

## Title page

**Article title:** If I had a rich picture...: Insights into the use of “soft” methodological tools to support the development of interprofessional education

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## **Abstract**

This article describes a methodological experiment that aimed to test a small number of tools borrowed from Soft Systems Methodology. Those tools were intended to support action research for a project in interprofessional educational development. The intention with using those tools was two-fold: first, they were expected to help structure the analysis of the problem situation that the project was to address; second, they were to facilitate and document the project management process itself, by allowing for the different voices within the interprofessional project team to be heard. The article relates how the tools functioned relatively successfully as analytical devices for the action researcher, but did not significantly contribute to further interprofessional collaboration or enhance dialogue between the action researcher and the project members. Issues of how to use the tools to support more effectively the existing dialogue across professional cultures and traditions are discussed.

**Keywords:** interprofessional education, curriculum development, Soft Systems Methodology, rich pictures, action research

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## **Introduction**

Over the last few years, the need for interprofessional education (IPE) has figured among the key issues faced by curriculum developers in the health sciences (Steven et al., 2007; Copperman & Newton, 2007; Cooper & Spencer-Dawe, 2006; Bjørke & Haavie, 2006; Freeth & Reeves, 2004; Illingworth & Chelvanayagam, 2007). It has been suggested, however, that IPE is relatively more complex than other types of professional education (Stone, 2006; Reeves & Freeth, 2006), which raises the question of which methodological approaches are most appropriate for the purpose of curriculum development in IPE.

An overview of the literature on interprofessional care reveals that complexity is a recurring theme among studies on interprofessional education and practice. To begin with, a client-centred approach typically entails a certain amount of complexity: the health and social situation of a client is often multifaceted (Watson et al., 1998), which can make the process of achieving a cohesive conceptualization of this situation challenging. Moreover, the processes that health professionals go through to structure their collaboration are characteristically complex, since “they concern human interaction between professionals from different world-views within a complex changing environment” (D’Amour & Oandasan, 2005, p. 11). Building a module that is aimed at supporting interprofessionality is also a complex endeavour because academics with various disciplinary and professional identities are bound to have different opinions on the module’s academic content and pedagogical approach (Cooper et al., 2004).

This article is concerned with the methodological aspects of IPE development and takes an introspective look into experiences gathered when using a specific method. It describes a methodological experiment performed as part of an action research project. The first author carried out the action research while the second author acted as a mentor. The overall goal with the experiment was to gather insights into the appropriateness of a particular methodological approach for supporting “reflection on action” and “reflection in action” (Schön, 1983) within the realm of IPE development.

The structure of the rest of the article is as follows. It first provides an overview of a curriculum development project aimed at strengthening an interprofessional module for the health sciences. It then outlines the rationale for a “soft” methodological approach and presents the main tenets of *Soft Systems Methodology*, before describing the experiment carried out. The limitations of the study as well as their implications for future research are discussed in a conclusion section.

## **Overview of the project**

The project that became the setting for the methodological experiment described here is a collaborative endeavour aiming at developing video triggers for a module referred to as *Inter2*<sup>1</sup>. The *Inter2* module is a compulsory interdisciplinary module common to all the second-year students at the Faculty of Health Sciences at a Norwegian institution of higher education. The Faculty hosts a number of professional programmes preparing students for accreditation within a range of health professions, including biomedical

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<sup>1</sup> The name of the module has been changed so as to preserve anonymity

laboratory sciences, dental technology, occupational therapy, pharmacy, physiotherapy, prosthetics and radiography.

Challenging disciplinary and professional boundaries has become one of the pillars of the teaching philosophy within the Faculty, which has long emphasized the need for students to gain a broad awareness of the various tasks performed and issues addressed within the various care professions. Interprofessional knowledge has been defined as one of the basic skills to be acquired in order to get accreditation. To that end, IPE has been woven into the core Health Science programmes in the form of three interdisciplinary modules, one for each year of study (referred to as *Inter1*, *Inter2* and *Inter3*).

The particularity of the *Inter* modules is that they aim to equip students with an awareness of other care professions than their own, and to further a “broad” understanding of the notion of care, i.e. one that goes beyond professional traditions and disciplinary perspectives. They also provide the students with an arena for experience exchange across disciplines and professions. Particular emphasis has been placed on allowing the students to comprehend the significance of client-centeredness and to gain insights into how interprofessional work can help achieve a client focus.

During the first years of the modules’ implementation, the results from the student evaluation had been less satisfactory than expected. A closer investigation of the situation uncovered two main reasons for the students’ dissatisfaction. First, the modules were based primarily on written cases, which the students did not always find they could easily relate to. Second, having to find a time slot common to eight different study programmes

for the *Inter* modules meant in practice that some of the programmes had to deal with a certain amount of disruption to their teaching schedules.

The academic leadership of the Faculty looked into new pedagogical methods that could increase the course's popularity. E-learning seemed appealing both because it was generally regarded as innovative and “cutting edge” and because it had been explicitly outlined as an area of focus in the strategic plan of the department. In addition, it was considered an efficient solution to the problems outlined earlier: presenting case studies in an audio-visual form was hoped to increase the perceived relevance of the cases, and making the cases available online was hoped to reduce the need for face-to-face course time. For the *Inter2* module, the choice fell on a combination of e-learning techniques, including online assignments, peer assessment, and video triggers<sup>2</sup>.

The *Inter2* module relied heavily on the use of video triggers, which required both technical competence and pedagogical and interdisciplinary expertise. As a result, the project was defined from the beginning as involving two separate groups. The first group, which became known as the “e-learning group”, consisted of Health Sciences academics that had additional expertise in the field of video production and the development of digital material. The purpose of this group was to design and program video triggers that were appropriate for the requirements of the *Inter2* module. The second group, which was referred to as the “group for interdisciplinary work”, consisted of academics from the various disciplines represented within the Faculty. The purpose of that group was to

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<sup>2</sup> A video trigger is a short documentary-style film that is meant to prompt (“trigger”) reflection and discussion.

further interdisciplinary dialogue and collaboration in general, and to build and follow up the *Inter2* module in particular.

### **Presentation of the methodological approach**

The project described above was first and foremost a project of educational development. One of its main challenges was that it aimed to tackle an almost quintessentially intricate and “messy” situation. First, the very core of the project consisted of delving into uncharted territory: interprofessionality and interdisciplinarity are relatively new notions in the health sciences and the world of academia still seems to adhere to the traditional compartmentalisation of knowledge into clearly separated spheres of competence (D’Amour & Oandasan, 2005). Second, the fact that the project participants were clustered into two different groups with different cultures (“e-learning group” and “group for interdisciplinary work”) added an extra layer of complexity to the problem situation.

It seemed therefore necessary to find a methodological perspective that could adequately support project development work involving stakeholders with diverse backgrounds and perspectives. Among the methodologies available, *Soft Systems Methodology* (SSM) appeared to be a particularly suitable alternative, as its very focus is on shedding light on a problem situation from different angles. SSM was developed as an alternative to “hard” systems thinking, which typically focuses on finding efficient solutions to well-defined problems and does not seem to provide an adequate way of tackling the complexity and fuzziness of human ventures. “Soft” systems thinking proposes a more holistic method of enquiry that emphasises the need to provide a “rich” description of a *problem situation* before taking further action aimed at improving it (Checkland, 1976; 1982, 1987; 1999;

Checkland & Scholes, 1990). SSM has proved useful in shedding light onto problem areas such as industrial therapy units (Wells, 2006), social help to mental health patients (Cook et al., 2001), organisational change in the British National Health Service (Jacobs, 2004), and information seeking among lecturers in nursing and midwifery (Stokes & Lewin, 2004).

The methodology used for this project was by no means a “pure” SSM course of action. Rather, the authors borrowed from SSM a small number of methodological tools that they considered suitable for the purpose of mapping out the problem situation at hand while preserving its richness and complexity. Those methodological instruments were also expected to support a participatory approach to project development, which sounded sensible in a project that involved members with different backgrounds. Among those instruments figured a presentation of the key elements in the project (*CATWOE*), the expression of a *root definition* and the drawing of *rich pictures* (Checkland, 1999; Checkland & Scholes, 1990; Checkland & Poulter, 2006).

One of the intellectual devices provided by SSM consists of specifying the key actors and elements in the project, using a checklist whereby the initials of each category make up the mnemonic *CATWOE*. The term *customer* (C) is used to refer to those that are at the receiving end of the system, whether they are beneficiaries or victims of the system. The word *actor* (A) refers to those who actually carry out the activities that constitute the system. *Transformation* (T) is at the core of a purposeful activity system and can be expressed as a process of conversion of a specific *input* into a certain *output*. The term *Weltanschauung* (W) refers to the world view that makes the transformation process meaningful. The *owners* (O) of a system are defined as those who have the power to put

an end to it. The *environmental constraints* (E) are all the elements that limit the system, including, e.g., ethical considerations, financial and resource constraints, legal requirements.

A *root definition* is, according to Checkland (1999), a “carefully phrased explicit statement of the nature of some systems which will subsequently be seen to be relevant to improving the problem situation” (p. 164). It typically aims to encapsulate the core purpose of an activity system.

A *rich picture* is meant to capture the very complexity of a problem situation in a pictorial form by representing the human activity system that makes up the problem situation. Pictorial devices such as drawings, symbols and “word bubbles” are used to represent the actors, institutions, objects and processes that play a role in the human system, as well as the connections between them. There is no formal “syntax” as to what symbols may be used in a rich picture, but simple symbols such as hearts, crossing swords or brick walls are often chosen to make the rich picture easily accessible.

The methodological experiment described here represented an attempt to test whether and how SSM-inspired tools can be useful for the purpose of action research for IPE development work.

## **Overview of the methodological experiment**

### ***A solo start***

The first author of this article was involved in the project both as a researcher and as a member of the project team. Her role as an action researcher was defined by the management of the Faculty and the academic staff were informed of the content of her project. Her expected contribution was originally defined as follows: first, to function as a link between the two groups, attending their meetings as secretary, and, second, to contribute to the project development process and document it.

In a first phase, she used the three SSM-inspired tools presented above without any involvement from the project team. She drew her individual CATWOE list (Table 1), expressed her own root definition, and drew her own rich picture of the problem situation (Figure 1). In that first period, those tools served solely as analytical instruments to shed light on the situation at hand. More specifically, they were used to structure empirical data gathered through several forms, including minutes of group meetings, e-mails exchanged before and after the meetings, and an “observation and reflection diary” she had kept since the beginning of the project.

#### *Root definition*

The root definition expressed by the action researcher was as follows:

“The project consists of developing *video triggers* and other e-learning tools to be used to support interdisciplinary learning processes in professional education within the health sciences, for the purpose of enhancing interdisciplinary understanding and dialogue across professions after graduation.”

## CATWOE analysis

Customers	The <b>students</b> of the interdisciplinary module <i>Inter2</i> , i.e. second-year students from all the Bachelor programmes offered at the Faculty of Health Sciences. One of the shared characteristics among the students is that they are all enrolled in a programme offering accreditation for a particular profession, and that they normally have little formal contact with practitioners and students from other healthcare professions, except within the realm of the <i>Inter2</i> module. Formal and informal feedback from the students suggests that they often consider <i>Inter2</i> to be an “appendix” to the core programme, although it is designed and run as an integral part of this core programme.
Actors	<p>The main actors in the project described here are the <b>members of staff</b> that contribute to the development of the module. All of them work within the various study programmes at the Faculty of Health Sciences, and they belong to the two separate groups described above.</p> <p>Other actors include the <b>academic leaders</b> of the departments within the Faculty of Health Sciences. Those are only involved indirectly, as they do not carry out any of the practical tasks related to the project. However, they are engaged in the project in the sense that they choose the members of staff that will participate in the two groups and allocate hours dedicated to the <i>Inter2</i> module. Although the academic leaders formally acknowledge the need to allocate resources to the <i>Inter2</i> module, they sometimes express that this happens at the expense of the “core” modules from their respective disciplines.</p>
Transformation	The <b>input situation</b> is one of general discontent among students with the <i>Inter2</i> module and a lack of organisational structure around the module. The <b>output situation</b> is one whereby <i>Inter2</i> is fully integrated into all the programmes and evaluated positively by the students. The transformation is characterized by new pedagogical methods principally based on the use of e-learning and video triggers.
Weltanschauung	The Weltanschauung that forms the underlying basis for this project is that introducing new e-learning methods such as video triggers will contribute to making the <i>Inter2</i> module more central to the programmes and render it more flexible as far as scheduling is concerned.
Owners	<p>The main owners are the <b>academic leaders</b> of the Faculty of Health Sciences, who have the power to modify the curriculum within the limits imposed by the Ministry of Education.</p> <p>It may also be argued that the <b>Ministry of Education and Research</b> is the ultimate owner of the project, since they also have the authority to initiate, support and provide guidelines for the curriculum.</p>
Environmental constraints	The first major constraint resides in the existence of <b>two groups</b> that share the same overall goal, but which have markedly different backgrounds and work practices.
	The fact that the <b>project is defined as relatively “stand alone”</b> within the Faculty also constrains the flow of information and the power processes at play within the project. In particular, it is noticeable that the various study programmes and the world of professional practice have little influence on the project.
	Another significant constraint, which might be characteristic of many interdisciplinary projects, is that the various study programmes involved in the project have <b>different cultures and logistical routines</b> .
	In addition, the <b>status given to <i>Inter2</i> varies</b> from one study programme to another, with some programmes stressing the importance of interdisciplinary identity while others have a stronger focus on disciplinary identity and tend to underemphasise interdisciplinary identity.

Table I: CATWOE analysis of the project

## Rich picture

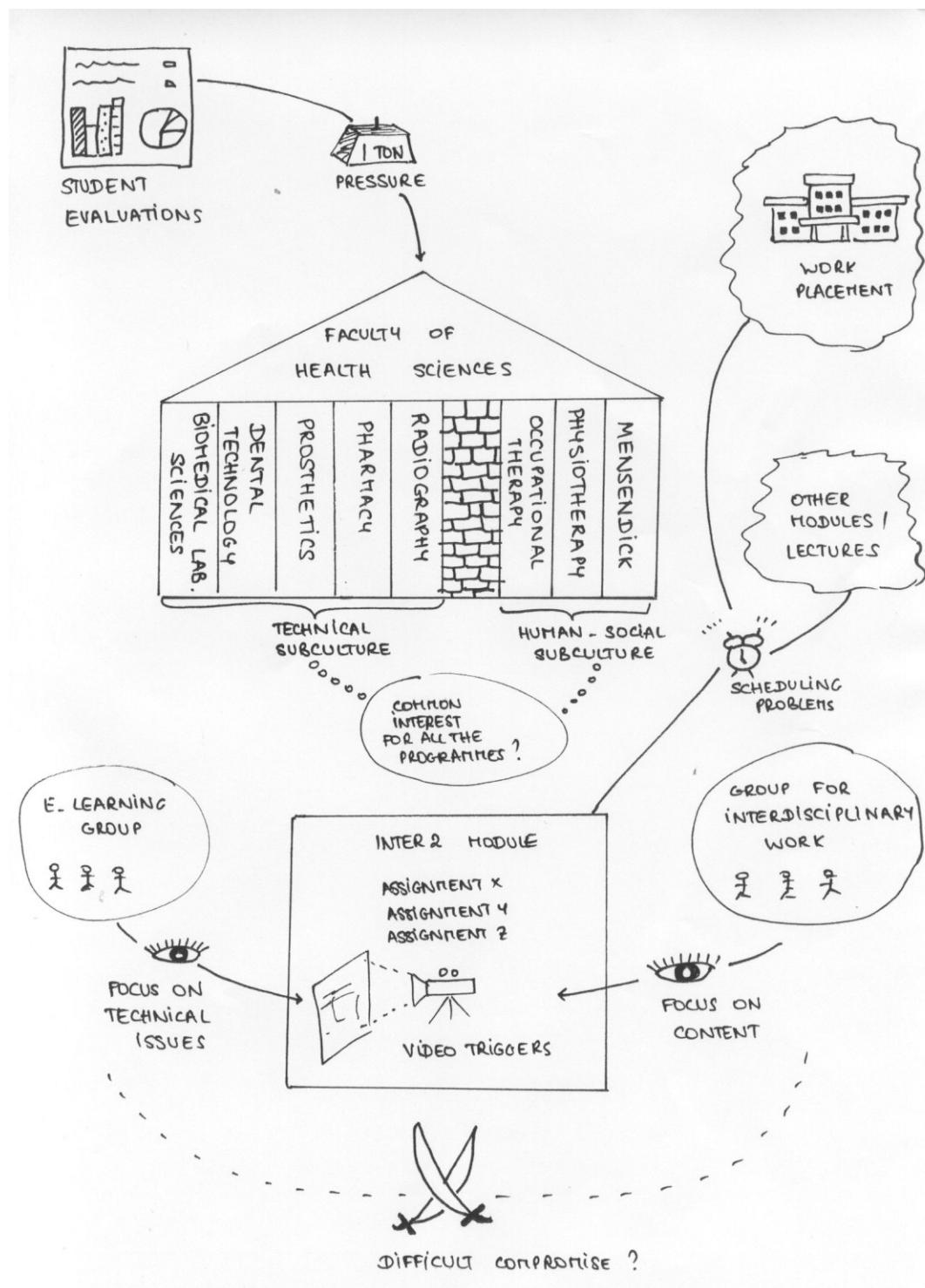


Figure 1: Draft of a rich picture of the *Inter2* project (translated into English for the purpose of this article)

### ***Insights into the project***

This first solo exercise provided some interesting insights into the project. In particular, both the CATWOE analysis and the first attempt to draw a rich picture suggested the existence of different cultures and work practices within the project. The first gap that was described was a culture clash between the e-learning group and the group for interdisciplinary work. The members of the e-learning group appeared to have two main areas of focus: their own discipline and teaching technologies. They appeared to have a strong personal interest in technology, and spend much time acquiring and cultivating software development skills. In doing so, they appeared to develop a sub-culture with its own norms and status system. What seemed to confer most status to group members was their ability to develop technologically elegant video triggers, while the issue of whether those video triggers satisfactorily illustrated interdisciplinary dilemmas appeared to be somewhat overshadowed by the technological issues.

Another dichotomy that was made visible through the rich picture and the CATWOE analysis was the difference between “human-oriented” and “technology-oriented” disciplines. The Faculty of Health Sciences hosts professional education programmes with very different traditions. Some of the programmes - such as bioengineering, radiography, dental technician and pharmacy - rely heavily on the natural sciences while others - such as physiotherapy, occupational therapy, and orthopedics - are rooted in a slightly different philosophical paradigm, inspired to a greater extent by the humanistic disciplines. Teachers from different branches of the Health Sciences are therefore representatives of different arenas that have their own specific conventions and designing

a module which brings together students that have been socialised into different epistemological traditions appears to be challenging.

### ***Opening the method to other group members: a reluctant involvement***

The second intention with the use of SSM-inspired tools was to support teamwork by inviting to a collective process of reflection in action. In particular, they were supposed to offer a collaborative form for project work documentation. One of their main promises was thought to reside in their potential to facilitate dialogue between stakeholders with different backgrounds. In particular, the process of drawing a rich picture was hoped to serve as a constructive tool in interprofessional and interdisciplinary dialogue. For example, the use of pictures could have contributed to alleviate the problems arising from the existence of different vocabularies and jargons in different professional cultures.

In the second phase of the experiment, the first author set out to involve some of the other actors in the project into the method. To that end, she arranged open-ended interviews and conversations with the group members, either individually or in small groups. This setting was chosen so as to provide project members with an informal environment, which was presumed to be more conducive to candid discussion than a plenary session. To avoid overwhelming the participants with new concepts and methods, she chose to focus on the rich picture and leave momentarily aside CATWOE and root definition. At the outset of the meetings, she presented the rich picture she had drawn and invited each interviewee to give feedback on how the picture could be improved.

The response from group members was largely unenthusiastic. Although a few of the interviewees volunteered comments and suggestions for improvement for the rich picture,

the general attitude towards the process was one of indifference, bordering towards suspicion. They expressed concerns about having to use project time on getting acquainted with a new method which they did not consider essential for the conduct of the project. Some of them also reacted negatively to the fact that the rich picture they were presented with portrayed assumptions based on subjective interpretation, and did so in a rather caricatured way. In particular, the image of a partition between two types of professional programmes as well as the representation of a gap between the two project groups seemed to cause unease and concerns. Altogether, the tool which had been presented to them as a way to support collaborative work ended up being perceived as an instrument for evaluation, which caused a certain amount of resistance. Interestingly, the tool did contribute to connect the two groups, albeit indirectly, as they seemed to tacitly unite against it.

The action researcher did get to make several new versions of the picture, based on input from those members of the group that had volunteered comments, but did not make the various versions available to the whole group, so as to avoid open discord. Because of the obvious lack of interest for the method among respondents, she abandoned her attempts to involve the group members in an analysis of the project and chose to concentrate instead on a less controversial way of documenting the project, i.e. through minute-taking.

### **Evaluation of the method and suggestions for improvement**

It is to be noted that the student evaluations for *Inter2* did not get noticeably better after the rich picture process than before. This is perhaps not surprising considering that the

method did not seem to be of much help to the faculty members involved in testing it. In addition, student evaluations can only provide a general appraisal of the module, and cannot be used to evaluate the effect of a particular method, since a large range of other factors may have come into play.

It is, however, possible to provide an assessment of the method regarding its potential to support the action researcher's analysis and to bolster collective action. The experiment suggests that the usefulness of the method as a mapping tool for the action researcher does not always mean that other stakeholders will find it effective.

A CATWOE analysis, a root definition and the drawing of a rich picture all proved to be useful as analytical tools for a researcher working on her own and aiming to map out the various elements and actors in a project, as well as their relationships to one another. However, as far as supporting collaborative project work across professions is concerned, the method fell short of expectations. In this section, we will try to outline a number of issues that may have contributed to the method's relative failure to facilitate interprofessional collaboration.

### *Issues of role ambiguity*

The story related here illustrates the ambiguous role of an action researcher with several assignments in a project. The perceived role of the action researcher underwent a dramatic change from the moment she started trying to involve other group members in the process of drawing a rich picture. Although it had been made clear from the start that she was to contribute to the project, her attempt to introduce a new methodological tool was perceived as unnecessary and disruptive.

From being a regular member of the two groups, she suddenly became one that stood out, and was suspected to wanting to take the project's steering wheel into her own hands. With hindsight, it is apparent that it would have been more judicious to inform the group members from the start and more explicitly that part of the role of the action researcher was to function as a change agent in addition to being a documenter and a connection point.

#### *Issues of method ownership*

Experience from the experiment highlights the need to involve participants in the choice of methodological approach and tools so as to allow them to develop a sense of ownership towards the method that will be used. The question of how to cultivate methodology ownership among participants has been raised in the literature on action research (Sheridan-Thomas, 2006; Reed, 2005; Löfman et al., 2004; David, 2002). Total method ownership among all the participants is probably an unreachable objective, as there may be divergent views about what the goals of the research are and how they can best be achieved, both between researcher and participant and within the participant group itself (David, 2002). However, it is to be expected that a research method which is perceived by project members as empowering and emancipating will further the process of method appropriation (Boog, 2003). Introducing the issue of methodology at an early stage in the project design and using a democratic approach to selecting the methodological tools might have increased the chances for a greater degree of method ownership.

#### *Issues of model power*

Presenting the interviewees with the sketch of a rich picture at the outset of the interview may have contributed to a building up of suspicion against the action researcher.

Although this first sketch was only intended as a draft to be improved and refined through discussion, the interviewees tended to perceive it as a finished product. Some of them openly disagreed with the ideas represented in the model or with the way they were depicted, but were unable or unwilling to provide suggestions for improvement. This raises the issue of whether a rich picture drawn by others is an appropriate basis for discussion. Perhaps the action researcher would have met less resistance if she had proposed to the interviewees to draw a rich picture with her from scratch.

The rich picture sketch presented to the interviewees was a model of the situation they were involved in. Because this model had been developed using a method which they were not “fluent” in, they became wary of the potential power imbalance that its use may instigate. Such issues evoke known concepts from the literature on sociology of organizations such as for example *model power* or *model monopoly* (Bråten, 1973, 1983, 1988). The concept of *model power* refers to situations whereby one person or a group of persons make use of a model that they have developed themselves or that they master significantly more than others to represent a particular state of affairs. This may result in the intentional or unintentional creation of a gap between the *model-strong* group members and the *model-weak* ones (Bråten, 1973; Johannessen, 1998), which in turn may open the way to manipulative behaviour.

It can be hypothesized that interdisciplinary and interprofessional settings are particularly conducive to the exercise of *model power* as they typically involve a variety of groups who all have different terminologies and different notions of what mode of representation

of reality is a valid one. Such differences may be deeply ingrained in the culture of a discipline and a profession, which may result in *model power* being inadvertently exercised.

### **Limitations and implications of the research**

This article is based on an experiment that is limited in scope and in significance. The findings from the study are necessarily context-dependent and we do not claim that they have any power of generalizability. However, we do believe that they provide insights into the conduct of action research in the context of interprofessional educational work. In particular, they bring to light ethical considerations related to the use of tools meant to map out a complex project situation involving a variety of viewpoints. They also suggest that tools that are useful to support *reflection on action* do not necessarily have the same beneficial outcome when used in *reflection in action*.

The experiment described provides an illustration of the explanatory power of SSM-inspired tools such as the definition of CATWOE, the outline of a root definition and the drawing of a rich picture. It also points towards a number of pitfalls to be avoided when using a tool such as rich picture as a basis for involvement of stakeholders. In particular, it exemplifies how a potentially valuable method for the conduct of interdisciplinary and interprofessional work might fail to stimulate constructive collaboration and participatory reflection in action if it is introduced without engaging the project participants to actively participate in the choice of methodological tools before the project start. It illustrates the need for a broad involvement of the stakeholders at the project definition stage, in

particular for projects of interprofessional development where interdisciplinary and cross-cultural dialogue is a central factor of project success.

Further experimentation with SSM-based tools will be required in order to draw more general conclusions about their applicability to the realm of curriculum development in IPE. For example, it would be interesting to examine whether an early and more democratic involvement of stakeholders would further ownership of the method, and whether this can contribute to a wider and more effective dialogue between academics representing different professions.

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