relation to one another.

![Figure 3: The SPGR diagram (Sjøvold, 2006a)](image)

Within this diagram the group members are shown as circles, and it is important to keep in mind that these diagrams are only a representation of the group members at one specific point in time. This avoids any feelings of permanent classification, comments on personality traits or anything of the like, giving the researcher and the group useful tools to use as the basis for
communication about the group and the group members. In order to illustrate the synergy – withdrawal dimension the outside of the diagram is marked (see figure 3).

This theory gives greater room for inter-group differences, integrating several of the most respected theories that have preceded it. As well as that it gives a good explanation of group dynamics, explaining it as a function of balance. The groups’ maturity and through that its capacity for greatness increases with how well this balance works (Sjøvold, 2006a). The goal here is not to use a theory that enables the creation of an elite form of groups, but to better understand groups that exist. After all, in most cases groups are formed using criteria that cannot be affected by theories such as the ones mentioned above, and realising that is vital. In this way it is possible to be clear about wanting to better the understanding of groups, and indeed helping them to better understand themselves. As a theory SPGR is clearly more comprehensive than the earlier theories as well as giving tools with which to measure and develop groups. The question is then how to use SPGR in practice to gain the most accurate and beneficial results for the researcher and the group itself.

The researcher within the group

There are several different ways SPGR could be used to both study and develop groups. Although all the different methods can give important information about groups, it is important to use the best method at hand in any given situation. On the one hand research on groups can be done in experimental settings such as the research done by Lewin where different aspects of group behaviour were investigated on groups that had been created for the purpose of the research project (ad-hoc groups) (Argyris, Putnam, & Smith, 1985). This way of researching groups has been heavily criticised (McGrath, 1984 in Chidambaram & Bostrom, 1996). If one studies a group that has never worked together before, and maybe more importantly, will never work together again, the general applicability of the results comes under question (Chidambaram & Bostrom, 1996). On the other hand, a large proportion of group research has also been done on real groups, studying groups that have a common history and a future (Sjøvold, 2006b). SPGR is developed with the real group in mind, allowing the researcher and the group to work on developing the group even further. With this said, SPGR is still a theory that can be applied to any group setting, as long as there is a wish to understand the group in question better. However, all of the settings have in common that SPGR expects the researcher to be in very close contact with the group (Sjøvold,
Whether this contact is through observation or processing and feedback of self/peer-measurements, it demands of the researcher a particular level of insight into the problems associated with “going native” (Flick, 2002). The SPGR measurements benefit and expect to be seen in context, and as well as that the feedback should not be done without considering its effects on the group. This demands that the researcher considers him/herself in relation to the group at all times, and in some cases will act more as a collaborator to the group being studied than a completely external observer (Somekh, 2006). It is important to find a method that allows for the continuous focus on how this collaboration can affect the research itself, the researcher and the group being studied. This makes a strong argument for the pairing of SPGR with Action Research.

**Action Research**

Action Research has existed as a method since the mid-1940s. The term was first used to describe research where the researcher and the people being researched where together in their endeavours (Arnold et al., 2005). This work was done by Lewin in order to among other things look at work teams and management, and formed the foundation for further decades’ research on organisational psychology and human relations (Lewin, 1946, 1948 in Herr & Anderson, 2005). Action Research is the generation of “knowledge that is useful, valid, descriptive of the world, and informative of how we might change it” (Argyris et al., 1985, p. x). Therefore, when using the Action Research methodology it is possible to contribute both to the basic knowledge situation in any social science, and to social action in everyday life (Argyris et al., 1985). Action Research is research that is done by or with insiders to an organization or community, but never to or on them (Herr & Anderson, 2005). In this way, Action Research often focuses on an issue that everyone participating is interested in including the researcher. This is often an area where there is a hope for change or development in some way (Herr & Anderson, 2005). Through this type of research the group, or organisation for that matter, is able to implement findings from the research as time goes on, and the researcher is able to not only report on the implementation of the findings, but go through several cycles of this way of working.

It is argued by sceptics that research done from within a setting cannot be as objective as research done from the outside of the setting, and therefore Action Research cannot claim the same validity as other methods. However, there have long been arguments that the creation of
knowledge and the interest of the researcher are inseparable (Herr & Anderson, 2005). Therefore, within the field of psychological research, instead of seeking a method that is free from any so-called subjectivism, perhaps the only viable option is to be clear about the researchers’ possible subjective views or effect on the research, and leave to the reader to consider the value of the knowledge presented therein. In this way the quality of Action Research becomes dependent on the reflexive sensitivity of the researcher (Somekh, 2006).

Action Research is clear about its goals, namely the collection of contextual knowledge. Similarly to other types of qualitative research, Action Research attempts to gain access to the impressions and experiences of the participants in the research, and as well as that the researcher’s own experiences. In order to be able to carry out this critical examination it becomes important for the researcher to participate fully in the group’s or organisation’s daily life. Due to this fact it is important that the researcher is at all times very clear about his or her role, being careful to avoid situations where they have gone native without reporting the possibility of it. This is not an exercise in keeping one’s distance from the participants, if this were the case it would be near impossible to gain the necessary insight into the group or organisation. An attempt at chronicling the researcher’s position vis-à-vis the group or organisation seems a more viable solution, thereby giving the reader the opportunity to accurately judge for themselves the existence and degree of bias.

As well as the researcher possibly being a member of the group being studied, another reason for using Action Research methods in the study of groups is the potential importance to the researcher and the group that the group benefits from the research. Research that focuses on group development makes it important that the group can be given feedback about their development at several points in time. To this end SPGR argues for the value of feedback sessions that can be held with the entire group present. In these sessions the researcher’s focus should be to give the group information about the results of any SPGR measurements or observations at a group level and some insight into their individual results.

**Conclusion**

Different researchers have over the past 50 years argued for many different ways of understanding and mapping group development. This review has presented some of the most central and often used theories and evaluated these against the relatively new theory SPGR.
Many of the theories in use attempt to classify and generalise groups to such an extent that they loose the ability to say anything about any groups. It is argued here that SPGR addresses these weaknesses by developing a theory that focuses on understanding and trying to map the behaviour within the present group as well as possible, and uses that information to develop the group as well as expand knowledge within the area. SPGR makes it possible to do this with less bias than earlier theories, less concerned with making the group fit a pattern than with recording the actual behaviour in the group. As well as this, SPGR provides tools with which to carry out this research, and tools to use in the development of the group. Using the theory and tools of SPGR, and combining it with the reflexivity provided by an Action Research approach will enable group research to move forward and gain a deeper understanding of all that can take place within the environment of a group.

This approach may not provide the same sense of generalisability that some of the other theories claim to give. Instead, it provides access to richer information that is hard to match, delivering a clear and concise picture of a group, and methods that allow for open and constructive dialogues with the group. Through research done in this way the knowledge about how groups develop and individual behaviour within groups will increase, making it possible to understand any group better.
References


Appendix A

The four main SPGR functions explained (Sjøvold, 2006b)

- Nurture: this function is easily spotted when the social relationships are being established and nurtured. People who often find themselves in this category are friendly, considerate and open. They care about equality within the group and try to make sure that everyone is being heard. A group affected by this function will be most interested in anything that will support human relationships and group-member happiness. Decisions will tend to be made slowly in this group because reaching goals and solving problems is not something that is appreciated.

- Dependency: this is apparent in a group that is adjusting to the rules they have set up for their work together as well as getting down to work. People operating in this category are seen as being logical and objective, trying to focus on the task at hand in a rational manner. They care about finishing the task, studying any material at hand, but they often do not have a large amount of individual drive. In a group of these kinds of people there will often be a great deal of dependency, value will be placed on loyalty to common values and discipline. This can lead to the need for a strong leader, in order to get the group members out of their subjugation.

- Opposition: this function is clear in a group that is using its energy to solve any problems or disagreements between the different members of a group. People seen operating in this category show disdain and intolerance for authority figures and are clear about not wanting to conform. By the rest of the group they are seen as being untrustworthy, irritable or impatient. A group where all the members operate within this category are suspicious of each other, and aggressive ways of acting are appreciated. The will to work together for a common purpose here is very low, and the leader is often seen in the role of negotiator.

- Control: a group dominated by this function has accepted the common rules and methods for working and is focusing on producing results. People who often find themselves in this category are seen by the group as being inflexible, overly interested in the correct way of going about the work. An entire group affected by this function will most likely be
quite rigid, with a strong and often implicit understanding of what the task is and how it will be solved. This group is convinced of its own invincibility and any new members or new methods/ideas are seen as threats.
Innovation in action – A study of group development through SPGR

Benedicte Biørnstad

Department of Psychology, University of Oslo, Norway

Abstract

This paper presents a study of group development using Action Research methodology and the theory and method included in Systematising Person-Group Relations (SPGR). A group at the University of Oslo was studied over the course of two academic semesters using three SPGR self/peer-measurements and video observations. The results give a unique insight into a working group and show that each of the group members developed and changed within the group context. This study shows that using SPGR and Action Research provides rich and valuable data on group development. Through this insight it is possible to gain a greater understanding of behaviour in groups in general.

Research on groups and their work has been carried over the last five decades, attempting to better understand what it is that takes place within a constellation of individuals (Arnold, Silvester, Patterson, Roberston, Cooper, & Burnes, 2005). Throughout this research differing models of what takes place in groups have been launched, some arguing for the existence of roles, some of phases, some arguing for a dependency on time, some on task (Arrow & McGrath, 1993; Bales & Cohen, 1979; Fisher, Hunter, & Macrossen, 2001; Hare, 1976; Hare, Blumberg, Davies, & Kent, 1994; McCrimmon, 1995; McGrath, Arrow, & Berdahl, 2000; Tuckman, 1965, in Pennington, 2002, p. 71; Sjøvold, 2006; Tuckman & Jensen, 1977).

Almost all of these models and theories have a common aim of finding a way of generalising what goes on in groups, in order to better explain, train and guide future groups. However, the propensity to generalise seems to have lead many of these researchers into developing theories that do more to force groups into patterns they do not fit into, and less to understand them. Although one group seems to fit into one theory, a new group comes along and fits into a completely contradictory theory (Sjøvold, 2006). Therefore, one can gather that contrary to what they intended, many theories may end up confusing both researchers and groups instead.
of explaining or guiding them in their work and interaction. When earlier theories are reviewed it becomes clear that there is a need for a more comprehensive theory in the field, and that finding a comprehensive theory and a method for the practical application of it, will add greatly to the field (Biørnstad, this thesis). It is considered that using Systematising Person-Group Relations (SPGR) and pairing it with the methodology of Action Research can make it possible to study groups without using hindsight or forcing them into a mould they do not fit into (Biørnstad, this thesis).

The focus of the present investigation is to give an insight into the life and development of a working group. In this study the researcher will be an equal participant in a working group and simultaneously record the group’s development. The group in question will be constant in its membership throughout the project, giving the investigation a controlled environment, close to the laboratory conditions that can be found in created groups (ad-hoc groups) (Sjøvold, 2002). In addition, the individual’s success will be clearly understood to be dependent not only in his/her own work, but also on the group’s work. Therefore, the individual’s ability to master the group relationship will be understood to be important, conditions one would expect to find in a real working group (ibid.). In this way this research will be conducted in a setting where there exists a combination of laboratory conditions and real working group conditions.

The research on the group’s development will be carried out mainly through the collection of the group’s reports of each of the individual’s behaviour using SPGR. What can SPGR tell us about this group’s development throughout the project period? Will this use of SPGR, and the group’s introduction to it through the feedback sessions and the researcher’s presence in the group lead the group to gain a deeper insight into their own behaviour? Will SPGR give the group a natural language with which to discuss their development? These are the questions this study will attempt to address.
Method

The material

This research is based on data gathered from within one group consisting of students in the master’s programme in Psychology at the University of Oslo. The group was formed in order to undertake a year-long (two academic semesters) development project where the goal was to create a simulator that utilised academic psychological knowledge. Initially, a group of six people, three women and three men, ranging in age from 24 to 30 participated in this work. All the group members were Norwegian.

Within the first weeks of existence one of the group members decided to leave the group, leaving five members, now two women and three men ranging in age from 25 to 30. All of the group members had knowledge of one another prior to starting the group development project, and had been in the same academic class for a year. However, the same group had not earlier existed, nor worked together, making this a new group. This group remained unchanged throughout the project. The group worked together full-time from the middle of August 2006 until the end of March 2007.

The SPGR instrument

SPGR is a theory developed through considering the issues earlier theories have in common. This operation results in three overarching categories that can be called control, opposition and nurture (Sjøvold, 2006). Here the category of control includes behaviour that advances goals and problem-solving, efficient routines and level headedness, opposition includes behaviour that advances corrections, breaks in conventional behaviour, criticism and new approaches, and nurture includes behaviour that advances relationships, togetherness, empathy and creativity. If one further considers in more detail the specific recurring behaviour of the group or individual member research reports behaviour across groups that falls into six clusters (ibid.). These clusters of behaviour have been systematised in the SPGR model and are listed in table 1.

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1 The term “group” here includes the researcher. The researcher participates in everything that happens to the group.
2 For more information on the group project please see “Simulating Skills – exploring skill development through the design of a game-based training simulator”
3 For more information about these functions please refer to Appendix A
Table 1: Elements of group constitution (Sjøvold, in print)

<table>
<thead>
<tr>
<th>Group Function</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>Structure, logic, authority</td>
</tr>
<tr>
<td>Nurture</td>
<td>Caring, social orientation, openness</td>
</tr>
<tr>
<td>Dependence</td>
<td>Loyalty, conformance, submission</td>
</tr>
<tr>
<td>Opposition</td>
<td>Criticism, rebellion</td>
</tr>
<tr>
<td>Withdrawal</td>
<td>Passive resistance</td>
</tr>
<tr>
<td>Synergy</td>
<td>Engagement, constructive goal-oriented teamwork</td>
</tr>
</tbody>
</table>

These functions do not work in a sequential or modal fashion. They are functions that the group members, or indeed the entire group, may have for a time before moving on to one of the other functions, only to return to the initial function later on at some point.

SPGR makes it possible to gather data from the group in using observation and self/peer-report measurements. What makes the instrument valuable for the users and target groups of SPGR is its focus on analysis and visualisations in the feedback. This makes development and growth possible in a variety of different areas such as group culture, group type, polarisation within the group, role structure, level of development, energy, efficiency, resources, cooperative competence and individual resource profiles (Sjøvold, 2006). This information is communicated though the use of the SPGR-diagram, making it easier for the groups to understand the information they are given. It is also possible to give the group more and more information as the group develops, enabling them to focus on new areas and refine others (ibid.).

The self/peer-measurement the participants are given include questions that measure each of the six elements in SPGR along 12 different vectors detailed in table 2. Each vector is measured twice giving the instrument 24 parts. Each participant is asked to report on his/her own behaviour and the behaviour of each group member.
Table 2: The SPGR vectors (Sjøvold, in print)

<table>
<thead>
<tr>
<th>Vector</th>
<th>Code</th>
<th>Typical behaviour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task-orientation</td>
<td>C1</td>
<td>Controlling, autocratic, attentive to rules and procedures</td>
</tr>
<tr>
<td>Task-orientation</td>
<td>C2</td>
<td>Analytical, task-oriented, conforming</td>
</tr>
<tr>
<td>Relation</td>
<td>N1</td>
<td>Taking care of others, attentive to relations</td>
</tr>
<tr>
<td>Creativity</td>
<td>N2</td>
<td>Creative, spontaneous</td>
</tr>
<tr>
<td>Loyalty</td>
<td>D1</td>
<td>Obedient, conforming</td>
</tr>
<tr>
<td>Acceptance</td>
<td>D2</td>
<td>Passive, accepting</td>
</tr>
<tr>
<td>Criticism</td>
<td>O1</td>
<td>Critical, opposing</td>
</tr>
<tr>
<td>Assertiveness</td>
<td>O2</td>
<td>Assertive, self-sufficient</td>
</tr>
<tr>
<td>Resignation</td>
<td>W1</td>
<td>Sad appearance, showing lack of self-confidence</td>
</tr>
<tr>
<td>Self-sacrifice</td>
<td>W2</td>
<td>Passive, reluctant to contribute</td>
</tr>
<tr>
<td>Engagement</td>
<td>S1</td>
<td>Engaged, inviting others to contribute</td>
</tr>
<tr>
<td>Empathy</td>
<td>S2</td>
<td>Showing empathy and interest in others</td>
</tr>
</tbody>
</table>

The results of these measurements are illustrated in SPGR diagrams (see figure 1). This makes it possible to better understand which function a group member is operating within, as well as making it possible to see the group members in relation to one another. Within this diagram the group members are shown as circles. The colour of the circle itself indicates if the group member has taken on one specific role within the group. For example if the circle is blue the group member exhibits so much behaviour within the control field that they have defined themselves in a control/structure role within the group. If the circle is yellow this indicates that the group member exhibits too varied behaviour to classify in this way, not taking on one specific role within the group. A grey coloured circle indicates that the group member has not been very active within the group.

The placement of the circle within the diagram indicates the behaviour that a particular group member exhibits most often. For example if the circle is placed in the Nurture field the group member most often exhibits behaviour that is nurturing. The size of each circle indicates how much room the individual group members take, how much attention they demand, the larger the circle, the more attention is demanded by that individual.
In order to illustrate the synergy – withdrawal dimension the outside of the diagram is marked in figure 1, but in the results to the groups this is marked with circle colours (yellow for synergy, grey for withdrawal)

The SPGR instrument put to use

SPGR self/peer-measurements were carried out in mid-August and mid-November 2006, and in mid-February 2007. These three measurements were self- and peer ratings using the 24-item SPGR scale where each respondent marks off whether the behaviour described is seen never, sometimes or often/always. In these measurements each group member reported on themselves and each other group member in a web-based questionnaire. The reports were used to give feedback to the group on two separate occasions throughout the project period. In the report the group members were presented with, there was one SPGR-diagram for the average results for each individual at group level, one diagram with their own reported results on the group members, one diagram with their own reported results of themselves and one diagram with the other group members’ reports of them.

In addition to the SPGR self/peer-report measurements, video observations of the group were carried out throughout the project period. The group consented to this prior to the project starting, and signed a consent form to that effect. The group was not given any specific instructions in relation to the filming; it was clear from the start that this activity was in order to document, not affect or alter behaviour. Therefore, the camera was placed where it could
capture the group where they had chosen to sit within the room they were in and if the group members moved out of the frame this was not commented on or changed.

A substantial amount of the group’s work was filmed. The filmed observations of the group were used to evaluate meetings that took place at around the same time as the self/peer-report measurements. Having the opportunity to video the group made it possible for the researcher to participate in the group work as intended. Three meetings were analysed by the researcher. The videos were analysed qualitatively and used as a snapshot of the group’s behaviour at the time of the peer/self-report measurements.

The group had two feedback sessions, one on the 20. December 2006, and the other the 13. March 2007. In both of these feedback sessions the group was presented with the background of SPGR and how to process the diagrams, and then taken through the averaged group results. At the first session the group was shown the results from the August and November measurements, and at the second session the group was in addition shown the February results.

The feedback sessions were an arena where the group’s members could attempt to better understand and therefore affect their behaviour. These sessions were scheduled with the group’s permission and were prepared by the researcher. In the feedback sessions it was necessary for the researcher to step out of the group member role and into the researcher role. At the beginning of each of the two feedback sessions the group was given a presentation of SPGR to refresh their knowledge on the topic. They were then presented with the group results and these were discussed. Following this each individual group member was given his/her individual results and optional individual feedback sessions were held with the researcher. The group members were not forced to have individual feedback, but were offered it.

Results

SPGR self/peer-measurements

The first measurement: The first measurement of the group shows that one group member, labelled “C”, has been assessed by the others to spend all of his/her time exhibiting nurturing behaviour (the green circle in the green field in the SPGR diagram labelled figure 2).
“C” is considered to exhibit behaviour that is outgoing, sociable, and shows commitment to the group at a social level. From the size of the circle it is clear that the group considers “C” to be a noticeable presence, demanding the group’s attention. Another group member, labelled “A”, is reported as exhibiting behaviour that exists in several areas, and therefore enough time is not considered to be spent in one single area to warrant a single colour such as “C”. However, “A” spends most of his/her time exhibiting behaviour that is in the control area, focusing on logical, objective, task-oriented and analytic behaviour. “A” is also considered by the group as one who demands attention from the group and is a very noticeable presence.

The three remaining group members are reported as exhibiting dependent behaviour, all three exhibiting dependency and loyalty to the group. These three are considered by the group to not be as vocal as the two others. Within these three, “E” is considered by the group to exhibit behaviour that in some reports is close to the opposition field and behaviour considered to be withdrawing or passive, pulling his/her circle closer to the centre. In the group at this point in time it is clear that there are two members “running the show”. These two are likely to spend the most time talking, and are likely to be at the centre of most of the

*Figure 2: Average measurements for the group members at first measurement (the white circles show the single reports)*
decisions being made. The three others are more likely to exhibit behaviour that is of a more quiet and supportive nature, and to a large extent focus on the well-being and social cohesion of the group, not task-orientation.

When looking at the video of a meeting that took place at the same time as the first measurement, some of the same tendencies are seen. In this videotaped session there is a general positive feeling in the group. There is a lot of laughter and joking, but at the same time it seems as though the group members are feeling each other out. It seems as though they are all wary of any negative feelings and therefore jokes are often used to keep the mood light. When it comes to assessing the individuals, “A” and “C” are the two most vocal participants in the group. This is an impression compounded by the fact that they are sitting on the same side of the table and therefore almost act as a panel. In the meeting “C” spends a great deal of time suggesting and laying out methods of working and other content that is clearly in the control area. At the same time, some of the statements that are clearly about structure, task and progress are stated as questions or with apologies at the end, making it seem as though s/he is less secure and seeking affirmation. “C” also tends to take the group off on tangents, at times entertaining them with stories and such, and at these times also apologising.

“A” acts as a meeting coordinator, taking notes, keeping the group on topic, making sure that everyone has their say or repeating other’s comments to clarify, but the entire content of his/her participation is firmly within the control area. At times, s/he veers from task-orientation into being authoritarian, underlining rules and previous agreements. It is clear that in separate ways, these two group members take up a lot of space and demand the group’s attention most of the time. Having said that, “B” participates in waves in this meeting, fluctuating from strong participation with vehement practical statements to complete passivity. When s/he participates it is in a task-oriented way with authority and certainty, but this behaviour does not happen often. Most of the time “B” is either supportively participating non-verbally (nodding his/her head etc.) or being passive and seemingly not paying attention to what is going on. This makes for an interesting hot/cold impression of this group member. Group member “D” participates very little verbally. However, although very little is said, barring some “mmm’s” and “uhu’s”, s/he seems very supportive of the other group members. S/he is clearly paying close attention to all that is going on and has very interested and active non-verbal behaviour, nodding his/her head and leaning forward. “D”
laughs at all the jokes and participates very actively, even though the verbal participation is almost non-existent.

In this meeting, it is the behaviour of “E” that is perhaps the most interesting. S/he is very visibly passive, seemingly not paying very close attention to what is happening in the group. When “E” participates verbally, and this happens very rarely, the content of what is said is negative and even accusatory such as “Haven’t we done this before?” and “I won’t be available to do that”. The group seems to notice this and although nothing is said to correct this behaviour someone tends to respond with a joke or amusing statement to lighten the mood.

*The second measurement:* The second measurement of the group shows a slightly larger spread of the group members (see figure 3), but not all of the group members had been evaluated to have changed their behaviour greatly.

![Figure 3: Average measurements for the group members at second measurement (the white circles show the single reports)](image)

The biggest change is perhaps found in group member “E”. This group member is reported to exhibit behaviour that now places him/her as someone who exhibits more synergic behaviour, taking him/her from a position of dependency to synergy, which means that s/he is
considered to exhibit behaviour that varies more than at the first measurement. As well as that this group member seems to have been defined much more clearly, with some of the single measurements necessarily placing him/her plainly in the opposition field. This leads to “E” no longer being considered as exhibiting behaviour chiefly concerned with loyalty to the group’s members, but at this measurement s/he is considered to exhibit behaviour more focused on an authoritarian content, and is reported to sometimes withdraw from the group in a more passive manner. Group member “A’s” behaviour is considered in much the same way as in the first measurement. In this measurement s/he is considered to exhibit behaviour that is slightly more defined in the control area of the SPGR diagram, more often exhibiting analytic and efficient behaviour focusing on the task at hand. At the same time “A” is not considered to exhibit behaviour restricted to this area. S/he is reported to exhibit behaviour from the other areas as well and therefore, as in measurement one, is not defined by a single colour. “A” is still considered by the group to behave in a way that takes quite a lot of space and attention. Similarly to “A”, “C” is considered not to have changed behaviour to a great extent. “C” is still considered by the group to exhibit behaviour that is almost entirely in the area of nurture in the SPGR diagram. As in the first measurement “C” is considered to exhibit behaviour that is focused on taking care of the group members, being sociable and protective of the group. In this measurement s/he is considered to take more room when exhibiting this behaviour than in the first measurement.

In the case of “D” there is a slight change in the reported behaviour in the second measurement. In this measurement, “D” is reported by the group to exhibit behaviour that places him/her in a position between the nurture field and the control field, exhibiting behaviour from both areas. This means that “D” is considered not only to be trusting and loyal to the group as a social unit, but now exhibits behaviour that is considered loyal to the task and its content. In addition “D” is at this measurement considered to take up more space than earlier. The reports concerning the final group member, “B” shows some opposite results to those of “D”. “B” is in this measurement considered to exhibit behaviour that is more clearly dependent on the group, displaying loyalty to the group as a social unit, but still without much initiative. As well as that “B” is reported to have become even less noticeable, and while many of the other group members are reported to take up more space s/he is reported to take up less.
The tape of the meeting at about the same time as the second measurement shows a group that is a little more even than earlier. In general the pace of the exchanges is a little faster, and all five members seem a little more comfortable with each other. Although “A” and “C” still talk a lot and take up space, they do not seem to be as marked as earlier. “C” uses humour very actively, keeping everyone laughing, often at his/her expense and participates in the discussion at hand. “A” is less marked than earlier, still participating, but less obtrusively. However, “A” still invites structure, for instance stating “Let’s get started” at the beginning of the meeting. “B’s” activity level fluctuates when it comes to verbal activity but non-verbally s/he is more active, leaning forward and making it obvious that s/he is following the group’s conversation. However, in this meeting s/he is the group member with the least aggressive participation, verbal or non-verbal. “D” participates very actively in this meeting, at several points even challenging other group members. S/he has a leading role in the subject matter that is being discussed and this visibly affects his/her behaviour. In the first few minutes of the meeting it looks as though “E” is going to be participating more than earlier, but this lasts only those first few minutes. After that “E” reverts to more passive and withdrawn behaviour, most of it non-verbal. At one point the other four group members crowd in over a drawing on a piece of paper. In this situation “E” leans slightly forward, but is still markedly passive compared to the other four. When s/he does participate verbally it is often very concise and in order to correct the group. This gives the impression that it takes quite a lot to illicit a reaction from him/her, and when a reaction comes it is in a negative form. However, the remaining four members do not seem to react in any dramatic fashion to this behaviour, implying that it is not unusual behaviour for “E”.

The third measurement: At the third measurement the group’s reports shows them more gathered again (see figure 4). The biggest change at this measurement is perhaps found in group member “D”. This group member is now reported by the other group members to exhibit behaviour that takes more space than at the last measurement, making the circle size increase. As well as this “D” is reported to exhibit behaviour that falls into different categories in SPGR, not exhibiting behaviour that could be tied to a specific role of any kind, making his/her circle yellow in colour.
Figure 4: Average measurements for the group members at the third measurement (the white circles show the single reports)

Group member “E” is in this round of measurements reported as exhibiting slightly different behaviour, moving away from the centre of the diagram and into a position both in the control area and the nurture area of the diagram. In addition, “E” is reported as taking more space in the group at this measurement. The same is reported for group member “A”, whose circle increases in size at this measurement. “A” is also placed closer to the centre in this measurement, possibly pulled there by single reports that place him/her as exhibiting more authoritarian behaviour. However, “A” still exhibits too varied behaviour to inhabit a specific role. In the case of group member “C” the opposite can be seen in this round, his/her circle decreasing in size. However, the reports on “C”s” behaviour still place him/her firmly in the nurture area of the diagram, and this behaviour is considered to be so consistent that “C” is still firmly green. Like “C”, group member “B” decreases in size, as a result of reports that s/he took little space in the group. However, “B” is reported to exhibit behaviour that is markedly closer to the control field in the diagram.

In the video taken at the time of the third measurement there is a feeling of egalitarianism. The group members seem more used to each other and give each other leeway in terms of accepted behaviour. “A” and “C” still participate quite actively, although the content of their statements are quite different. “C” seems to have a more persuasive tone, trying to invite the
other group members to share his/her point of view. On the other hand ”A” seems to spend more time questioning the group, asking for their point of view, and their decision. “E” participates actively in this meeting, both verbally and non-verbally. S/he still articulates arguments in a negative fashion but the group does not seem to notice, ostensibly stripping his statements of their negative dressings and taking them only for their content. Both “B” and “D” are less active verbally in this meeting, but non-verbally they are leant forward, nodding and supporting the group.

The feedback sessions and individual results
On the 20th of December 2006 the first feedback session was held. The researcher presented the results of the first and second measurements, looking first at the results at the group level, and then in individual sessions looking at the individual results. This session was eagerly anticipated by the group, and they were active in the session itself; asking questions and eager to gain a deeper understanding of the SPGR diagrams. After the two measurements were presented and the differences between them were outlined, individual sessions were held with the group members. In the individual sessions the main focus was talking through the individual results and comparing the group’s peer-reports to the individual’s self-report. In some cases the differences between the self-reports and the peer-reports were marked. This lead to opportunities for important reflection by the individuals. In this process the researcher served only as an interpreter between the SPGR diagram and the individual. In the session on the 13th of March 2007 this process was repeated, and included the third measurement. In both the sessions the group was very positive and open to feedback, as well as showing a lot of interest in the individual results.

Discussion
The goal of this study was not to unequivocally categorise this group, as this is not considered possible (Biørnstad, this thesis). However, the goal was to gain an understanding of how this group functioned and developed through the use of SPGR measurements within an Action Research methodology. A great deal of information was gathered about the group, giving insight into their behaviour and through that adding to the knowledge base of what goes on in groups. This kind of research makes it possible to gain knowledge about the possible ways in which interaction and behaviour take place within a group. There is
considered to be more value in this increase in knowledge than in the possibility of fitting several groups into a single mould (Biørnstad, this thesis).

Through the SPGR diagrams and the reports of the videotaped meetings it is possible to get to know this specific group and understand something about their interaction. When looking at the three measurements it also seems as though the group may have been heading in a specific direction. It is difficult to know what would have been seen in future measurements of the group, but it is possible to make some inferences based on the three that were carried out. Although two of the group members, “A” and “C”, where very strong presences, it seems as though the other group members were slowly gaining ground on them. Both “E” and “D” were slowly taking more space and exhibiting behaviour that was considered more assertive. “B” was constant in his/her exhibition of dependent behaviour, but was moving from a loyalty to the social setting of the group to a loyalty to both the social and the task-oriented setting.

It is interesting that the group does not take issue with the dominance of “A” and “C”; one can wonder whether this would have come at a later date. The group in general seems to cut each other a lot of slack, also not taking offence with the sometimes passive behaviour of “E” and “B”. One can wonder whether the group masked their experiences of each others’ behaviour, and if so would at any point make a clearer stand in relation to it. One possible reason for this can be that the group may have answered the self/peer-report measurements with more accumulative impressions than snapshot observations. Spending all day, every day together the group also spent quite a substantial amount of time socialising over coffee or eating lunch, and therefore the measurements inevitably included general impressions of group members’ behaviour. This still provides us with an impression of the group’s environment, but it is possible to wonder whether this has placated the more extreme reports.

From the feedback sessions it is clear to this researcher that the individual group members benefited greatly from the use of the SPGR measurements. Experiencing the gap between their own reports of their behaviour and the reports of their peers gave the group members food for thought. Several of them expressed surprise and seemed to use the measurements actively to gain an insight into how their behaviour was experienced by others. At the same time, it is not clear whether the group members took this knowledge with them into the group’s work. It does not seem as though the individual members adjusted their behaviour
dramatically in order to take in their peer reports. Even in cases where the gap was substantial, and the individual clearly and reflectively understood that gap, it did not seem to affect their behaviour substantiably. However, this kind of development is dependent on the individual’s ability and willingness to actively reflect on his/her own behaviour. The individual must fully grasp the direction in which s/he wishes to influence his/her behaviour, and then take steps to carry this out. This is not always an easy task and therefore, results of this work may be slow to show themselves.

This study also questioned whether the group would employ SPGR as a common language with which to support behaviour the group condoned and discourage behaviour the group condemned. Although the group gained an understanding of the theory through the sessions and the researcher participating in the group, it did not use SPGR actively in order to talk about behaviour. In the feedback sessions themselves and in the time directly after them SPGR language\textsuperscript{4} was used by the group members. However, this was short-lived, and the language did not become part of the group’s normal interaction. It is possible that this was related to the researcher’s presence in the group. In many groups within organisations it may be the case that the group being studied is one where each member has their own areas of work, perhaps even his/her own subordinates, being a constant group but only meeting at certain times. For this group the situation was such that the group members were in an innovative process, spending every day together. This brings up the question of whether this made the researcher more hesitant to give overly direct feedback to the group. There was the knowledge that any extremely direct feedback could lead to upheaval in the group, and that there was no recourse, no time in separate corners, such as there would have been in for instance a more traditional management group. Living with the trade-off between the potential upheaval/recovery process and the potential developmental benefit of very direct feedback may have lead the researcher in this study to pull some punches. This could be experienced differently in more traditional groups within organisations that do not work as intensively in the group. In these more traditional groups, it could be more possible for an Action Research researcher to give more forceful feedback.

In conclusion it can be said that this method of group research lives up to its reputation. Pairing SPGR and Action Research does much to add to the knowledge of what takes place

\textsuperscript{4} Such as for instance “You’re being green now” or “Let’s be blue for a minute”
within a group. Using these methods on more groups will lead to a greater well of knowledge, and that will be more powerful when it comes to understanding groups than any mould could ever be.
References


Appendix A

The four main SPGR functions explained (Sjøvold, 2006)

- **Nurture**: this function is easily spotted when the social relationships are being established and nurtured. People who often find themselves in this category are friendly, considerate and open. They care about equality within the group and try to make sure that everyone is being heard. A group affected by this function will be most interested in anything that will support human relationships and group-member happiness. Decisions will tend to be made slowly in this group because reaching goals and solving problems is not something that is appreciated.

- **Dependency**: this is apparent in a group that is adjusting to the rules they have set up for their work together as well as getting down to work. People operating in this category are seen as being logical and objective, trying to focus on the task at hand in a rational manner. They care about finishing the task, studying any material at hand, but they often do not have a large amount of individual drive. In a group of these kinds of people there will often be a great deal of dependency, value will be placed on loyalty to common values and discipline. This can lead to the need for a strong leader, in order to get the group members out of their subjugation.

- **Opposition**: this function is clear in a group that is using its energy to solve any problems or disagreements between the different members of a group. People seen operating in this category show disdain and intolerance for authority figures and are clear about not wanting to conform. By the rest of the group they are seen as being untrustworthy, irritable or impatient. A group where all the members operate within this category are suspicious of each other, and aggressive ways of acting are appreciated. The will to work together for a common purpose here is very low, and the leader is often seen in the role of negotiator.

- **Control**: a group dominated by this function has accepted the common rules and methods for working and is focusing on producing results. People who often find themselves in this category are seen by the group as being inflexible, overly interested in the correct way of going about the work. An entire group affected by this function will most likely be
quite rigid, with a strong and often implicit understanding of what the task is and how it will be solved. This group is convinced of its own invincibility and any new members or new methods/ideas are seen as threats.