EXPLORATORY WORKSHOP USING ABSTRACT COLLAGING TO REFLECT ON UNIVERSITY-SOCIETY COLLABORATIONS

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ABSTRACT

Collaborating with society (businesses, industry and municipalities) is a common practice for many universities today. To support such collaborations, there is a need to share and evaluate these practices. This research explores the use of creative and visual methods from Participatory Design to support reflective practice in university-society collaborations. The paper describes an exploratory workshop consisting of an abstract collage-making exercise and a list of questions. The purpose of this workshop is to see how the visual exercise could support discussions about university-society collaborations and to develop future studies. The results from the workshop show that using abstract collages generated multiple interpretations and metaphors about the visualized collaborations. The collage-making exercise prompted discussions about the interrelationship between collaboration, innovation processes and knowledge creation. It also stimulated playful interactions between participants. Moreover, the workshop participants gave valuable feedback on how to develop materials and questions to discuss university-society collaborations.

INTRODUCTION

In order to create economic growth and new jobs in Europe, a large emphasis is placed on achieving innovation out of research (European Commission 2014). Universities play a major role in this, building knowledge to enable economic, social and ecological progress (Markkula 2013). To support the role of universities in fostering innovation, a theoretical framework called the Knowledge Triangle (Fig. 1) was developed. The Knowledge Triangle takes a systematic approach to the *orchestration* of knowledge creation and innovation processes by linking three areas of knowledge creation and (academic) research, education and training, and (business) innovation (Unger & Polt 2017). Orchestration in this setting means to mobilize and integrate resources to provide value for customers and the involved network members (Wallin 2006). One aspect of orchestration is to improve the collaboration scheme between cross-sectorial partners, for example, through common terminology, facilitating work methods, and coordinating the intermediate processes (Markkula 2015).
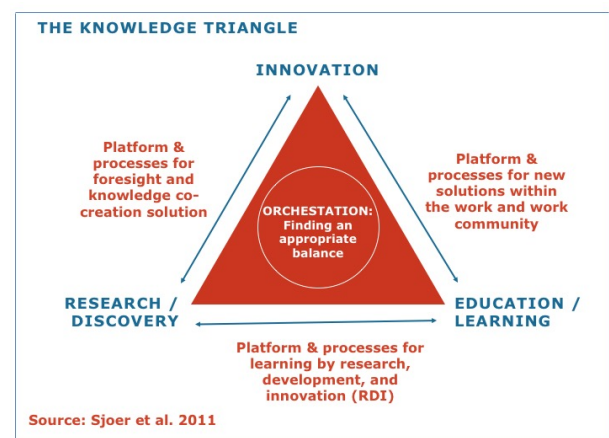

Figure 1. The Knowledge Triangle framework

In order to implement the Knowledge Triangle in universities, examples are needed to show how it is manifested in university practice and in real-life (Ibid.). Using approaches from Participatory Design (PD), this research explores how creative and visual methods could be used to articulate the Knowledge Triangle. The aim is to prompt reflective practice (Schön 1983) about how universities and society (businesses, industry and municipalities) collaborate and how this relates to knowledge creation and innovation processes. The purpose is to develop methods and tools for researchers to generate a deeper understanding of their collaborative practices. Further iterations will also explore how these creative methods could be used facilitate reflective practice between inter-sectorial partners in a university-society collaboration.

This paper describes and evaluates an exploratory workshop which tests the use of a creative, visual exercise to articulate the Knowledge Triangle. In the workshop, 11 researchers discuss specific university-society projects through an abstract collage-making exercise and by answering a list of questions. This trial aims to inform future studies and to gather feedback from the workshop participants about how to develop these methods and tools. This research is situated at Mälardalen University which collaborates closely with industry and municipalities. The overall purpose of this research is to develop practical tools and methods to support university-society collaboration and to generate knowledge about the benefits and hindrances of using creative and visual methods in this context.

WORKSHOP

The workshop consists of a collage-making exercise and a list of questions. The collaging technique is used to bring focus to the relationships between university-society collaboration, knowledge creation and innovation processes. The collage gives the opportunity to present a holistic response, which could be useful to explain how elements coexist and link together (Arnheim 1969, Gauntlett 2007). The motivation to try a collaging technique came from a previously developed prototype- *Knowledge Triangle Cards* (Fig. 2) (Gottlieb 2017). The cards are also used to prompt discussions about university-society collaborations and do so by containing examples of processes, stakeholders,
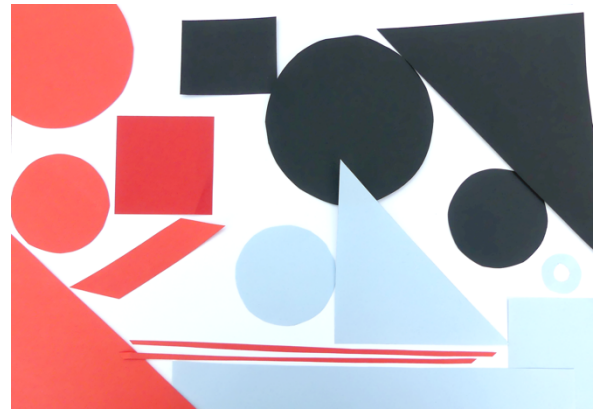

Figure 2: The Knowledge Triangle Cards

Figure 3: Materials provided for the collage exercise.

outcomes and societal challenges. Although the cards and activities support participants to identify processes and people in a collaborative project, the cards to not visualize nor prompt reflection about collaboration in relation to innovation processes and knowledge creation. The collaging exercise in this workshop resembles collaging and mind-mapping techniques used in PD processes (Sanders and Stappers 2012). However, rather than using realistic photographs this collage-making exercise provides participants with basic shapes in three different colours (Fig. 3). The purpose for this was to denote central aspects of the Knowledge Triangle (innovation, collaboration, and knowledge) with the use of different colours in order to discuss the relations between these concepts. The following concepts are represented by these colours: collaboration (black), innovation (red), and knowledge (blue). The basic shapes, having "endless variations, combinations, permutations" (Donis 1973), are meant to serve as building blocks for participants to explore how to visually represent collaboration, innovation and knowledge.

The workshop took place in May 2017 at Mälardalen University with 11 researchers from the *Innovation and Product Realisation (IPR)* research group. The research group was chosen as a starting point to explore these methods as a large focus of their research involves university-society collaborations. The group might therefore provide valuable insights about questions and means for discussing these topics. The participants are
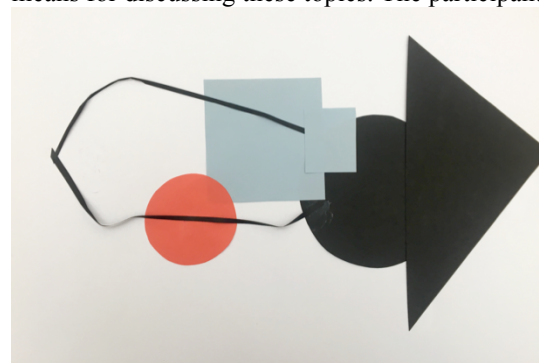

Figure 4: Collage made during workshop by group 3.

from the fields of innovation, business management and information design. The workshop was composed of two parts. In the first part, participants in groups of 2 or 3 made collages representing a specific university-society collaboration. Whilst some participants in a group had previously worked in a collaborative project together, others had not. The groups presented their collages to all the participants at the end of the exercise (Fig. 4). In the second part of the workshop, participants answered a list of questions (Fig. 5) about the collaboration, knowledge creation and innovation aspects of the project.

Figure 6 shows the layout of the questions. These questions were compiled and adapted from a list of questions made by an IPR researcher. This initial list of questions was developed to evaluate university-society collaborations. The workshop concluded with a discussion about questions that could be suitable when discussing university-society collaborations. Some participants gave feedback straight after the workshop.

Collaboration
1. What was the reason/motivation to work with the external partners?
2. Did you have different goals/expectations from the external partners?
3. What was the best way to communicate with the external partners?
4. What obstacles did you have to collaborate?
5. In what way were students involved in the project?
6. What contribution did you have to the external partners?
7. What continuous impact has the project had on the research group, students, teachers and external organization?

Knowledge
8. What scientific knowledge was produced?
9. What new knowledge has the project produced for the academy and the external organization?
10. What did you learn?
11. What impact has the project had on publications and new knowledge of teachers and students?

Innovation
12. What was the innovation foresight?
13. What were the barriers for innovation?

Figure 5. List of questions for workshop participants to discuss.

Figure 6: Layout of the questions.

VISUAL TOOLS FOR REFLECTION

The design of the collage-making exercise is influenced and inspired by methods, tools and techniques used in Participatory Design. In Participatory Design- tools, materials and methods are developed to facilitate dialogue between diverse groups of participants and stakeholders in order to "put all the players on a common ground" (Sanders 2013:69). Visual and creative methods are used to support interdisciplinary teams where members may have their own jargon and paradigms (Sanders and Westerlund 2011). These methods are deployed to elicit deeper reflections about experiences and to encourage sharing amongst participants. A range of materials, both 2D and 3D, are used to make tangible things, including collages, prototypes, mock-ups. An important aspect of designing these tools and methods is to provide material that non-designers feel comfortable using. The materials should not require advanced design skills nor overwhelm participants with too many choices. At the same time, the materials need to be ambiguous and generative to allow for multiple interpretations and unique combinations. This was the aim of the collage exercise in this workshop- to keep the materials ambiguous and generative and at the same time avoid making the exercise too difficult. The abstract shapes give a starting point for participants to begin to assemble their collages, yet can be arranged in many ways. Furthermore, being made out of paper the shapes can be cut and bent. The colours of the shapes also create certain boundaries in order to make the collage exercise more straight forward and focused on the topic of the Knowledge Triangle.

Another influence in developing the visual exercise is *Playful Triggers* (Loi 2007); a tool derived from *Cultural Probes* (Gaver et al. 1999). Playful Triggers focuses on enabling relationships in co-design processes in order to foster and sustain collaborative practices. It uses the notions of *odd experiences* and *anomalous objects* in order "to dramatically expand creative and interpretive engagement between people, providing platforms where diverse interpretations can be generated" (Loi & Burrows 2006). The tool makes use of provocative, creative and inspirational artefacts in research and development processes. Interacting with inspirational artefacts aims to elicit receptive modes of engagement (Deikman 1973), which are non-verbal, intuitive and perceptual. The use of metaphors is central in Playful Triggers, as it can stimulate new perceptions and understandings (Lawrence & Mealman 1999). The workshop takes into consideration how the collage-making exercise enables relationships so that the participants feel comfortable to explore and contribute ideas in a discussion. The workshop also explores the role of metaphors in the discussions.

The abstract collage-making exercise aims to support the cultivation of *reflective practice* (Schön 1983). Reflecting together with others about why and how we acted as we did is an important aspect to developing

questions and ideas about our activities and practices. Schön refers to this as *reflecting-on-action.* Through this, practitioners build up a repertoire of examples, images and actions that they can draw upon, which Schön believes to be central for reflective thought. The use of collage-making to stimulate reflective practices relates to Papert's concept of *objects-to-think-with* (1980). This refers to representations or artefacts that help to shape our understanding of the world (Ackerman 2004). Through our own expressions or existing cultural mediations (language, tools, toys) we negotiate and deliberate our conceptions of the world. Expressing ideas or giving form to them, shape and sharpen and these ideas.

Like Playful Triggers, the workshop places an emphasis on discussion in order to develop participants' understanding of collaborative practices between university and society. This is grounded on social constructivist theory, where knowledge is formed through interactions, sharing and negotiating meanings with others (Vygotsky 1978). Externalizing ideas about university-society collaboration through discussions aim to support the understanding of these practices. Using abstract collages in these discussions could come to act as *boundary objects* (Star and Griesemar 1989). The function of boundary objects is to act as an intermediate between social worlds or communities of practice. The objects allow for multiple interpretations and are used to facilitate a shared understanding.

DATA AND METHODS

This study uses a design-oriented research approach (Zimmerman 2003) where experimental prototypes are iteratively developed and tested in order to discover new possibilities of the design outcome. The findings of this workshop aim to inform the development of future workshops, tools and methods, as well as, the design of future studies and data collection. The author of this paper was the facilitator of this workshop and also developed these exercises. The workshop lasted for 2.5 hours and data was collected through voice recording and participant feedback. The voice recording took place during the collage presentations and during the end discussion (see Fig. 7). The recording is 53 min long and is partially transcribed. Due to technical problems, group 1's collage presentation was not recorded. Participants signed forms of consent at the start of the workshop, giving permission for the data to be collected and used in research. The participants were given pseudonyms before handling and disseminating the data, for example: G1 P1. This relates to the group (G) that the participant (P) was in.
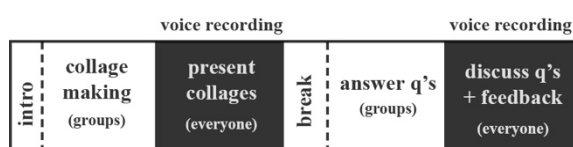

Figure 7. Workshop structure and voice recording

RESULTS

COLLAGES HIGHLIGHTED NEW PERCEPTIONS

Examples from the workshop indicate that the collages helped to highlight that the group's perceptions had changed throughout the discussions. Two groups mentioned the using the collages whilst discussing how their perceptions have changed. Group 4 realised that "the line is too small" to represent the impact of the project and in group 1 the red innovation shape "should happen here (on the collage)" instead. Using a collage to map out initial ideas could help to clarify changes of perception in a discussion. The list of questions in the second part of the workshop contributed to the change of perceptions in these two examples.

Collages from group 1(left) and group 4 (right)

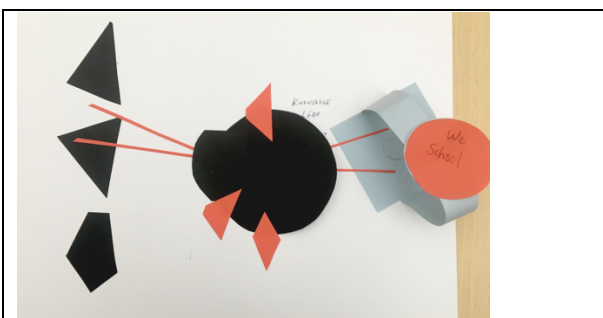Facilitator: did you use the collages when answering the questions?

G4 P3: I think it was really helpful for [my group member] to have this [the collage] as a base for questioning… [during the group discussion] we said: "now we understand it differently- maybe it was a really solid collaboration"… [before] she said: "it was all for me, this [project] was all for me" but when we talk about the questions we understand that this line [on the collage] is too small for what in reality was the impact. In our group, we saw that happen. A lot of touch [on the collage].

G1 P1: When you talk about this I think…we too pointed at [the collage], in regard to the foresight to innovation. We actually thought that the innovation should be with the company, with improved writing and images, but instead it happened here [on the collage]". We used [the collage] in that sense. Yes, it became clear.

Transcript 1: Changes of perceptions in relation to the collage.

COLLAGES PROMPTED METAPHORS AND SUGGESTIONS

The groups used metaphors to describe their own collages. For instance, group 5 made a "patty"- a kind of food which was the product of concern in the university-society collaboration. Group 2 visualized their collaboration with industry partners as a "collaboration wheel" iterating and contributing to innovation and knowledge. Participants from other groups suggested new metaphors for each other's collages (see examples in transcript 3).

Collage from group 5

G1 P1: The blue is only towards the end, I understand that was when you mapped in out as a case study. But I also understand that [the industry partner] was discussing things with you previously, so wouldn't you say that there's a knowledge transfer?

G5 P1: So yea, maybe some of the blue should have been here [on the collage] because part of learning came from what he was doing with other venture partners and stakeholders.

G1 P1: It was a transaction.

G5 P1: It was not only that we were able to provide, but we were able to learn. So yes, you are right. Probably some of the blue should have been here as well.

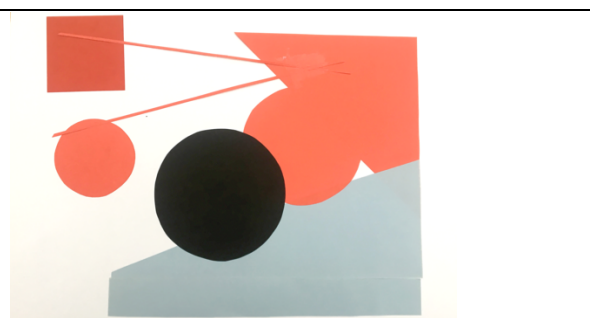Transcript 2: Negotiating representations

Participants suggested alternative ways of visualizing the collaboration. This negotiation involved discussing how innovation, knowledge and collaboration interlinked in the project. Transcript 2 shows an example of how the visualisation was negotiated by the participants.

COLLAGES STIMULATED PLAYFUL INTERACTIONS
During the workshop, there were many playful interactions between the participants. Jokes and laughter were prominent during the collage presentations. Participants made humorous suggestions of new metaphors and interpretations of the collages. Transcript 3 shows how the participants used metaphors when describing their collages and the playful interactions that concurred.

COLLAGES DESCRIBED THE INTERRELATIONSHIP BETWEEN COLLABORATION, INNOVATION AND KNOWLEDGE
Using the collages, the participants visualized and described how innovation, knowledge and collaboration relate to each other. For instance, in group 2 "knowledge is gained by the wheel of collaboration", and group 3 discussed the "need to build a lot of knowledge before we make more innovation". Participants discussed where on the collage these aspects should be visualized in relation to each other. As seen in the example in transcript 2, participants discussed that the "blue (knowledge) should have been here as well [on the collage]" as there was knowledge exchange during collaboration. In this sense, the collage

Collage from group 2

The following coloured highlights represent:
Red: jokes / laughter
Blue: use of metaphors

G2 P1: This visualization is self-explanatory. (laughter)
G1 P1: A lot of innovation.
G1 P1: Yea, a lot reds actually, it turned out.
…
there's a time perspective in this image- so we start from today, this is yesterday, this is tomorrow- the future. We are moving in this direction [from left to right].
The knowledge in society, academia is growing. So this is visualizing that there's a growth and an increase of knowledge gained by this wheel, which is the collaboration wheel.
G1 P1: It's a good picture.
G2 P1: And this collaboration wheel is iterating, so it's moving upwards here, so there's an uphill, which is visualizing the (laughter) challenges and frustration that you feel (laughter). This wheel drives this innovation, which creates value for society, this is companies, this is academia, but there is of course a shared knowledge pool somewhere here.
…
Yea.. (laughter)
G?P?: Makes sense (laughter)
G3 P1: A resemblance- this black circle, it represents the triangle check act, the learning cycle. And then the knowledge value stream… so that could represent the top.
G2 P1: This could be viewed [as a] "bröd kavel" (rolling-pin), "kavla deg" (kneading dough)… You are building up a mass.
G1 P1: you are fixing the knowledge dough (laughter).

Transcript 3: Metaphors and playful interactions.

prompted discussions about the relationships between innovation, knowledge and collaboration of a specific project.

CHANGING THE LAYOUT OF THE QUESTIONS
Due to how the participants were asked for feedback, the workshop generated feedback mostly about the list of questions for evaluating university-society collaborations. The participants pointed out that the phrasing of the questions embeds hidden statements and biases. Furthermore, the participants discussed that the layout of the list of questions could produce a hierarchy in the questions. For example, the innovation category only has two questions and are placed at the end of the

list. This could communicate that this category is less important than the other two categories- knowledge and collaboration. A suggestion was to juxtapose the questions in the shape of the Knowledge Triangle. One participant suggested adding the categories co-creation and co-production. Whereas collaboration is a more general term, the other two categories are more specific instances of collaboration, which could add to an interesting discussion. Another suggestion was to have a question to clarify what the categories (innovation, collaboration, knowledge) mean to the participants. This could reveal how various communities of practice understand the terms differently. A participant recommended placing these questions towards the end of the list in order to make it easier to answer.

CONSIDERATIONS ABOUT THE MATERIALS USED

In terms of the visual material used for the workshop, one participant thought that virtual 3D tools could be useful for discussing stakeholders' goals and expectations at the start of a collaboration. The volume and weight of the 3D shapes could highlight the different expectations, for instance the university being more "heavy" on knowledge. Perhaps different materials could be used to produce various metaphors when discussing university-society collaborations. During the workshop, G4 P2 made a comment that they are not from a visual background, hence G4 P3 was making the visualization. This bring up concern about whether participants from non-visual backgrounds would be comfortable using these materials.

DISCUSSION

This workshop is a starting point to explore the use of creative, visual methods to prompt reflective practice about university-society collaborations. The aim of the paper is to understand the role of these exercises on discussion and to develop future studies. The workshop shows that participants used metaphors to describe their own and others' collages. Ambiguity and metaphors are important in PD tools and Playful Triggers to stimulate new ideas and multiple interpretations. Indeed, during the workshop participants shared multiple interpretations and metaphors about each other's collages. Participants also asked each other for clarifications about the visual representations. At times, the collages became *boundary objects*, where different interpretations were contributed and negotiated. This negotiation could lead to changing ideas about how to visualize the collaboration in relation to innovation and knowledge creation. Further consideration is needed towards clarifying the relationship between the abstract shapes and metaphors, to understand whether (and if so, how) the shapes trigger metaphors. Future workshops will be dedicated to exploring how various materials might prompt different kinds of metaphors and how this affects reflection and discussions about university-society collaborations. More consideration will be given to the collage-making process to get more details about

what the shapes represent, the negotiation between group members and the reflection process.

Making collages at the start of the workshop highlighted that the visualized ideas had transformed throughout the discussion. Like Papert's *objects-to-think-with*, the collages seemed to clarify and sharpen the understanding of those ideas. How a reflective practice grows out of using such creative, visual exercises and list of questions will need further testing and evaluation. Future studies will focus on the participants' experiences of making and using the materials in order to understand whether it indeed stimulated or hindered reflection and discussion. These workshops will be held with persons from non-design backgrounds to see the responses to the visual and creative exercises.

The playful interactions occurred while explaining the collages and contributing metaphors to each other. Like Playful Triggers, the collage exercise supported the enabling of relationships through ambiguous artefacts and metaphors. How these methods could facilitate reflection and discussion between inter-sectorial collaborators will be tested. This will explore how creative and visual methods could be used to support these collaborations and the forming of learning environments.

Using collages and different colours to represent collaboration, innovation and knowledge brought focus to the interrelations of these aspects. As discussed by Gauntlett, collages present a holistic response which can be useful to show how concepts coexist. This was indeed the purpose of the workshop and the intended development from the previous prototype- Knowledge Triangle Cards. In the next iterations, further analysis will be made to see whether these discussions are useful to show the implementations of the Knowledge Triangle.

ACKNOWLEDGMENTS

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