Knowledge Cultures

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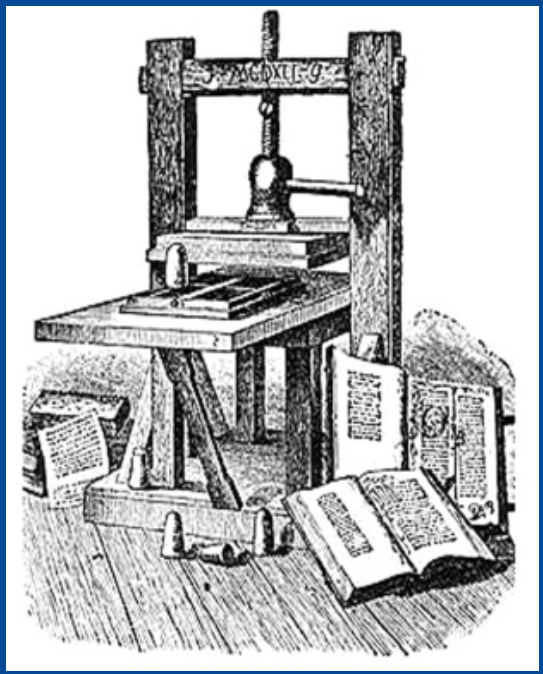

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A Multidisciplinary Journal

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Special issue: Visual pedagogies and digital cultures

Petar Jandrić
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(eds.)

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CONTENTS

EDITORIAL: VISUAL PEDAGOGIES AND DIGITAL CULTURES [11]
PETAR JANDRIĆ, SARAH HAYES

REFLECTIVE RECONSTRUCTION OF VISUAL PRODUCTS: STUDYING THE WATER CYCLE [14]
KATHRIN OTREL-CASS

TÉCHNÊ OF THE VISUAL [29]
KATARINA PEOVIĆ VUKOVIĆ

MOVING TOWARDS THE TRIALECTICS OF SPACE, DISABILITY, AND INTERSECTIONALITY: INTERSECTING SPATIALITY AND ARTS-BASED VISUAL METHODOLOGIES [43]
HOLLY E. PEARSON

VISUAL DIMENSIONS OF PROTEST: THREE EXAMPLES FROM THE BALKANS [69]
DAVID A. BROWN, EVANGELOS EVANGELINIDIS, MARIJA MARTINOVIĆ

CODING THE COMPLEXITY OF ACTIVITY IN VIDEO RECORDINGS: A PROPOSAL FOR CONSTRUCTING CODES FOR VIDEO ANALYSIS USING ACTIVITY THEORY [96]
CHRISTOPHER HARTER, KATHRIN OTREL-CASS

LEARNING FROM DIGITAL VIDEO CASES: HOW FUTURE TEACHERS PERCEIVE THE USE OF OPEN SOURCE TOOLS AND OPEN EDUCATIONAL RESOURCES [115]
IVANA BATARELO KOKIĆ, SUZANA RUKAVINA

BOOK REVIEW: COLLECTIVE KNOWLEDGE ARISES FROM MULTIMODAL, DIALOGIC INTERTEXTUALITY: *LEARNING IN THE AGE OF DIGITAL REASON* (2017) BY PETAR JANDRIĆ [131]
NATAŠA LACKOVIĆ

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EDITORIAL: VISUAL PEDAGOGIES AND DIGITAL CULTURES

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In 2016 the newly formed Association of Visual Pedagogies (AVP) embarked on various activities aimed at advancing practice and research in the field of video education. AVP was founded by the international consortium of 8 institutions: Wilf Malcolm Institute of Educational Research, University of Waikato (New Zealand), Philosophy of Education Society of Australasia, Institute of Education, Massey University (New Zealand), College of Educational Studies, Chapman University (USA), Department of Learning and Philosophy, Aalborg University (Denmark), Faculty of Education, University of Auckland (New Zealand), Department of Informatics and Computing, Zagreb University of Applied Sciences (Croatia), National Taiwan University (Taiwan). (AVP, 2016) Amongst its first activities, AVP initiated a series of annual conferences aimed at developing a new international video education community (Peters, Besley, Jandrić and Bajić, 2016a). The inaugural conference, The Association for Visual Pedagogies Conference AVPC 2016: Visual Pedagogies and Digital Cultures, took place at Zagreb University of Applied Sciences in Croatia in June 18–19, 2016.

The Conference explored the area of visual pedagogies around three broad dialectically intertwined themes. The first theme was concerned with practical issues. How to produce suitable video learning materials? When, and under which conditions, can we videotape children? The second theme was related to video pedagogies. What is the role of video in physical and virtual classrooms? How to seize the pedagogical potentials of video? Finally, the third theme was related to digital cultures, politics, and emancipation. What is the new role of video in production and dissemination of culture and knowledge? What are the unique features of video research methodologies? What is the role of visual cultures in new social movements and social transformations at large? (AVPC, 2017)

AVP invited contributors from various fields to join the debate about multiple aspects of the new movement towards visual cultures in education and academic

publishing. Working at the intersection of technology, psychology, sociology, history, politics, philosophy, and visual arts, it welcomed contributions from a wide range of disciplines and inter-, trans- and anti- disciplinary research methodologies. This enabled a fascinating exchange that explored key questions around vision and visuality, acknowledging that what a viewer will see cannot be pre-supposed. How do we see? How are we able, allowed or encouraged to see? What implications does this have in people's contexts for learning, action and expression? AVPC 2016 had almost 100 participants and 55 presented papers. It attracted approximately fifty percent of educators, one quarter of film-makers, and one-quarter of people working in various fields from video arts to video anthropology and activism.

In this way, AVPC 2016 started to build a new transdisciplinary community with a common interest in video pedagogies. The new community would not make much sense if it contained just educators, or just film-makers, or just artists – its main strength is its diversity. However, such diversity produces various challenges. We want to be inclusive, and yet to have quality; we want to foster trans-disciplinary dialogue, and still be relevant for everyone; we want to talk to people working in different media, and we also want these people to talk to each other. (For more about these challenges, see Peters, Besley, Jandrić and Bajić, 2015 and 2016b; Peters, Besley, Jandrić, Bajić and White, 2017). Reflecting these challenges, this Special Issue brings selected and expanded papers presented at the inaugural Association for Visual Pedagogies Conference AVPC 2016: Visual Pedagogies and Digital Cultures.

The first paper, "Reflective reconstruction through the visual" by Kathrin Otrel-Cass, explores cultural construction of visual products using the case of a New Zealand year 7/8 primary science class. The second paper, "Téchnê of the visual" by Katarina Peović Vuković, analyses the distinction between high and popular culture in order to define authentic political art. The third paper, "Intersecting spatiality and visual methodologies: Moving towards spatial justice" by Holly Pearson, uses empirical inquiry of the lived experiences of racial and ethnic minorities with disabilities to explore the role of arts-based visual methodologies in regards to spatial consciousness and spatial justice for marginalized populations in higher education.

In the fourth paper, "Visual dimension of protest: three examples from the Balkans," Marija Martinović, Evangelos Evangelinidis, and David Brown use case studies conducted in Slovenia, Greece, and Serbia to develop a framework for understanding the visual cultures of protest beyond representative images. The fifth paper, "Coding for video analysis: an activity theory approach" by Christopher Harter and Kathrin Otrel-Cass develops a theoretical approach to coding and analysing video data on human interaction and activity in education. In the last paper for this Special Issue, "Learning from digital video cases: How future teachers perceive the use of open source tools and Open Educational Resources," Ivana Batarelo-Kokić and Suzana Rukavina use their experiences from a four week

distance education graduate course to explore ways in which future teachers perceive usage of open source tools and open source educational resources.

Based on conference papers, this Special Issue brings together established academics and PhD Students in various fields, thus reflecting a wide diversity of communities gathered around the activities of the Association of Visual Pedagogies and its conference. The path of reconciling these diverse disciplinary interests and approaches is far from straightforward (Jandrić, 2016). While most people may agree that visual cultures and digital pedagogies are the present and the future, at this moment we can merely respond to what we have here and now. This enterprise requires thinking theoretically, but also acting practically, in order to develop the field of video pedagogy – therefore, our project must be a true philosophy of praxis. We are literally making the road by walking – and it will be exciting to see, in five or ten years from now, where this path will take us!

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REFLECTIVE RECONSTRUCTION OF VISUAL PRODUCTS: STUDYING THE WATER CYCLE

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ABSTRACT. This paper presents an argument about the cultural construction of visual products. Based on data from video observations, interviews and the collection of student-produced (visual) artifacts, a material ethnography approach is presented. Applying reflexivity with the use of visuals, the following argument is made. Instead of revealing insights through just one approach, a reflective methodology should consider: (a) the context in which the visual was produced; (b) the content of the visual; (c) the contexts in, and subjectivities through, which visuals are viewed; and (d) the materiality and agency of visuals. A case of a New Zealand year 7/8 primary science class studying the water cycle is presented. It is argued that teaching science concepts like the water cycle through visualizations cannot be an abstract endeavor because even when abstract ideas are presented, they are visualized as concrete objects. The teacher used a range of visual materials including video clips, diagrams, student drawings, and student produced 3D models, each endowed with unique material and visual dimensions. The teacher activated those through talking, writing, drawing and working with artifacts and purposefully recorded conversations with individual students to be able to reflect on and track the children's progression in understanding.

Keywords: visuality; material objects; reflexivity; subjectivity; objective; cultural constructions

Introduction

This article presents an argument about the cultural construction of visual products in a science classroom. The production of visual materials and artifacts including videos and three dimensional models is a particular cultural practice in science and can be witnessed in many science classes. Visual depictions have historically been amongst the ways for science to communicate, represent, teach or learn about the complexity of the natural world, yet not necessarily with the intent to be objective

but instead, to shape ideas about things (Daston & Galison, 2007). Daston (2004) explains that since the middle of the sixteenth century, scientists have used and produced visualizations of nature that would fit their written descriptions. For example, it hasn't been uncommon that visual illustrations were produced based on the close examination of several artifacts of the same kind to compose a depiction that would perfectly portray all the key aspects to be communicated. Hence imagery in science has been traditionally attached to a specific meaning that is intended to be interpreted in a particular way.

In her book on technology, literacy and learning, Carey Jewitt (2001) explains that multimodality and the unpacking of different semiotic resources we may be utilizing to understand things is a helpful way to identify the grammar of a set of resources (p. 17). This approach takes not only note of the product but also of the social process that produced the product. "Understanding how the visual both produces and represents culture is the reason attending to the visual forms of representation" (Jewitt, 2008, p. 9). From this perspective material objects in science are regarded as communication modes that come with different affordances and may also include embodied expressions and gestures (e.g. Kress, Jewitt, Ogborn & Tsatsarelis, 2001).

The cultural construction and the products of visualized knowledge in science, including when visuals are used to explain one's own learning or understanding, is thus important in order to interpret the transformative potential of the visual. Science works with the visual in a very particular way, including depictions of abstract, invisible or difficult to observe phenomena. To use an example, I will draw on case data that was collected in a primary science class learning about the water cycle. The water cycle is a scientific concept that describes the processes involved when water in its different states moves between the land, the ocean, and the atmosphere. Given the significance that water plays for life on Earth, the topic is featured in all science curriculums in some way or the other. The case that is used tells of a teacher and her year 7/8 class who explored the water cycle. To do this the teacher deliberately employed a variety of visual tools in an effort to overcome the challenges when students have to learn about abstract scientific concepts. They were difficult ideas, due to materials or processes being invisible, too small, happening to fast or too slow for direct observation. Next, I continue by sharing some theoretical ideas on the significance of visualization for science education.

Visuality and Its Role in Science Education

While there is plenty of research in science education that focuses on visual representations, there has been a focus on the connections between visuals and conceptual understanding. This interest for instance, is grounded in neuroscience research that says that conceptual knowledge is visually organized through perceptual systems (Kan et al., 2010). Visualizations play a significant part in

science education to depict abstract ideas (Buckley, 2000), allowing students to 'see' things that cannot be seen, such as details of chemical processes (Kozma, Chin, Russel, & Marx 2000). However, depending on the nature of the visualization, particular skills and techniques are needed, and to use visualizations for teaching and learning purposes may require that individuals may need to adopt new learning strategies and individual schemas in order to make inferences (Halpern et al., 2015). This may include mental but also physical manipulations of visualizations such as videos that have been produced as part of the visualization process. For example, a video may zoom in or out to highlight and emphasize particular points of interest.

Prain and Tytler (2012) identify three perspectives on using representations in science: a semiotic perspective, with a focus on symbols and materials, an epistemic to show the relationship between representations and the big picture of ideas, and an epistemological perspective to identify challenges of depicting causalities. The authors argue that students draw on diverse cultural and cognitive resources which are contextualized in the topic that is under investigation. However, traditionally the focus on materials in science has been ignored or underplayed, giving rise working with material ethnographic ways to study socio-material assemblages in science education (Fenwick & Landri, 2012).

What Material Ethnography Is

That studies on science education may need to involve more than focusing on talk has been emphasized and empirically examined by a number of scholars (see for example, research advocating for the inclusion of sensory experiences Roehl, 2012). This should not however, depreciate the importance the studies on how to learn and master scientific language (Mortimer and Scott, 2003; Lemke, 1990). A focus on understanding the connections between students, their teacher and the materials they use emphasizes that science education is also about embodied human/socio – material experiences, and taking note of the complexity of the experiences made include where and how they come together and co-shape the learning experiences (Fenwick & Landri, 2012; Roehl, 2012). Taking note of the complexity of factors that come together that are orchestrated by the teacher, the students, and the materials used and produced, require a carefully tuned approach for the study of educational experiences.

Roehl (2012) presented three approaches that can be used for ethnographic studies that consider materials: Actor Network Theory (ANT), Social Construction of Technology (SCOT) and postphenomenological and pragmatist notions of materiality. Each of those three methodological research approaches identifies how to address socio-material conditions through ethnographic examinations but each methodology has its limitations. Actor Network Theory (ANT) most prominently shaped by Bruno Latour, John Law and Michel Callon, attribute as much significance to the material object as to the human actor. This creates a symmetry

since material objects are viewed as actors, thus allowing the ethnographer to examine how material objects shape and are being shaped by human actors and vice versa. This allows for the consideration of all factors (material and human) to be considered that shape social situations. If ethnographers use such an approach they can reassemble the social, as Latour put it (2005). However, Roehl critiques this approach since it does not necessarily shine enough light on transformations or creative responses to material objects. Science Technology Studies (STS) include the theoretical approaches of Social Construction of Technology (SCOT) that are interested in exploring how technology shapes human activity. As described in the seminal work of Pinch and Bijker (1987), SCOT is often used by those interested in user centered design processes, thus highlighting the social dimensions in the production of material artefacts. Postphenomenologists such as Don Ihde (2009) propose that researchers should examine the use of materials, objects and how people go about it. This gives opportunities to identify when things do not work out as planned and create situations that can only be resolved through reflexivity. It allows the researcher to examine details of situations including emotional or embodied responses, but Roehl finds that the limitation lies in its scope since it is difficult to move beyond the contextual example and make sense of wider networks.

In this ethnographic study, I am interested in visual products and their connection to learning situations. I situate myself in sociocultural perspectives (Wertsch, 1998) on learning to expand ethnographic methodologies, to pay particular attention to the visual aspect of materials and what this could mean for learning. I considered three basic conditions. The first is that visual material artifacts need mediation to come to life. As James Wertsch (1991) explains: "They have no magical power in and of themselves" (p. 119). Deliberate selections are made by teachers and students for exemplifying ideas, designing visual learning products in order to tell a relevant story, so it is about more than just use (Wenger, 1998). Visual productions become scenarios and resources of ideas and interaction (Roth, 2005; Wells, 2002).

Second, material products have both material and conceptual dimensions (Cole & Engeström, 1993). As Gordon Wells (2002) explains:

> The materiality of the object is critical in allowing it to become a focus on joint activity—something that can be sensually perceived, handled and acted on. At the same time, it is the symbolic aspect of the object that allows it to participate in the students' progressive attempts to increase their understanding of the phenomena under investigation. (p. 45) In the classroom, it is then through the teachers' orchestration of investigating the attributes of those products, that students learn to discern the attributes of objects that provide entry points for discussion and the development of a consensus about the underpinning concepts and processes that can be a rich and powerful source of ideas and feedback (Cowie, Moreland, & Otrel-Cass, 2013).

Third, material artifacts, once produced can be revisited (Wertsch, 1998), interrogated and changed if needed, this can happen over time because they can endure in contrast to speech (Jordan & Henderson, 1995; Roth, 2005). This way they become also historical records of the past with the agency to shape future interpretations (McDonald, Le, Higgins & Podmore, 2005).

This implies that visual material products that are available to students mediate interactions and learning practices. For the classroom ethnographer who visually records and analyses episodes of such occurrences, it is then important to take note on how the teacher introduces and works with a task that involves materials to understand and make sense of how these objects shape what can be witnessed.

Understanding the Cultural Construction of Visual Products through Reflexivity

In this article, I am particularly interested in making sense of students' interactions with their science classrooms productions and the role of visual interpretation. This means that I am exploring how to best understand and reinterpret what had been visually recorded through videos during ethnographic classroom studies. The focus of the episodes of interests in the videos were instances where students were reflecting over their own visualizations of scientific concepts, through videos and 3D models. The focus here is also on addressing the researchers' challenge in being ethnographic with visual products. Sarah Pink (2007, p. 22) provides a useful description in that ethnography is not a method but a methodology that seeks to experience, interpret and represent culture and society.

As mentioned above, Prain and Tytler (2012) provide inspiration for analyzing visualizations, i.e. drawings based on the use of and availability of cultural tools. Rose (2001, 2014) emphasizes the importance of applying reflexivity in order to gain insights into: (a) the context in which the visual was produced; (b) the content of the visual; (c) the contexts in, and subjectivities through, which visuals are viewed; and (d) the materiality and agency of visuals. (Rose refers to images not visuals). This approach requires reflexivity and takes the wider context into consideration, with implications for the educational ethnographer wanting to understand interactions and materially mediated learning situations. The insights that can be gained through reflective approaches include people's personal stance and their perceptions of self and the world but this also requires that the researcher is aware of the role reflexivity plays (Savin-Baden, 2004). The four aspects for such reflective approaches are in more detail:

The context in which the visual product was constructed

Rose (2014, p. 19) also referring to Kress (2010), argues that visual communication should be considered as a design process set in a context within which the communication takes place. The context includes who is the anticipated audience,

the modes of communication and the available resources and perhaps also the origin of those resources especially if they are multimodal.

The content of the visual product
Considerations of the content should take note of what is used and depicted. Content Rose (2014) explains, is never neutral and always an interpretation of the world. She highlights that visual products need to be taken seriously by researchers, to deal with the challenge of interpretation. Rose (2014) explains that working with visual material often leads a researcher to identify content sources, drivers and barriers and interpret or overlay explanations about them that cannot be seen.

The contexts in, and subjectivities through, which visual products are viewed
The challenge with working with, and making sense of, reflexivity is that it is shaped by one's point of departure including "perceptions of self and … perspectives of the world, which ultimately is connected to our personal stance" (Savin-Baden, 2004, p. 366). Savin-Baden points out that adoption of understanding, and working with reflexivity, has to start with situating one self. In this case it requires situating the student, the teacher and the researcher.

The materiality and agency of visuals
Visual products are 'objects that talk' (Daston, 2004), and in order to gain insight into these talking objects, it is necessary to identify what aspects have been foregrounded and emphasized by the designer of the visual product and to take note of visuality (Rose, 2014). Rose explains that visuality is about the ways our vision of things is constructed. This is also necessary to identify the cultural drivers for utilizing particular norms and ways of presenting and communicating information as well as preserve a historical snapshot thereof (Daston, 2011). Next, I will discuss the methods employed in this study.

Working with Visual Research Methods in This Case

I used video recordings and photographs, together with field notes and interview data to trace and make sense of how young people worked with their visual products in the science classroom. The way how the visual data was examined was not necessarily with the aim to present a precise truth, but to tell *a* truth (Wilder, 2011) and to consider the nature of information that can be accessed (Rose, 2014), thus taking on an archeological approach to the research investigation (Law, 2009). Exemplifying such ways of interpretation and reflection, the case of a New Zealand year 7/8 primary science class studying the water cycle is presented. Teaching science concepts like the water cycle does not necessarily need to be an abstract endeavor (Ingold, 2006, 2013; de Freitas & Palmer, 2015) despite of its inherent problematic details that lead to children's conceptions in science (Driver, Asoko, Leach, Mortimer, & Scott, 1994). I conducted ethnographic video observations

over three weeks of classroom teaching where the teacher used a range of visual materials including video clips, diagrams, student drawings, and student produced 3D models, each endowed with unique material and visual dimensions. The teacher activated those through talking, writing, drawing and working with artifacts and purposefully recorded conversations with individual students to be able to reflect on and track the children's progression in understanding. More specifically, she repeatedly asked the children to draw and then reflect on their drawing, recording their reflections so she could revisit those conversations and trace their development. The teacher also asked her students to video record reflections, such as video recording in pairs the details of the 3D model the students produced. At the end of the unit, the teacher, the researcher and a selected group of students had focused conversations about the selected drawing the children made.

I am now going to present the analysis of students' visual products. Names used in the following section are fictitious to protect the identity of the individuals. The case is presented in two acts that contextualize how the students worked through this water cycle unit. The first act explains and shows what the children had to do, the materials they used to create their visual products while the second act aims to unpack the context that shaped the conditions for such a production.

The 3D Model: A Dam and Ice-comets and How Water Got to Earth

First act – the visual story

Prolog: The students finished building their 3D model using the following materials: A plastic container, soil, plant material (leaves, grass), white straws, water, a slab of rock, gravel, coat hanger and a plastic bag. After the assemblage of the different materials into a scene, they produced a video having a discussion with each other where one boy interviewed the other about the model and its connection to the water cycle. The screenshots in figure 1 show selected scenes from the video the two boys produced. The scenes represent what the cameraman focused on and emphasized.

Figure 1 Screenshots from the video two students took explaining their 3D model.

Following is the transcript from the video the two boys produced. In it Tom is takes on the role of the cameraman and interviewer while Max explains the details of their 3D model.

Tom cannot be seen, he is the cameraman, but he has a conversation with Max.

Tom: Recording…
Max: Well, that's our model. We made a dam *(touching the rock slab).* And there are some sewage pipes going back and forth *(referring to white straws).* We had to quickly ruffle the bag for clouds cause… we didn't have any time.

The water originally comes from the river. The sun comes along and it makes the water hot *(puts fingers in water).* And (.) hot steam rises. So, it rises up and forms a cloud. And after the cloud is made when it gets to a colour like this *(touches and shows the plastic bag)* it starts to get heavier and weighs down more and then it rains again. It goes on the land and gets absorbed over there in the trees *(points towards green leaves on side of model)* or… it gets into the water here *(puts finger into water)* and still lives.
Tom: Well, can you tell me the thing you told me before… that the sun got away or something?

Max: When the clouds are formed (.) the clouds come up and (.) they block out the sun (.) and… it puts too much hot on the clouds making it rise too high, so that's how they get high.

But before the water originally (was) getting to the lake is actually …from space…ice comets, a long time ago, and hundred thousand years ago or something came … smashing down onto Earth and the atmosphere…it was coming down the atmosphere… and it would burn up and … exorb (*Max's formulation*) and turn into water, into liquid and then rain down and turn into a river.

Second act – reflections on the visual productions

The context in which the visual was produced

The production of the three-dimensional models and the filmmaking occurred in the classroom. Science classrooms are places of multimodal learning, where speech, writing, images, gestures, materials and three-dimensional models shape the ecology of learning (Jewitt, Kress, Ogborn, & Tsatsarelis, 2001). However, classrooms are also spaces that represent institutions and their expectations. Foucault (1991) talks here about governmentality to highlight that these places are signified by power structures, intentionality and control. Schools are not value free and dictate certain societal expectations. For science education, it means that particular ways of seeing and interpreting the world are emphasized. Everyday experiences that are acceptable elsewhere can be rendered incorrect or unscientific in the science classroom.

In this case, the teacher had planned the activity relatively early in the teaching unit. The excerpt here from her teaching plan shows her plans and also her reflections on why an activity was planned and how things went (in colour).

Micro Task	**Focal Artefacts** *Any resources/tools you/the students may use*	**Skills/time required to complete task**	**Planned Interactions**	**Intended Learning Outcomes**
Number micro tasks)	*(Identify type of artefact to highlight what support may be needed in using the artefact/tool)*	*(Identify what you know about your students ability to complete the tasks set with the planned artefacts and consider the time needed)*	*(Identify here how you think your students will engage with the artefact/task)*	*(What do you expect students to gain from this task ,and how you will assess this include here also any assessment – formative/summative)*
A 1. Brainstorm where water comes from and goes to.		*Prior knowledge – students may need a starting point e.g. rain*	Explain the key understanding and why we are investigating water, as a topic. Key Question: Where does our water that we use come from? Students brainstorm ideas in Science Books My Life as a Raindrop Discussion as class around student ideas. • Brainstorm where water comes from and goes to. Video - The Importance of Water	To evaluate their own knowledge of topic
A 2. Construct a water cycle	*Equipment for constructions:* *Large plastic container (this might be a large plastic bottle), half a bucket of soil or potting mix, two or three wire coat hangers, large clear plastic bag or plastic wrap, pebbles and small rocks, plenty of water, some small plants, moss, ferns, grass seed or bird seed* *List of questions* *Flip videos*	Prior knowledge of the cyclic nature of the water cycle Components that contribute to the water cycle	Students use equipment to construct a model of the water cycle. Students take flip video to explain their thinking behind their construction. Scaffold questions for explanation. Why are plants included in the water cycle?	The continuous movement of water on, above and below the surface of the Earth (also known as the hydrological cycle). This was quite interesting. I think it helped to clarify with some students that the water does not just sit on top of the soil, but goes into it, some even put in holes.

Table 1 Excerpt from the teacher's planning document.

The teacher had clear expectations such as "… the continuous movement of water on, above and below the surface of the Earth…." She also listed the materials that

should be available to the students. The closer examination of the context for the visual production, on both the model but also the video recording, reveals the circumstances on how they have been produced.

The content of the visual product

The different modalities shaped how the visual products were composed and shaped the learning content. The three-dimensional model showed a unique interpretation of the challenge; a scenario where the two boys decided on constructing a dam to produce a story of their interest. The content produced in the video reflected the discussions the two boys had before hand.

The content details included dammed water and piping (man-made interferences with the natural environment), the land and plants and their connection to the water cycle (from the recording: "…. It goes on the land and gets absorbed over there in the trees"). The visual product's three-dimensional model and the video displayed content that carried agency and represented social practices (Rose, 2001), such as the damming of water.

The contexts in, and subjectivities through which, the visual products are viewed

The context in the video included also insight into the boys' views on what was interesting and of significance to them, such as the origin of water on Earth (from the recording: "….But before the water originally (was) getting to the lake is actually …from space…ice comets, a long time ago… …it was coming down the atmosphere… and it would burn up and … exorb (*Max's formulation*) and turn into water, into liquid and then rain down and turn into a river."). Here Tom reminded Max of the conversation they had before the filming. The short moment in the recording gives insights into how the two boys made meaning of the abstract concept as well as how this was further connected to information they had identified as interesting and significant. They contextualize the story in their three-dimensional model. The visual products carried unique meaning, and in that sense pushed forward the subjectivity of the two producers.

Also, the structure of their video starting with explaining the features in the model, then explaining what they interpreted as relevant for detailing the water cycle and later adding additional information, gives insight into the boys understanding on what they saw their audiences (their teacher, other students, the researcher) may expect them to produce. The children demonstrated in the way how they transformed materials also that 'ideas are lived rather than abstract and full of personal values and judgments' (Sullivan, 2012, p. 5, referring to the works by Bakhtin).

The materiality and agency of visuals

The materials the teacher made available to the students for constructing their visual products also included a video camera (the teacher refers to flip video in her planner, an easy to use video camera with in-built USB connector). This camera and the video it produced meant the children could quickly and easily review and

revise. The same applied to the other materials. When Max explained in the video that water heats up and evaporates, he stuck the fingers of his hand into the water of his model, sensing and performing the concept of water warming up. The materials used for the three-dimensional model were overlaid with dramatized meaning.

Figure 2 Max touching the water while saying …
"The sun comes along and it makes the water hot."

The assemblage of the different material components made these visual products into objects that mediated visions (Turkle, 2011). Evelyn Fox Keller (2011, p. 301) reflects that: "As scientists, our mission is to understand and explain natural phenomena, but the words *understand* and *explain* have many different meanings" (emphasis added by original author). The materials endowed with materiality were put together in such a way that they contributed to the boys' reframing of the task at hand.

Discussion

The presentation of unpacking the visual products of the two boys also requires a reflection on the researcher's position to understand how the kind of meaning (a truth) is produced here. This analysis is situated in a sociocultural perspective meaning that the interpretation of visual production expands on multimodality and what it means for learning and the appropriate units of analysis. Since science is full of discipline specific language, symbols and texts that scientists use to develop, represent and communicate knowledge it is important how the interpretation of signs and symbols (semiotics) are carried forward and adapted by teachers and learners. This means also that different materials and objects including drawings, three-dimensional models, are often accompanied by different actions, so are not necessarily meant as standalone entities (Cowie, Moreland & Otrel-Cass, 2013).

This way of unpacking visual products reflects also the specificity that these material objects are being viewed by various audiences (Rose (2001), in this case the students themselves, other students, the teacher, the researcher). As Sarah Pink

(2011) reflects on Paul Hocking's (1992) work, ethnographers describe events they have witnessed and this kind of work is selective and interpretive.

The argument has been that to understand the significance of visual student products in science classrooms, it is important to pay attention to how they were conceptualized, produced and purposefully presented. The explanations that accompany the productions are significant in making sense of context, content, subjectivity and materiality that make up the objects that have been produced. The visual depictions were not necessarily produced with the intent to be perfectly objective, but with the intention to introduce audiences to the boys' ideas about things (Daston, 2007).

In the context of the study the teacher applied a pedagogical approach to utilize visual products as part of the classroom learning. It also included that the teacher was able to discover her children's existing and developing knowledge and experiences. By using different visual means and media the children were able to transform their lived experiences and their stories to share their own insights. The process itself allows also for the individual to engage in a reflective process (Rose, 2011). This reflexivity is demanded for by the combination of modes: the model combined with recorded video is about being able to tell a story and expanding from what can be seen in the model to imagining the real world and mediate visions (Turkle, 2011).

Conclusion

In this article, the aim was to present the case of a visual material production during a science unit about the water cycle. I assume a socio-cultural position that the interactions that take place in science classrooms are mediated by social, material, temporal, historical, political and cultural contextual factors (Wertsch, 1998).

The ambition was to apply material ethnography with an archeological approach to the research investigation (Law, 2009). The visual products video and three-dimensional model demanded particular things from the students Max and Tom when they were used and produced. They were assembled through the teachers' orchestration, thus bestowing everyday materials with new identities (a plastic bag becomes a cloud) and the ideals and aspirations of a science curriculum. Following a Latouring argument, the productions also represented what the teachers and the boys were expected to generate in the context of being together in the science classroom. The dramatization the boys applied to those visual objects emphasized and identified the reflective processes with those ideals (Rose, 2011). This reflection process was apparent throughout the entire activity and revealed also their imaginaries and personal stories.

Returning to the matter of teaching science concepts like the water cycle this case shows that this does not necessarily need to be an abstract endeavor (Ingold, 2006, 2013; de Freitas & Palmer, 2015). Understanding the cultural conditions for

producing visuals requires a reflective cycle of interpretations by students, teacher and researcher. More than understanding young people's meaning making of the water cycle, such a process allows for a reflective reconstruction of visual materials that also describe the nature of the interrelationships between students, materials and the production of concrete thinking.

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TÉCHNÊ OF THE VISUAL

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ABSTRACT. The paper discusses the distinction between high and popular culture through the elaboration of the craftsmanship, or what is in the ancient Greek named *téchnê (τέχνη)*. The paper will argue that *téchnê* remains the ultimate element of the distinction between high and popular culture. The concept of remediation inaugurated by David Bolter and Richard Grusin (2000) serves to lighten a material aspect of an artefact, especially remediation as a ground for distinguishing the immediacy from the hypermediacy as two representational strategies. The model is demonstrated on the example of the computer games were the immediacy is a common technique that aims at "seamless bond" between the narrative and the algorithm. On the other hand, art forms often follow modernist tradition with the affinity toward non-transparent hypermediacy. The article discusses modernism as a specific turn in representational strategies that can be described through the concept of immediacy/hypermediacy. Further, the paper questions political aspects of such affinity. In order to define authentic political art, the paper reads Benjamin's essay "The Author as Producer".

Keywords: téchnê; hypermediacy; modernism; actuality; computer games; popular culture

Introduction

The paper introduces a question of the distinction between high and popular culture through analyses of video games. In doing so it uses the distinction between immediacy and hypermediacy – two types of representations based on the transparency of the medium. Distinguishing between popular and high art serves as an introduction to different question of the political aspect of the media and media techniques. The paper accents the difference between immediacy and hypermediacy as fundamental difference between political and non-political art.

Postmodernism is sometimes defined as 'a culture which no longer recognises the distinction between high and popular culture' (Storey, 2006, p. 9). Two different cultural registers, types of production or *raison d'être* of culture today lost

their autonomies since it became more difficult to define the distinction between something that can classify as 'authentic' on the one hand and 'commercial' on the other (2006, p. 9). This paper will argue that there is a remainder of this cultural distinction between high and popular art – a specific distinctive mode of representation present even in the postmodern era, a distinction embodied in the material sphere of the artistic work. Computer games will serve as a starting point of analysis as prominent genre of the popular culture (Aarseth, 1997; Galloway, 2006; Johnson, 2005). As an opposition in the realm of high art, we find the *digital art* and *art games* – high culture twins of the popular model.

Finally, paper will propose the idea that political aspect of the material dimension of an art games serve the similar purpose as Brechtian methods (as montage) used in his epic theatre. Both techniques – hypermediacy of an art games, and montage in Brecht's theatre – aim at discovering techniques present behind the narrative. Technique thus serves as a final distinction between popular and high art, as well as demarcating line between political and non-political art.

Remediation

Concepts such as 'remediation' and 'transparency' can be of a help in describing a material aspect of a cultural artefact in the era of the media that are usually described as 'immaterial', pure numerical representations of a reality (Manovich, 2002; Heim, 1987; Hayles, 1999). The remediation originates from the distinction between seeing through and seeing at something. Remediation 'makes the medium as such visible' (Guillory, 2010, p. 324). Originally, remediation was related to the concept of transparency. Either we see the medium, or the medium is hidden, and the spectator observes the content of the visual representation. Marshall McLuhan's formula 'content of any medium is always another medium', aims at revealing such reflexive character of a media (McLuhan, 1964, p. 25). Media cannot be understood through its content, the 'content' of a medium is 'like the juicy piece of meat carried by the burglar to distract the watchdog of the mind' (McLuhan, 1964, p. 25).

Is it not of the crucial importance today to perceive such distracting role of the content? The social networks are constantly measured by the standards of their content (usually, the content is accused of its banality, low literacy, etc.). The same criteria are applied to computer games which are often described as dangerous because of the possibility of a transference of their narrative into a real world. It is common to interpret the 'influence' of virtual worlds through their narratives that are often full of violent plots, fights, and combats. At the same time, video games are profoundly different from literature and other narrative forms, since they are not stories but 'algorithmic narrations'. The role of the narrative in a game's structure is sometimes almost the opposite from what critics of the transfer interpret as the danger of the transfer from virtual to the real (Peović Vuković, 2014). Critics claim that the transfer can occur as a reaction to violent scenes. But

how these scenes affect a player? Do they impress the player with the story? On the contrary, the most vivid representations can have no or limited transfer. The narrative is sometimes opposed to action defined and structured by the game's algorithm (Galloway, 2006). So-called 'cut scenes', cinematic interludes which enrich a narrative by the elaborating world of a game (characters, ambient, historical period, etc.) are limiting the actions of the gamer who is forced to sit still and watch.

Thus, instead on the content, analysis should focus on the material aspect of an artefact. The materiality is not understood purely as material substance opposed to the spirit or mental images in Descartes understanding of the dualistic nature of the world (Descartes, 1968). In other words, the material must not be understood as purely a material substance juxtaposed by the natural laws. The material embodiment does not mean that media depends on human sensible apparatus, where media, as Mark Hansen deducted, is always supplemental to a real embodiment and sensory apparatus (Hansen, 2004). Media is material because of its own material specificities. Focus on material specificities (structure, media grammar), introduced by Marshall McLuhan in the formula of the medium as the message (McLuhan, 1964), suggest two things. First, that one media value emerges from its specificities, and second, that auto-referentiality of media blocks the understanding of a media by reading its content. What would mean for the digital media? First, the flexibility of digital media, the characteristics of digital artefacts as 'flickering signifiers' (Hayles, 1999), as well as other characteristics of digital-network paradigm (Peović Vuković, 2013) are their specificities, and therefore – their material aspect. At the same time, those specificities and not their content should be understood as its value. It is the equation between media's grammar and its meaning – the medium as the message.

Bolter and Grusin started from this idea and broadened a formula. They coined the term 'remediation' to describe both reflexivities of the media (media representing another media) and media materiality (importance of the focus on the media structure). The term 'remediation' describes not only media reflexivities, but also the fact that there exist two representational strategies on the account of such reflexivity (Bolter and Grusin, 1999). Either media hides its artificial structure, the notion of media as *remediated*, or it stresses its initial nontransparency (the fact that every media is a remediation of another). Immediacy works as an attempt to erase or to conceal the remediation by making the medium invisible. On the other hand, hypermediacy calls the attention to the medium, increasing the artificiality of a representation.

The realist perspective works as a proto-immediacy of visual representation. Leon Batista Alberti, Italian painter from 15th century, in his treatise *On painting* describes the process of painting as seeing through the window: 'On the surface on which I am going to paint, I draw a rectangle of whatever size I want, which I regard as an open window through which the subject to be painted is seen' (Bolter and Grusin, 1999, pp. 24–25). It is what Bolter and Grusin described as a historical

'insatiable desire for immediacy' that is present in linear perspective, as well as in photography and cinema (1999: 5). The desire to produce an image that will be so realistic that one cannot tell the difference between the image and the thing is present through the whole history of art. It is a desire to produce a *trompe-l'oeil* effect that can deceive the spectator. The sole concept of the perspective Albrecht Dürer defined as a 'seeing through' (Bolter and Grusin, 1999: 24). Film and photography present a continuation of the immediacy. André Bazin wrote that photography could be regarded as a perfect Albertian window. Finally, a graphical interface design is a direct reflection of Alberti's window metaphor (Bolter and Grusin, 1999, p. 24).

On the other hand, the hypermediacy is not so desirable representational strategy, at least until the modernism. Modernism presents a detour from the long history of the immediacy. Modernistic hypermediacy aims at revealing the secret behind the content – the secret of an artistic form. Richard Hamilton's work from 1950s titled 'Just what is it that makes today's homes so different, so appealing?' is one example of such tendency. The picture represents a modern living accompanied with an accumulation of all sorts of technical devices, everyday things, modern furniture and colourful artefacts. Modernism, and especially this picture, represents not only its content but also its *technique w*hich becomes the essential for the representation. Collaging, painting and drawing construct not only a representation of a modern life but also the representation of the artificial process of visual representation as such.

Bolter and Grusin provided various examples of the hypermediacy (such as television, rock music stage productions, and World Wide Web) and immediacy (linear perspective paintings, photography, the Hollywood film style). However, they recognised the unclear division between hypermediacy and immediacy. Hypermediacy can be interpreted as immediacy and vice versa. The categorization of the representation as hypermediated or immediated depends on the observer's knowledge of the media, the era in which representation is observed, as well as on the skills of the artist, creator or a designer who sometimes can simply fail in immediacy as it is the case of the computer game 'bugs'. Although immediacy presents historical 'desire', and a constant tendency (Bolter and Grusin, 1999: 34), the history of immediacy can be analysed as a history of failures of immediacy.

For example, although the flight simulators aim at immediacy, the representational strategies present pure hypermediacy (Bolter, 2000, p. 65). It is a result of a modern tendency to describe immediate immersion as a hypermediated experience. It is such because the real experience of being of the flying the plain is the experience of the monitoring of the instruments (2000, p. 65). Although visual representation aims at realistic experience, the medium remains visible.

The reason for the emergence of paradoxical hypermediated immediacy (Bolter does not use this term), can be found in a fact that postmodern subjects are more and more accustomed to hypermediacy. That could surely be said for the popular culture. Such is the case with the unintentional hypermediated experience of

graphical interface design. While designers aim at immediacy, using Alberti's windows metaphor, the experience of multi tasking, opening of several windows, enriched initial immediated is actually an experience of hypermediacy.

It is not only that a distinction of hypermediacy and immediacy presents a vague distinction, but there is also a question of intentionality. Bolter and Grusin's examples are mostly forms of non-intentional hypermediacy, while the modernism stands for intentional hypermediacy. Although hypermediacy sometimes can be interpreted as representational failure, the realm of high culture, especially visual art provides fruitful examples of the intended hypermediacy. In Bolter and Grusin's study, we find modernist collages and photo-montages. Those are the only works presented in their study that present, in a strict sense, cases of the hypermediacy, and cannot be interpreted as simple failures of immediacy.

Modernism and Transparency

Modernism challenged the cultural dominance of the transparency, while bringing forth the concept of the self-reflectiveness of the art. "[T]he essence of Modernism lies, in the use of characteristic methods of a discipline to criticize the discipline itself" (Greenberg, 1982, p. 5). Self-reflectiveness, as a form of non-transparency that emerged in modernism as a heritage of Kant, invented the criticism that is oriented towards the means of the criticism itself (Greenberg, 1982, p. 5). The idea that experience is limited by categories of space and time gave a birth to a new aesthetics, that is to emerge only later as a consequence of this split. Modernism brought a specific spirituality that can be described as a form of the 'abolition of art itself' (Sontag, 1969, p. 5). Sontag defined this change of modern art as a change of a figure of an artist. The modernist artist is not a creator, but a subject that processes information and manipulates with a ready-made material. With this shift in the character of an artist, the aesthetics of silence brought also a rupture in the history of visual representation.

Abolition of the immediacy functions as the formative moment of the self-reflectiveness which no longer aims at transparency, but insists on the craftsmanship. In a way, such turn in the history of visual representations is a return to the original understanding of the art as téchnê *(τέχνη)* in the classical Greek sense of the word, an art of craft. The art as téchnê presents something almost conservative – the creating of the artistic material, the visual representation as material, a technological product which has to be manufactured. Two questions emerge from this turn in representational strategies that happened during the Modernism. First, such turn formulated one of the rare leftovers of a distinction between popular and high culture. Such distinction will be further elaborated. Second, the art as téchnê conserved the art not only in regards to Greek understanding of an art as craftsmanship but also turned this craftsmanship into a new political tool of postmodernism. Self-reflective art function on two different levels – on the one level it is the art as such – an artist is producing an artwork that

function within the rules of the period, conventions and style. However, on the second level, an artwork's production is challenged. The artwork is superimposed on a production of a creation of an artefact. The Modernism and its heritage discuss such production. In the world of immediacy and transparent culture, such gesture can be political. Before this political aspect can be elaborated, one must detect a context in which artist as producer becomes a political agent.

During the eighties, a turn forms the transformation of modernist 'culture of calculation' towards the postmodernist 'culture of simulation' (Turkle 1995, p. 20) brought a new type of immediacy. Postmodern 'transparency' within popular culture aimed at simulation of the realistic model. The interface screen is supposed to conceal the workings of the machine, and to simulate our everyday experience as faithfully as possible (the Macintosh style of interface, in which written orders are replaced by simple mouse-clicking on iconic signs, etc.). At the same time, postmodernism is a period of the emergence of hypermediacy as a common experience. The elaborated example of flight simulators is an exemplar of the contemporary representational strategies. Although aiming at transparent realism, flight simulators end as hypermediated experience because they represent a 'material' reality that is in itself hypermediated. It is an experience of a pure mediatization. Flying means monitoring of the instruments. Thus it is a simulation of already hypermediated experience. As such, in order to be transparent, non-mediated, visual representation of a flight must be hypermediated. Thus, postmodern era as an era of new domination of immediacy would nevertheless be defined as era of the hypermediacy judging by the criteria of the previous periods such as Renaissance.

The distinction between immediacy and hypermediacy in the realm of the popular culture is not only a distinction between transparent and non-transparent representation since both flight simulator and Hamilton's patchwork present an accumulation of the media and depict instruments of contemporary life. The profound difference is to be found in the function of such accumulation. While simulator aims at erasing the medium, and simulating 'natural' experience, Hamilton's work insists on weakening the spectator from the immersion. Thus the differentiation between hypermediacy and immediacy can be defined as the paradigmatic difference between popular – Turkle's culture of the simulation and high art – and heritage of modernistic culture of hypermediacy. Postmodernism, as some argue, is a specific form of everyday thinking that hides the materiality of the media. It is a specific form of everyday thinking that 'makes the very quest for "what lies behind it" irrelevant' (Žižek, 2008, pp. 167–168). However, the art is no so indifferent. While popular culture aims at transparency, fabrication of immediacy of hypermediated experience, high art overthrown in advance such possibility and insists on the non-transparent representation. The artistic strategy that can be described as an 'intentional hypermediacy' must be analysed on specific examples.

Popular Culture vis. High Art. Immediacy vis. Hypermediacy

As popular culture *par excellence*, computer games are a good example of the contemporary tendencies. Computer games are stories run by algorithms. There are different types of algorithms (Danaher, 2015; Danaher, 2016; Knox, 2010). This paper is not deeply engaged in the algorithm studies, thus argumentation that follows can not be fully aware of every technical aspect of the algorithm or algorithmic structure of the game. However, generally speaking, there is concrete aim and the role of the game algorithm.

Although an algorithm is the crucial technical aspect of a computer game, the initial intention of a game design is to hide its technical aspect. In other words, the crucial mechanism is a process of transforming an algorithm into a story. Algorithm becomes visible only when a player is faced with errors, crashing of a system, freezing of an interface, or with a problem of loading a game. Those inconsistencies spoil a pleasure of gaming since player becomes aware of the algorithm that works behind the narrative.

The dialectic of algorithm/story can be found not only on the level of playing the game but also on the level of designing a computer game. Designing of an algorithm is a process of a contextualization of the non-narrative mathematical algorithm. It is a transition or the translating of the human experience (driving a car, shooting an enemy, collecting things, etc.) into a mathematical model. Playing can be seen as a reverse condition – or a re-contextualization. It is a process of transforming a narrative into an algorithm, a process of acting as if the action is in accordance to a story (although the action is actually in accordance with an algorithm).

> Firstly, the algorithm is fabricated in order to produce immediacy and to design the game world as natural. But in order to win the game player must play according to the logic of a machine/algorithm. Ted Friedman describes such dialectics: "The way computer games structures our thought – the way they reorganise perception – is by getting you to internalise the logic of the program. To win, you can't just do whatever you want. You have to figure out what will work within the rules of the game. You must learn to predict the consequences of each move, and anticipate the computer's response. Eventually, your decisions become intuitive, as smooth and rapid-fire as the computer's own machinations." (Friedman, 2002)

The moment this process of contextualization/decontextualization that is usually hidden, becomes visible is the moment when it is obvious that players are not acting on the basis of an understanding the content, but on the basis of the intuitive 'understanding' of an algorithm. The causal relation between the lowering of one parameter and proportionally increasing of the other is a classical example of such acting. It allows children of the early age to use the terminology of the economy in order to elaborate the importance of 'lowering the taxes on the industrial

production if we want to develop the industrial zone' in the *Sim City* (Berlin Johnson, 2005, p. 136). Although children cannot 'understand' the meaning of this relation in the economy, they can understand its functioning, without proper context.

While the strategy of transparent immediacy is more or less immanent for popular computer games, digital art is using precise the opposite strategy, the one of non-transparent hypermediacy. Digital art is developing techniques immanently marked by non-transparent hypermediacy. For example, the work titled the 204_NO_CONTENT presents a graphic folder (2001) in which Croatian artist Darko Fritz reports on server mistakes. Visualizing of the Internet protocols and messages that are returned if something unexpectedly happens aims at a specific artificalization of the protocolar technology that usually remains hidden. Although such artistic gesture functions in a context of a postmodern digital art, its hypermediacy relates it to modernistic practices. As such Fritz's work function as a modern version of Marcel Duchamp's *Fountain*. Both works pinpoint the art as a production. They approach its content on a meta-level that usually remains hidden. Both share what would Brecht called *Verfremdungseffekt*, a distancing or alienating effect that aims at rejecting the transparency of the representation.

The difference between popular culture and high art can be easily seen in an artistic twin genre of the popular computer games – art games. Although it is not a dominant technique – art games uses the hypermediated experiences in order to make an interface visible. Art games question the role of the interface as a mediator between algorithm and narrative. They separate content from a form (algorithmic code), addressing the complexity of an interface design. Hypermediation is essential for those art games that distance the player from an interface by making the interface visible. Franc Cadet's *Sweet Pad* (2004), for example, constructs the highly aggressive game *Quake 3 Arena* in an unusual way. Instead of using the joystick, the player must interact by gently touching the sphere. The interface suppresses the efficient and direct interaction and makes the player distance him/herself from the narrative and the action present on the screen. A similar division between the content of a game and its materiality can be found in art game called *Massage me* (Perner-Wilson/Satomi, 2007), where the player needs to massage his/her partner in order to hit the opponent in game *Tekken*. Shooting an enemy or fighting in a virtual 'face to face' combat is in games like *Sweet Pad* and *Massage me* burdened with unfunctional elements (massaging, touching the sphere), as such those elements function as in a similar manner as *ostranenie.* Russian formalists used the word *ostranenie* in order to explain the element of the materiality present in the art. Shklovsky wrote, 'the purpose of art is to impart the sensation of things as they are perceived and not as they are known. The technique of art is to make objects "unfamiliar", to makes forms difficult, to increase difficulty and length of perception because the process of perception is an aesthetic end in itself and must be prolonged. Art is a way of experiencing the artfulness of an object; the object is not important' (Shklovsky, 2006: 778). Is it not the

description of the art-game techniques which aim at unfamiliarisation of what is usually transparent materiality of a medium. Meta-textual level active in those art games is pointing at the difference between two arbitrary related sphere – acting according to an algorithm and acting according to a story, or in other words between contextualization and decontextualization, dialectics between an algorithm and a narrative.[1]

Distinction immediacy/hypermediacy as a tool of distinguishing high art from popular culture is not limited to a field of computer games and art games. There is a tradition of an art interested in the téchnê, material aspect of the literature. The whole history of the art and literature, From Mallarméa to surrealists, explored the material stratum of the representation. John Barth wrote on 'the literature of exhaustion' (Barth, 1984), etc. Antony Easthope described a similar opposition between popular novels and literature, that dates back to modernist novels. Easthope refers to practice of popular culture as 'a will-to-transparency' (Doane 1988: 71; Easthope, 1991, p. 90), a tendency of hiding the material aspect of the work. Easthope is comparing Joseph Conrad's modernist novel *Heart of darkness* and popular novel *Tarzan of the apes* by Edgar Rice in order to stress the difference between representational strategies. Although both novels share a similar interest and motive (the story in the jungle), the modernist novel is not only a story but also an art of the language which tends to be abstract, complex and connotative. In contrast to such modernistic use of the language, novel on Tarzan aims to be concrete, simple, denotative and literal (Easthope, 1991, p. 87).

The hypertextual literature, a genre that emerged with the proliferation of personal computers during the nineties, stands as another example of the same process. While hypertext literature was mostly described as a classical postmodernist genre, Espen Aarseth provoked the different reading. He insisted that works such as pioneer hypertext Michael Joyce's *Afternoon* rely heavily on classical modernist narrative strategies. *Afternoon*, as well as many other hypertext novels, used the strategies of an aesthetic of a silence, hypermediated experiences and forms. As such it can also be described as a hypermediated genre. That is precisely what N. Katherine Hayles introduced by coining the term 'technotexts'. It aimed to describe literary works of 'material poetics', that 'strengthen, foreground, and thematize the connections between themselves as material artefacts and the imaginative realm of verbal/semiotic signifiers they instantiate' (Hayles, 2002, p. 25). However, if the function of art is to make objects unfamiliar is there a political element in such disclosing of the work of art?

The Politics of Hypermediacy

In the essay 'The author as producer', Walter Benjamin described how the technique can give an 'access to a direct social analysis, and thus a materialist analysis of literary products' (Benjamin, 1970: 2). Téchnê or Benjamin 'technique' empowers the artist to transform the forms and instruments of the artistic

production (1970, p. 3). Technical progress is, therefore, political progress in the process of the invention of an author as producer (1970, p. 5). The question is how today such productivity looks like? Are there authors that consider themselves to be producers? Today indeed exists a demand to master a technology, to be the artist-producer. However, 'the only way to make this production politically useful is to master the competencies in the process of intellectual production' (1970, p. 5). That is surely important for the process of the intellectual production today, but does this demand meets its supply? Demands for grasping the processes of technological production are today present not only among activists but even more in the realm of the relatively conservative epistemologies and artistic productions. The process of producing a scientific work is today engaged with technology. Digital humanities proponents, for example, demand that every scientist in the humanistic discipline grasp the basic technological knowledge, such as computer programming or data mining. However, one must ask what this demand proposes, or, what would be the purpose of grasping such technological knowledge? What would scientist in humanities benefit on focusing on the programming skills. He/she can never become more skilful programmer to meet the market

Benjamin answers from the point of view of the artist, the work of such revolutionary artist would not be to merely develop products, but to work 'with the means of production themselves' (1970, p. 6). In other words, such 'productions must possess, in addition to and even before their characteristics as works, an organizing function' (1979, p. 6). Brecht and his epic theatre, example Benjamin uses, discovered and implemented in the theatre the concept of a montage, common in film and radio, press and photography (1970, p. 6). Montage became a tool of uncovering of the artistic technique, 'interruption of the action' against the public's theatrical illusion (1970, p. 7). What would be today such transformation, and are there fashionable uses of technology such as those existing in Benjamin's time that he dismisses as a 'process too often dictated by fashion into a human act' (1970, p. 7)?

Today the importance of the technological, material stratum of an artwork is often acknowledged. However, cognitive, theoretical and aesthetic phenomena are too often limited to pragmatic fact of newness, progress for the sake of the progress. For example, electronic literature, undoubtedly an influential form of postmodern high culture is indeed interested in self-reflexive investigations. The Electronic Literature Organization defines electronic literature as a 'work with an important *literary aspect* that *takes advantage* of the capabilities and contexts provided by... computer' (Hayles, 2008, p. 3, cursive is mine). Electronic literature is understood as a progressive form of art exactly because of its technological, therefore material aspect. However, if an electronic literature work simply takes the 'advantage' of the key aspect of the new digital media is this material form of an art at all political? It is a difference between working *within* the means of production, as Benjamin describes Brecht's epic theatre and working *with* the

technology. Today, téchnê is indeed welcomed, but too often only in a form of *newness*,[2] and fashionable uses.

Here elaborated examples challenge us to take a more radical view toward the distinction between popular and high culture. Different representational strategies emerge from different political functions of representation. The difference between art object as 'purposive without purpose', in Kantian terms, and popular culture that finds its purpose in a profit, is reinstalled in hypermediacy as specific affinity toward the media material. In that socio-economic context the high art, as Greenberg insisted, can take a role of a subversive action. There can be questioned whether here provided examples of digital art and art games function as political art, but one cannot ignore that they are challenging a technique of an artwork, creating the figure of the author as a producer. Such works are installing the intentional hypermediacy at the centre of an artistic production which can be interpreted as a form of a political art.

Conclusion

We can turn back to the original question proposed at the beginning of this paper. Is there a reason to differentiate popular and high art, if, according to theoreticians of popular culture, authentic and commercial culture merged? Following Benjamin's definitions, we could ask whether blurring of that distinction is an organic process related to the contemporary socio-political context – the conditions of the production of art? Non-transparent games function perfectly within contemporary spectacle of narrations and visualisations that serve to provide a light entertainment for the moment.

On the other hand, a distinction between high and popular is reinstalled in the understanding of media, téchnê or material. The art engaged in the investigations of the materiality of the artefact, potentially function as a revolutionary art. What is revolutionary in hypermediacy of art games and other art objects? Hypermediacy function as a starting point of today's repoliticization of art which focus on the reinvention of the structure and purpose of an art.

Although it seems that digital art is a perfect example of the blurring of a distinction popular/high, those are showing that a relation is more complicated. The goal of understanding new artistic forms such as art games or electronic literature is to disclose tendencies that function 'behind' the art forms. In that way, art games as well as other new media art forms can serve not only to entertain but to educate the user about the structure and function of today's narratives.

NOTES

1. One of the best examples of such intended hypermediacy was Stewart Hogarth's The naked game (2008), (unfortunately lost piece). It was an art game that elaborated the disclosed structure, the mechanism which usually remains hidden. The game reconstructed the primitive version of Pong with exposing the version of a code governing the game and the variables affecting the mechanics of the game. The player could remove lines of code and see the effects in real time. (For example if player decided to remove a line of the code the paddle or a ball would disappear, or a game rhythm distorted, or something similar.)

2. As the crucial problem of elaboration of contemporary phenomenon in the era of late capitalism Žarko Paić describes a specificity of the contemporary state. He criticises postmodern tendency of limiting cognitive-theoretical questions about the character of the society to the pragmatic definition of actuality, or entrepreneurship (Paić, 2011, p. 75). The tendency of pragmatism and limiting cognitive-theoretical questions about the character of the society to pragmatic definition of actuality was, off course, a central question in philosophy of Martin Heidegger. In elaboration of the end of philosophy and the task of thinking, Heidegger addressed the problem of forming the contemporary thought according to a specific model of thinking. Heidegger uses the term Vorstellung, that could be translated as either as 'presentation' or 'representation' (Richardson, 2003, p. 108). Precisely that presentation/representation limits the ways in which world could be contextualised today.

The specific phenomenology of thought is a specific framing of the question that has great consequences on the question itself. (This fact was not only important for Martin Heidegger, it is what later poststructuralist Jacques Derrida offers in a form of his critique of Western thought.) There are reasons to ask whether such representation is specific techno-science model (Heidegger believed that cybernetic is science model according to which all questions are formulated), or framework for the definition of world and art as well provided by capitalist way of production and reproduction of social reality. The conflict present in this definition of electronic literature between market logic and technological progress that can be a factor of change in art is a direct reflection of socio-political conflict in postmodernism as a whole.

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MOVING TOWARDS THE TRIALECTICS OF SPACE, DISABILITY, AND INTERSECTIONALITY: INTERSECTING SPATIALITY AND ARTS-BASED VISUAL METHODOLOGIES

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ABSTRACT. Using empirical research that explores the lived experiences of 16 racial and ethnic minorities with disabilities, this paper argues that the trialectics of space, disability, and intersectionality highlights how institutions of higher education are not neutral or static landscapes, but also draws attention to the significant role visual approaches have in gaining a deeper understanding of the significance of socio-spatiality on campus spaces. Arts-based visual approaches illustrate a multi-dimensional understanding of how spatiality and identities are interconnected. This approach also highlights how arts-based visual methods can facilitate a collaborative and empowering process between researchers and participants, especially when addressing individual and systematic oppression and hegemonies. Therefore, this paper considers the role of arts-based visual methodologies in the production and dissemination of spatial consciousness and spatial justice, especially for marginalized populations in higher education, when considering institutional diversity.

Keywords: spatiality; arts based visual methodologies; disabilities; race and ethnicity; intersectionality; higher education

Introduction

Geographical imagination and spatial justice has never been more momentous (Soja, 2010). As Said (1993: 7) declares, “None of us is beyond geography, none of us is completely free from the struggle over geography.” Yet, the significance of space continues to be underestimated and disconnected in societal and historical processes. Across institutions of higher education, this is particularly evident as institutional diversity disputes continue to surface in a myriad of ways. There is pushback to address and facilitate a culture of diversity and inclusion, especially for the marginalized populations of students, faculty, staff, and administrators. The changes include updating tenure criteria with a requirement that candidates participate in structuring inclusive, diverse, and collaborative environments

(Jaschik, 2016), increasing the number of underrepresented minority faculty and students (Flaherty, 2016; Logue, 2016), implementing diversity training among the staff, adding diversity and inclusion to the university's core values (Logue, 2016), and enacting a separate student government to ensure representation of minority students and their needs (New, 2016). This paper contributes to this current dialogue by discussing the significance of consideration of space and its implications for higher education and institutional diversity.

In educational theory, there is a growing body of significant research that considers the role of architecture and social-spatial dynamics on campuses. The evolution of the built and spatial organization of campuses elucidates the institutions' history, mission, intents, pedagogical ideals, and identity (Calvo-Sotelo, 2001; Edwards, 2000; Neuman, 2003; Temple, 2008). Accordingly to Dayton Reuter, "the campus is not just leftover spaces between buildings. It is, in fact, a series of designed spaces that reflect the value an institution wishes to be known for. It is a culturally dynamic complex landscape setting" (Neuman, 2003: 2). The application of geographical imagination discloses how ideologies, norms, and culture continuously construct citizenship, policies, and access within the trialectics of social, historical, and spatial considerations (Gulson & Symes, 2008; Kenway & Youndell, 2011; Samura, 2010). In particular, with disability and educational spaces, themes of representation (Siebers, 2003; Young, 2008; 2011), segregation (Gabel, Cohen, Kotel, & Pearson, 2013; Young, 2008; 2011), and inclusion (Bodaghi & Zainab, 2013; Dyment & Bell, 2008) emerge; however, further research into the socio-spatial relationship between the physical surroundings and occupiers of higher education is needed (Samura, 2010).

In contrast, a significant body of literature stemming from Marxist geographers emerged during the 1970s to rectify the marginalization of geography and space, in particular, with social theories and their tendencies to privilege social and temporal processes and relations. Focusing solely on the socio-historical processes and relations, Western social theories consider space in the linear context of how social processes shape geography. As Soja (1989; 1996; 2010) notes, there is no deliberation of geography's role in shaping, perpetuating, or maintaining social processes. However, according to Soja (1980; 1989; 2010), the marginalization of geographical structures is unintentional as the dominant positivist hegemony of geography views space as a neutral material backdrop. Nevertheless, the reassertion of geography into the social-historical relationship proposes space "is not an empty void. It is always filled with politics, ideology and other forces shaping our lives and challenging us to engage in struggles over geography" (Soja, 2010: 19). Intersecting social and historical relationships with space, as fluid, historical, contested, and stratified, offers access and alternative approaches to the intricacy of social processes. Thus, as Said (1993: 7) notes, "That struggle is complex and interesting because it is not only about soldiers and cannons but also about ideas, about forms, about images, and imaginings."

Expanding upon the application of the geographical imagination, this article uses empirical research from a study that explores the socio-spatial lived experiences of racial and ethnic minorities with disabilities in higher education (Pearson, 2016). Soja's (1989; 1996; 2010) work on the trialectics of space, social, and historical relationships presents a framework to explore the entwined dialectics between space, disability, and intersectionality. In addressing institutional diversity, citizenship, and access, this article argues that the empirical study's utilization of arts-based methodologies enables access to the nuances of everyday spatiality. In particular, photovoice and photo elicitation illustrates the dynamics of interpretation and perception in the contested construction of their identities and surroundings. Thus, arts-based methodologies are spatial tools to access a deeper understanding and emancipative ownership among the users on campuses, especially with populations who are vulnerable to marginalization, inequity, and segregation.

Spatial Disabled Embodiment in Trialectics

Building upon Henri Lefebvre's and Michel Foucault's theorization of space, Soja (1989; 1996; 2010) instigates the argument for triple dialectics. His argument draws upon numerous critiques. In particular, feminist geographers criticize the absence of difference (race, class, and gender), power, and identity. In response, Soja (1996) expands his argument to include the politics of class, race, and gender by drawing upon multiple works in feminism studies, postcolonial studies, and feminist geography (e.g., bell hooks, Edward Said, Gillian Rose, Gloria Anzaldua, Gayatri Spivak, and Homi K. Bhabha). Nonetheless, in his work, the absence of disability persists.

Alternatively, as the forerunner, the field of Disability Studies demonstrates the importance of engaging with disability theoretically, pedagogically, and empirically (Goodley, 2010). Prior to the 1990s, the fields of rehabilitation, medicine, psychology, special education, and social work define and perpetuate the dominant ideologies of disability as a form of impairment, deviation, or medical condition that needs to be fixed/cured, or a personal tragedy (Barnes, Mercer, & Shakespeare, 1999; Davis, 1995; Goodley, 2010; Johnstone, 2001; Michalko, 2002). In response, disabled activists and scholars counter by stating that disability is a social, structural, and institutional construct (Barnes et al., 1999; Ferguson & Nusbaum, 2012; Oliver, 1996a). Viewing disability as a social construction presents alternative ways of understanding how institutions (e.g., policy, politics, economy, history, education, and culture) wield considerable influence over the meaning and representation of disability (Barnes et al., 1999; Davis, 1995; Gabel, 2005; Johnstone, 2001; Michalko, 2002; Titchkosky, 2006). Shifting away from an individual concept of disability provides the grounds to unite and collectively move towards social structural changes with regard to citizenship rights, equal

opportunities, inclusion, and social justice (Barnes & Mercer, 2010; Finkelstein, 1996; 2002; Johnstone, 2001; Oliver, 1986).

Furthermore, after 1990s, a significant yet marginalized body of literature competes for critical consideration of space and disability. Geographical imagination demonstrates how spaces of disability embody social, cultural, political, historical, economical, and citizenship implications for individuals with disabilities. As a "productive occupant of space" (Lefebvre, 1991: 162), the disabled body is an embodiment of social and cultural ideologies that needs to be spatially contained (Freund, 2001; Gleeson, 1999; Imrie, 1996; 2000). Disability is spatially controlled by the implementation of design apartheid that structures a society where disabled bodies cannot venture beyond the edges of containment (Imrie, 1996; Imrie & Kumar, 1998; Kitchin, 1998; 2000).

The numerous formations of spatial constraints such as absence of a ramp, cracked sidewalks, no visual cues, or inaccessible bathrooms clearly convey how disabled bodies are not welcome (Armstrong, 1999; Blackman et al., 2010; Imrie, 2001; Kitchin, 1998; Kitchin & Law, 2001). Relocating accessible ramps to the back of the building or placing large decorative rocks in front of handicapped parking reinforces the presence of disability as not spatially desirable (Siebers, 2003). In particular, with asylums, as a form of antidote, the built environment has a role in eradicating undesirable characteristics. However, the built environment is not the only form of spatial control, as everyday behavioral cues such as stares, looks, or derogatory language also uphold the hegemonic notions of disability (Butler & Bowbly, 1997; Hall 2005; Hine & Michell, 2001; Vujakovic & Matthews, 1994). Spatializing disability highlights how spaces organize different abilities through policies, building regulations, planning practices, ideologies, and symbolism (Imrie 1996; 2001; Titchkosky, 2011).

Consideration of Intersectionality in Spatiality

In response to the hegemony of materialist and socio-economical-political frameworks in the spaces and disability literature, feminist disabled geographers address the significance of everyday lived experiences, in particular, the intersection of gender and disability. The adaption of an intersectional lens further disrupts the dominant narrative of disability as merely a medical condition that has no implication for social structures (Crooks & Chouinard, 2006; Dyck, 1995; Gleeson, 1999; Hawkesworth, 2001). The negotiation between one's gender and disability identity highlights the fluidity in the two constructs as one engages or redefines their surroundings (Dyck, 1995; Kruse, 2002; 2003; Moss, 1997; Wilton, 1996). The intersections of social differences illustrate how individuals "are already spatially positioned and marked by differences of gender, race, and class" in both public and private spaces (Kruse, 2003: 500). According to Dear, Wilton, Gaber, and Takahaski (1997), understanding how a body occupies a space and how

the landscape constrains or facilitates its occupation reveals how spatial boundaries maintain the stratification of differences.

Through the contributions of the feminist disabled geographers, they illustrate the need for further empirical research on the intersections of social differences from spatial lens. Further considerations of spatiality outside of the field of geography, in this case, in higher education research are needed. According to Soja (1996), the absence of a transdisciplinary approach means one runs the risk of myopia, where one only sees what is right in front of them. In particular with feminist geographers, Soja (1996; 1999) argues that focusing on the spatiality of hegemonic masculine society and patriarchal power limits the boundaries of geographical imagination. Instead, a transdisciplinary approach, which emphasizes pulling together different perspectives rather than fragmentizing knowledge, is the key to structuring a holistic and fluid analysis of a social phenomenon (Soja, 1996). As a means of "capturing" a holistic and fluid understanding, arts-based visual methodologies are needed. Similarly, there is limited empirical research that utilizes arts-based methodologies to explore the spatiality of everyday experiences.

Shifting Towards Diverse Ways of Knowing, Engaging, and Representing

Generally speaking, the research traditions stem from two camps: quantitative and qualitative. Drawing upon a positivist orientation, quantitative research accentuates objectivity, casual relationships, and statistical significance (Leavy, 2009; Oliver, 1992; Sullivan, 2005). This emphasis originates from the positivism contention that there is an objective reality that can be systematically measured and analyzed (Banks, 2008; Paul, Kleinhammer-Tramill, & Fowler, 2009). Alternatively, qualitative research draws upon the paradigms of post-modernism and post-structuralism, which emphasizes lived experiences, different ways of knowing, reflexivity/subjectivity, and co-constructing reality and meaning in research (Cresswell, 2007; Leavy, 2009; Paul, Kleinhammer-Tramill, & Fowler, 2009; Sullivan, 2005). Emerging in the 1990s, arts-based research presents a process of engaging with qualitative research through the practices of the arts (Barone & Eisner, 2012; Leavy, 2009; Osei-Kofi, 2013). As Savin-Baden and Wimpenny (2014: 1) stated: "Arts-related research is defined here as research that uses the arts, in the broadest sense, to explore, understand, and represent human action and experience. It has emerged as a concept and practice from the interaction between art and social science."

Arts-based research utilizes different artistic processes at different stages (e.g., research design, data collection, and/or representation). These artistic processes can include music, ethnodrama, visual arts, collages, drawings, comics, poetry, performance, and documentaries (Barone & Eisner, 2012; Leavy, 2009; McNiff, 2008; Savin-Baden & Wimpenny, 2014). As Leavy (2009: 12) states, "Arts-based practices are particularly useful for research projects that aim to describe, explore, or discover. Furthermore, these methods are generally attentive to processes."

The emphasis on the process implies a sense of moral commitment as arts-based research is not only about challenging the status quo, but also about being open and mindful to different ways of knowing and engagement (Leavy, 2009, Osei-Kofi, 2013; Savin-Baden & Wimpenny, 2014). "Arts-related research recognized there was no monopoly on ways to inquire. Arts-related research recognized what counted as knowledge depended on perspective, time, interest, and forms of representation" (Savin-Baden & Wimpenny, 2014: 19). Furthermore, drawing upon arts-based practices enables accessibility for the researcher and the audience to the voices and lived experiences through multiple dimensions: textual, oral, and visual (Barone & Eisner, 2012; Chappell & Cahnmann-Taylor, 2013; Eisner, 2008; Leavy, 2009; Osei-Kofi, 2013; Pinar, 2004). Arts-based research is not only about challenging and transforming social structures, but also about finding ways for the audience to understand and relate to the different ways of knowing and engaging (Savin-Baden & Wimpenny, 2014). Therefore, research can be an act of collaborative and transformative resistance (Osei-Kofi, 2013).

The authentic and transformative ideologies behind arts-based research correspond with emancipatory disability approach to conducting research with the disability population. Presently, research continues to be contested since individuals with disabilities are treated as objects of research rather than as individuals, which contributes to the marginalization of their lived experiences and the absence of their voices. Furthermore, the research contributions benefit the researcher's agendas rather than policy, citizenship, and inclusive changes for individuals with disabilities (Barnes & Mercer, 2010; Johnstone, 2001; Morris 1992). In response, emancipatory disability research contends that disability research must be a collaborative matter between researchers and individuals with disabilities while addressing oppression, citizenship rights, in/accessibility, and inclusion (Manning, 2009; Oliver, 1992). Therefore, research must be *with* rather than *on* those with disabilities (Oliver, 1992), as this fosters empowerment, liberation, and ownership in the narratives of those with disabilities (Morris, 1992; Oliver, 1992; Ripat & Woodgate, 2011).

As a means of disrupting the long history of objectifying those with disabilities, arts-based research presents alternative ways of accessing the stories in a collaborative manner that allows the participants greater control over how they approach and present their experiences. Furthermore, utilizing multiple formats (e.g., textual, oral, and visual) enables greater accessibility as the participants share their lived experiences with themselves, the researcher, and the audiences. In this context, accessibility is not solely about an audience being able to read or see the work, but they, themselves, are able to understand and relate to the lived experiences (Savin-Baden & Wimpenny, 2014). This is a critical point due to the dominant hegemonic climate around disability as an individualized, medicalized, and pathological condition. Utilizing multiple formats increases the chance of the audience understanding the significance of approaching disability as a political,

historical, cultural, economical, and social construct when considering social justice and social change.

The Potential of Visual Approaches' Role in Spatial Justice

The "voices" of racial and ethnic minorities with disabilities encapsulate the potential of arts-based methodologies in facilitating social-spatial justice in higher education.

This study is part of a broader study on racial and ethnic minorities with disabilities, and how they negotiate identities and spaces in higher education (Pearson, 2016). In this paper, I employ photovoice and photo elicitation, an arts-based visual methodology. This process is discussed thoroughly in another manuscript (Pearson, 2016). Briefly, through images and verbal expression, 16 students share their experiences on campus. Using arts-based visual methodologies, in particular, photo voice and photo elicitation, not only enables the students to construct their realities (Clark-Ibanez, 2007; Harper, 2002; Johnson, 2008; Lapenta, 2011; Mitchell, 2011), but also to share their observations about the social-spatial dynamics between identities and space(s). While the camera is a method of capturing images that preserve a static moment, the dialogue around the images is pivotal as it presents access to one's biography, worldview, biases, intentions, and interpretations (Banks, 1998; Collier & Collier, 1986; Harper, 2002; Margolis, 1990; Mitchell, 2011; Pink, 2013; Weber, 2008).

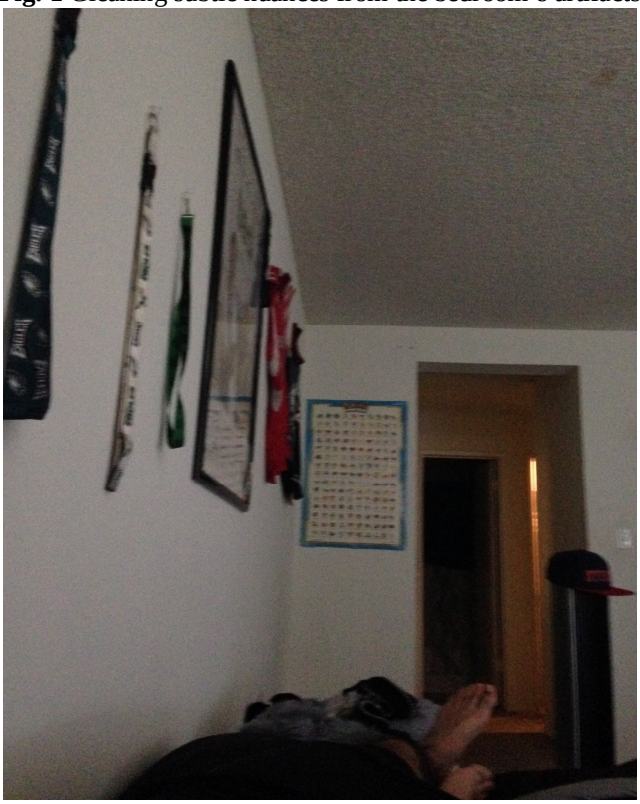
The hybridism of image and dialogue offers a rich analysis into the significance of socio-spatiality in higher education, in particular, among marginalized populations. However, grasping the significance of the dynamics between space(s) and identities necessitates methodologies that embody holistic, complex, and integrated approaches (Barone & Eisner, 2012; Leavy, 2009). Arts-based methodologies reflect how methods are not neutral, but rather, tools to carve out alternative worldviews (Leavy, 2009; Osei-Kofi, 2013). This raises the question of the role of arts-based methodologies, in particular, visual approaches in addressing social-spatial justice. Interweaving the narratives, the students share how the socio-spatial relationship of self and campus spaces influence their experiences and perceptions of self; thus, offering a multi-dimensional understanding of institutions of higher education. The institutions, offices, and individual names are exchanged with pseudonyms to ensure confidentiality. As mentioned previously, this study is part of a broader study (Pearson, 2016); therefore, not all of the lived experiences are represented. To access the diversity among the individuals, their lived experiences are available in another manuscript (Pearson, 2016).

Nuances of Spatiality

As a catalyst for facilitating institutional diversity, arts-based methodologies provide an intimate insight into who the users are on campus. Together, through

visual and oral forms of expression, an image transitions from a static 2D record to a fluid 3D narrative of the negotiation of perception and interpretation in everyday spaces (Collier & Collier, 1986). Showing an image of his bedroom, Troy notes his bedroom is a calming place where he can relax and be in the moment. From the head of the bed to the left along the white wall there are three hanging lanyards, a framed poster, and two jerseys. On the wall that is closest to the foot of the bed, there is another poster with various characters. To the right of that poster is the doorframe.

Fig. 1 Gleaning subtle nuances from the bedroom's artifacts



Upon inquiring about the artifacts, Troy explains the background behind the various relics.

> "I've started collecting lanyards lately… I have a lot more at my house. This poster right here is actually a signed poster by Mark Wahlberg. Me and my roommate… We're extras in the movie, so we're hoping that we can see [it] when it comes out. If we can pause it on one spot, and be like, 'There we are, right there.' We'll be so happy. Our lives will be made. There was a drawing, and they pulled my ticket, so I won that. I thought that was kind of cool. Those two jerseys, one's a Miami Heat jersey, the one's a Houston Rockets jersey. Those are two of my favorite players,

> One's Shaquille O'Neal, and one is Tracy McGrady… When I started playing basketball as a kid, I really got into basketball. When we went to the store one time, and my dad's like, 'You want a jersey, or something like that?' They were buy one, get one half off… I got those two, because those are two of my favorite players. They kind of inspired me for basketball. Kept me going on that ramp for a while. Straight ahead, on that wall right there, that's actually a poster I've had for a long time. That's a Pokémon poster. It's the first series of Pokémon, one through one fifty... I don't know, me and my brother really got into Pokémon when we were kids. Our parents, now that we're older, they'll tell us, 'Yeah, we hated it. It was so annoying.' It was so cool, though. We still think that. It's still pretty cool, it's just the original. It's just something nice that I like to have, just fun… Things that kind of share something in an aspect of my life, I guess."

Revisiting the artifacts build a webbing of temporal moments that leads to a deeper understanding into the intrinsic nuances of his background that shape who he is today. This reflects the significant insight that spatial intimacy, usually inaccessible, has to offer when considering the diversity among the users of the campus.

The ordinariness of everyday mundane actions also reveals insights that are often taken for granted or not considered in the first place. As he illustrates his gender identity, Win captures an image of him in the act of walking. There is a black shoe in the bottom right corner. The ground appeared to be of a grey stone quality with two yellow vertical parallel stripes.

Fig. 2 Defining oneself through everyday mundane acts

For him, his day to day routine consists of traveling from one location to the next, whether it is to and from class, internships, dorm, library, or cafeteria. Walking is when Win thinks about his gender. He views walking as being proactive, to be independent.

> "Walking around, doing everything… on my own. It really means a lot to me because my parents never really did anything for me. They gave me up when I was 2 years old, so I feel like I've been always walking this road, this hard road where it's never been really easy. It makes me into a stronger individual… I consider myself a man because I had to become independent, worked hard, and nobody really taught me to do that. I had to learn on my own."

Using the act of walking as a metaphor to symbolize what it means to be an independent man enables a powerful visual and emotional understanding of how an accumulation of moments contributed to his present self-perception. Together, images and dialogue illuminate how they can broaden our understanding of the students' everyday lives.

A Dance between Identities and Spaces

Visual and oral narratives illustrate how built and social structures influence their everyday experiences on campus, and in turn, how they construct the meanings of those particular spaces. When considering in/accessibility, Wanda expresses frustration due to being unable to access her department. An image of a concrete staircase leading up to the front entrance embodies her exasperation. "This! This bugs the hell out of me. These stupid stairs. I feel like I'm paying enough in tuition that they should have an elevator. It's too expensive for me to be going here and not have access."

Fig. 3 Inaccessibility translating into everyday mundane saliency

While it is important to draw attention to incidents of inaccessibility, the socio-spatial lens reveals how entwined our experiences are with our surroundings. For Wanda, inaccessibility is a contributing factor in the saliency of her disability, not occasionally, but on a continuous basis. “It’s such a significant disability that everything I try to do, I have to think about ways of accommodating my disability. Even if I lie down with a book at night and read in my spare time, I have to think about accessibility issues.”

While considering the built surrounding’s influences on everyday experiences, it is as important to caution against assuming a linear relationship as it is important to consider that the students are agents themselves. As a change agent, Wanda approached the institution’s president about the inaccessibility issues. However, the exchange did not go favorably for Wanda. “The president blew me off. The president was on his way to a meeting and I stopped him and he just said, ‘Well there’s plans to build an elevator in a couple of years.’ He just blew me off and went to his meeting.” The unfavorable interactions and physical inaccessibility result in Wanda locating alternative locations of comfort and accessibility as an act of spatial resistance.

The notion of in/accessibility does not reside solely with physical contestation as tension manifests emotionally, symbolically, socially, and psychologically. In particular with her biracial identity, the Diversity Office is a location of tension for Hilda. In this space, Hilda becomes hyperaware of the contrast between how she perceives herself and how others perceive her. “It’s not a bad thing. I just become very aware of how I look and how I am defined racially, because race as a social construct is how people see you versus how I define myself. It's always going to be white when they see me and Mexican if you ask me.”

While the Diversity Office is a designated space for marginalized groups, she does not feel welcome in this space due to others perceiving her as not being Mexican because of her outer appearance. “[W]hen I come here or when I leave my town, I’m white because white is what you see. I feel like it’d be awkward if I tried to join one of the Hispanic clubs there because I don’t look like I belong there… I don’t want to have to deal with that so I just don’t go.”

Therefore, in Hilda’s case, the Diversity Office makes her hyperaware of her biracial identity. Similar to Wanda, Hilda’s response is to relocate to spaces of acceptance.

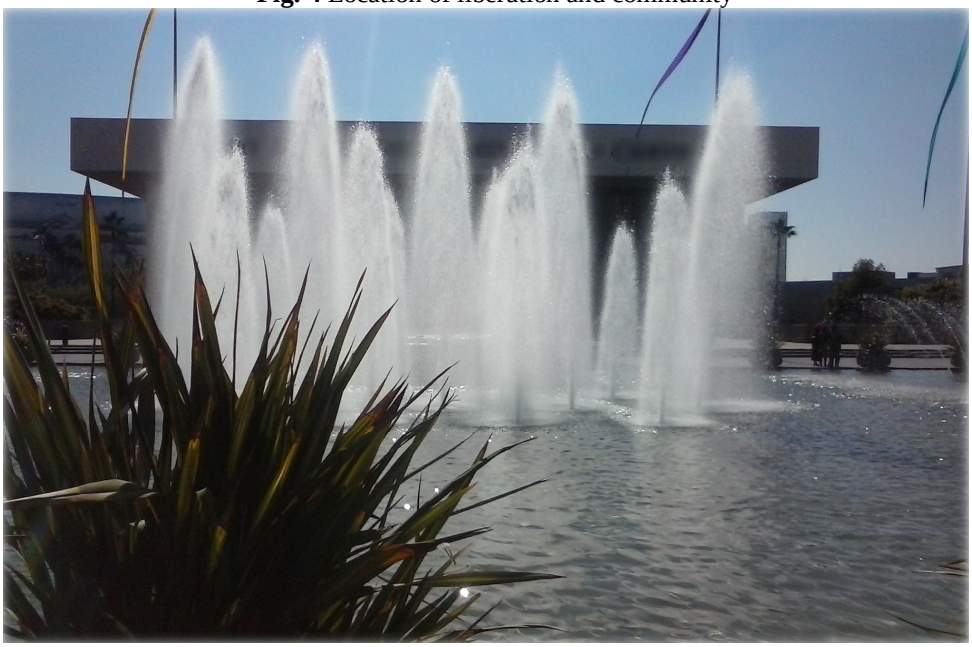
In locations of acceptance, certain identities no longer appear to be pressing. Among his former foster youth peers, Win notes both his race and disability do not matter.

> “I feel like in that community, it doesn’t matter for me. With them, I’m able to think about my disability identity and my racial identity but it doesn’t really matter to us…. There’s a certain amount of understanding that we have for each other because it’s like he’s a white kid but he didn't have parents or that kid was Asian but he didn’t have parents. That kid was black, [and] he didn’t have parents. That’s the main thing that makes

> us very similar is that we all know that we didn't have parents, and that's what makes us bond."

There is this shared sense of camaraderie of "Hey, man, we made it. We didn't end up in prison for the rest of our lives. We didn't end up dead. We didn't up at some weird street, poor for the rest of our lives. We're in college." Rather than capturing an image that represents an identity, Win uses an image of a tall concrete building behind a large fountain that has multiple water spots shooting up in the air to convey his emotions.

Fig. 4 Location of liberation and community



The lightness of the image along with the water shooting in the air presents a symbolic emotional sense of triumph and accomplishment that Win experiences as a former foster youth that managed to overcome all odds to attend and succeed in college.

While spatial organization is a critical factor, artifacts within those layouts also spin webs of connection such as a sports team jersey. In a testing center, there is a staff member who shares passion for the same sports team as Lizzy. Whenever she sees the individual wear the sports team jersey, Lizzy psychologically returns home. "It made me feel like home, although it's not home, it's like a home away from home." Therefore, the jersey not only represents a common interest, but also symbolizes home. "That reminds me [of] home, reminds me of Boston, reminds me of that feeling… smell of New England and of Boston baked beans, the Green Monster, and Fenway Park. When you can just go back in time and remember what makes you feel alive, those are the things that you want to remember. It's good to

remember the things that make you happy, that make you feel good, that make you feel alive in life."

The webbing of built structures, social spaces, symbolic spaces, and representation demonstrates how these students are not merely disabled individuals. Instead, they are multidimensional individuals who come from all walks of life. Utilizing the socio-spatial lens offers a more holistic, intersectional, and fluid understanding of the interexchange of their identities, meaning, and surroundings.

Symbolism of Institutional Ideologies

While a micro understanding enables access into the nuances of the everyday experiences, macro level examinations reflect the importance of considering the spatial organization of the campus to gain insights into the ideologies and mission of the institution. When discussing where she frequently visits, Rachael shares how spatial layout of the campus reveals discourses of institutional diversity. In her day-to-day activities, Rachael may visit the following facilities: the Office of International Students, Disability Services, the Religious and Spiritual Center, and the Center of Holocaust. Each office is housed in a different location. The Religious and Spiritual Center and the Center of Holocaust are located on campus, while the Office of International Students and Disability Services are located off campus in separate locations. As multi-dimensional individuals, the question arises: what are implications of having these identity markers segregated across campus? Furthermore, what kinds of messages are being conveyed to the students in regards to identity, diversity, and intersectionality?

At another institution, this segregation persists. At University of Luminton, there appears to be a central part of campus for students' academic, work, and social needs. In an image of a walkway that is covered with various posters (e.g., Red Cross Club, an online course, and Bringing Liberty to North Korea), Hilda comments this particular area is useful for advertising identity related topics, as this is a high-volume traffic area.

Fig. 5 Where identities matter the most

As one is walking across the walkway, there is a "natural" slope towards the central area where the coffee shop, bookstore, bank, and food court are located. In this area, there is a Diversity Office, a Counseling Office, and an Academic Service Office. However, the Disability Service Office is located on the opposite side of campus- on the opposite side of campus, where, according to Hilda, students do not socialize or work due to the absence of collaboration spaces and places to obtain food and drinks. The displacement of the Disability Service Office underlines the embedded hidden curriculum about disability and diversity that needs to be critically reexamined.

As the students are multi-layered individuals, the institutions also include a diverse array of spaces and pathways. This raises the question: how do the diversity of spaces and pathways impact everyday experiences? When considering everyday routes, Noah views the campus as a layered sense of "You're always isolated, you're going different routes, [and] you're doing your own thing." To access a classroom, he uses a different entrance from his able-bodied peers, which serves as a constant reminder that his route is different and isolating. "You take this entrance, and then you go to the top. Then you have to take the ramp or you take the same elevator, go to the elevator, and you go up to the top. I've never found this elevator, but this door is always unlocked, if the door is locked, [then] go into the other building, [and] up the elevator, [to the] 2nd floor."

Not only are the pathways not clear, but also they are not welcoming either as seen in the image of a dimly lit concrete hallway.

Fig. 6 The implications of uninvited detouring

He remarks that he feels the accessible entrance conveys a sense of afterthought towards those with disabilities. While the accessible entrances attempt to be discreet, an accessible desk is another story. “At UOL[classes] for some reason they always put these big, ugly desks that sets you apart from everybody, and you feel like a red M&Ms in a bowl of green M&Ms, you’re like sticking out.” Noah shares a picture of the classroom where a single stand-alone giant desk stands out in comparison to the rows of small desks.

Fig. 7 The marker of difference

In this case, the location did not matter as much as the absurd size of the desk as a symbolic marker of being different. Noah also has to detour if he wishes to access other parts of the campus. The campus's natural terrain involves a progress of hills, which means accessing other parts of campus involves using his car to access other side of campus. Thus, for him, the campus consists of layered pockets of isolation, "Throughout the years you go and you're separated, you're alone most of the time because you have to go through th[ese] little things." This raises the impact of these daily occurrences not only from an individual point of view, but how the institutions' ideologies and missions manifest physically, socially, symbolically, psychologically, and emotionally.

Returning to the Trialectics of Space, Disability and Intersectionality

Multiple fields (e.g., critical spatial studies, humanistic geography, environmental psychology, and architectural theory) have significantly contributed to the body of literature that reexamines and problematizes the notion of space as a contested and fluid social construct. As Titchkosky (2011: 92) noted, "Structures are neither static nor accidental but are, instead, social activities; they carry messages about collective conceptions of people and places, conceptions which themselves come into existence through such social structures and activities." For instance, if the design of a room has limited natural light entering into the space, one might interpret the room as feeling enclosed or claustrophobic. This reflects how space is never neutral, as the physical, social, and symbolic qualities of a location influence how one interprets the surroundings and how one creates the meaning of a place through the description of how one perceives the area (Creswell, 2004; Hornecker, 2005; Keith & Pile, 1993; Soja, 1989).

Building upon the theoretical interpretation of space as contested, fluid, historic, and stratified, scholars have considered the socio-spatial dynamic in different contexts (e.g., critical studies, postcolonial studies, and feminism) (Heynen & Wright, 2012; Hosagrahar, 2012; Rendell, 2012; Rothschild & Rosner, 1999; Sewell, 2011). Across these contexts, scholars have considered how power and social differences manifest and are reinforced within the built, social, and symbolic spaces (Heynen & Wright, 2012; Kusno, 2012). As noted previously, further engagement with disability is needed; therefore, in response, multiple scholars (e.g., Boys, 2014; Golledge, 1990; 1991; Gleeson, 1996; Hahn, 1986; Imrie, 1996; 2000) have theorized and presented empirical insights about how social and physical barriers disable individuals, and how spaces construct and perpetuate hegemonic notions about disability from different considerations (e.g., accessibility planning, public transportation, mobility, employment, housing, and education, mapping and navigation, asylum, medical, and mental health institutions, and everyday socio-spatial experiences) (Gleeson, 1996; Hall & Kearns, 2001; Kitchin, 2000; Vujakovic & Matthews, 1994).

Understanding how spaces exclude individuals with disabilities, both intentionally and unintentionally, through the containment of disability to certain locations (e.g., nursing homes, institutions, asylums, or the placement of an accessible ramp in the back of a building) convey insights about the dominant hegemonies of disability as something undesirable, pathological, or medical. As Siebers (2003: 201) notes, "The built environment maintains a spatial caste system at the expense of people with disabilities. This caste system not only targets individual disabled bodies for exclusion but also rejects any form of appearance that symbolizes disability." Encountering layered and daily incidents of inaccessibility, whether it is the absence of braille markers, curb cuts, or closed captions, usage of fluorescents lights, inability to enter into a facility, or encountering stares, looks, and derogatory language conveys ongoing strong verbal and nonverbal messages towards individuals with disabilities that not only is this society not built for them, but they are unwelcomed second-class citizens (Blackman et al., 2010; Imrie, 2001; Kitchen & Law, 2001; Sibley, 1995; Vujakovic & Matthews, 1994). Their engagement with hostile and inaccessible spaces reflects how the built environment is a social and cultural construct.

While this research provides much needed theoretical and empirical research on the socio-spatiality of disability, the context is situated around physical and sensory disabilities. To rectify this, scholars explore the everyday processes of negotiating disability, particularly with invisible or not readily apparent disabilities (e.g., HIV, intellectual disabilities, mental illness, rheumatoid arthritis, multiple sclerosis, and fibromyalgia) to bring in alternative perspectives. Similarly, disabled feminist geographers highlight the dearth of research that utilize an intersectionality lens when considering the experiences of individuals with disabilities due to the recognition that these people are not merely disabled, but are also gendered, racial, and sexual beings (Crooks & Chouinard, 2006; Dyck, 1995; Hawkesworth, 2001). As Kruse (2003) notes, bodies are already spatially situated in public and private places according to social differences. Utilizing a socio-spatial lens not only offers insights into how spaces influence the meaning of disability, but also provides access to a deeper understanding of the contrasting roles and cultural norms that are negotiated based on the embodiment of multiple identities (Chouinard, 1999; Dyck, 1995; Kruse, 2003).

Building upon the work of disabled feminist geographers, this study focuses on how individuals with disabilities negotiate their identities and spaces on campus, and how identities and spaces influence, perpetuate, and uphold each other's meanings from an intersectional socio-spatial lens. Similarly, the students demonstrate they are not merely individuals with disabilities, but instead they embody multiple identities (e.g., multiethnic, female, mom, athlete, brother, sister, heterosexual, pessimistic, ADHD, local, or foreigner). They illustrate the diversity within disability experience as their identities intersect or interexchange with one another. Therefore, disability identity is not easily isolated, as its meaning is

greatly influenced by other embodied social differences (e.g., race, class, gender, sexuality) and space(s).

Furthermore, as reflected in previous research, entwining intersectionality and the socio-spatial lens reflects how the dynamic between identities and spatiality is not a predetermined linear process but instead is in constant flux (Dyck, 1995; Hawkesworth, 2001). In this study, the students illustrate how institutions consist of a multitude of spaces, with the meanings of each of those spaces in flux due to the diverse array of users on campus. Together, the socio-spatial dynamic between disability, intersectionality, and spaces acknowledges the urgency for further transdisciplinary approaches, especially when addressing institutional diversity, accessibility, inclusion, and socio-spatial justice. When considering the needs of racial and ethnic minorities with disabilities, theoretically and empirically, institutions of higher education need to adapt approaches that draw upon diverse perspectives to gain a more holistic, layered, and fluid understanding in order expand their geographical imagination and move towards a more social and spatial justice orientation across campuses.

Through their worldviews, the students illuminate the significance and power of arts-based visual research in advancing geographical imagination, spatial consciousness, and socio-spatial justice, in higher education in particular. According to Soja (2010), developing a spatial consciousness is vital in moving towards democratic spatial justice and action. Broadening spatial consciousness includes considering how arts-based visual methodologies can bring attention to the presence and significance of spatiality in our everyday lives. Arts-based visual approaches highlight the symbolic interactional process and how meaning is constructed and influenced by temporal, spatial, and cultural contexts (Banks, 2008; Leavy, 2009; Mitchell, 2011; Pink 2013). As Lawrence-Lightfoot and Davis (1997: xv) note, entwining "the boundaries of aesthetics and empiricism enabled a means to capture the complexity, dynamics and subtlety of human experience and organizational life." Intersecting arts-based visual research and geographical imagination displays the experiential dynamics of spatiality through our senses (e.g., sight, hearing, smell, taste, and touch) (Bachelard, 1994; Pallasmaa, 2005; 2006; 2012; Zumthor, 2006; 2010).

While arts-based visual methodologies present a means of developing a critical spatial consciousness, there is a need to ensure individuals are part of the process rather than being objectified. Emancipatory disability research contests the oppressive nature of research, particularly with the disability population. To disrupt the long history of conducting research *on* individuals with disabilities, scholars contend research needs to be a collaborative and empowering relationship between researchers and individuals with disabilities while challenging philosophical and structural oppressions (Barnes & Mercer, 2010; Oliver, 1992).

In this arts-based visual research study, photovoice and photo elicitation are particularly beneficial as the students are able to present a fluid, complex, layered, and holistic understanding of themselves and their social realities. These two arts-

based visual approaches also enable the students to capture and share their images, allowing them to be part of the process of constructing their stories. To move towards spatial justice, there is an ethical responsibility to ensure *"accessibility"* or to structure spaces where marginalized populations have active roles in the research process. Accessibility also indicates respect for different ways of knowing and engaging, hence, structuring spaces that not only respect but also adapt according to how the participants come to understand self and society, and how they convey their experiences whether through textual, visual, oral, or alternative means.

While this study offers intricate socio-spatial insights into the narratives of 16 students who are currently pursuing their educational aspirations, their lived experiences are not and were never intended to be representative of all marginalized populations, especially for those who identify as racial and ethnic minorities with disabilities. And while the findings cannot be *generalized* due to the small sample size of 16 students and 3 institutions, this research is not only a qualitative study, but an arts-based visual study. In the process of seeking out and representing a myriad of narratives, qualitative research emphasizes that the research process must be credible and rigorous (Cresswell, 2007; Harrison, MacGibbon, & Morton, 2001; Moss, 2004; Rossman & Rallis, 2012). Rigorous research involves intersecting multiple factors (e.g., multiple methods, conceptual framework, triangulation, prolonged engagement, member checks, peer debriefing, and community of practice) (Cresswell. 2007; Ferguson & Ferguson, 2000; Harrison, MacGibbon, & Morton, 2001; Moss, 2004). Credibility stems from rigor and the audiences' confidence in a project's integrity (Rossman & Rallis, 2012).

Arts-based research also embodies similar criteria of credibility and trustworthiness (Barone & Eisner, 2012). Speaking generally, credibility and trustworthiness stem from arts-based research that is able to highlight and integrate key points of research while offering an alternative lens in an accessible manner, where the audience can identify and relate to the phenomena (Barone & Eisner, 2012; Eisner, 2008; Leavy 2009; McNiff, 2008). This approach also emphasizes a flexible framework that allows different forms of engagement and to disrupt what constitutes research (Ferguson & Ferguson, 2000; Harrison, MacGibbon, & Morton, 2001). However, in arts-based research, there is a greater emphasis on authenticity, where "the work and research must be intertwined and mutually shaping so there is a sense of integrity about the art and the research" (Savin-Baden & Wimpenny, 2014, 2); therefore, consistency and trustworthiness are defined by the dynamic between research and art during the process.

For this socio-spatial study, the hybridism between textual, visual, and oral allows a layered understanding of the world of 16 students who identify as racial and ethnic minorities with disabilities. Utilizing a mix of multiple medias (e.g., interviews, poetry, drawings, and photographs) presents a multi-dimensional understanding of the spatiality of diversity on higher education campuses. As the students illustrate the problematic realities of being reduced to a singular identity,

the socio-spatial dynamic between identities and spaces, and the embedded ideologies within higher education spaces became evident through the layered processes of textual, visual, and oral means. Together, the different mediums allow for access to these subtle nuances on an everyday scale and on an institutional level.

Furthermore, using a hybrid approach allows the researcher a deeper, layered understanding of the students' worldviews in comparison to a singular format such as analyzing photographs in isolation or using photographs taken by the researcher to facilitate an interview process with the participants. By having them write, capture, and discuss their own images, they not only share their own experiences but are able to also reflect upon and add more to the "*portrait*" of their world. Similarly, by constructing found poetry from the interview transcripts, the researcher gains a fluid understanding of how the participants' identities are entwined and their meaning. Together, arts and research, particularly with this marginalized population, presents grounds for further research considerations including the need to examine the significance of spatiality in higher education, especially when considering and addressing institutional diversity. Furthermore, arts-based visual approaches can play a role in not only generating understanding but moving towards policy and institutional changes, and alternative ways of including, engaging, and representing disability, space, and intersectionality.

Further Directions

Through the framework of arts-based approaches, the trialectics of space, disability, and intersectionality present an unfinished framework of socio-spatial narratives of racial and ethnic minorities with disabilities in higher education. Through their narratives, the participants illustrate the diversity within their backgrounds as they negotiate everyday experiences as a person with ADD, dyslexia, and learning disabilities, a son, a veteran, a former foster youth, a mother, an international student, and/or as biracial. Essentially, they reflect how disability is heterogeneous as individuals come from all different walks of life. As they enter into the domain of higher education, they demonstrate that they cannot be reduced to one construct (e.g., disability, race, gender, sexuality, class, etc.). This is evident as they share how they continuously navigate and negotiate their multiple identities in myriad everyday campus spaces.

Together, through a hybrid of images, text, and oral expression, they illustrate how the landscape of higher education is not a backdrop. Instead, higher education embodies a multitude of built, social, and symbolic spaces whose meanings are in a constant state of flux and contestation by its users (e.g., students, professors, staff, administrators, and board of trustees). The students reflect how the most ordinary spaces (e.g., gym, study room, classroom, open space, parking garage, and etc.) can impact and be impacted by their users. Hand in hand, geographical imagination, through the lens of arts-based approaches, demonstrates how space, geography, and

the individual impact one another on both a micro and macro level. Developing a spatial consciousness enables us to not only broaden and extend our understanding, but also to grasp the complexity within the socio-spatial dynamic (Soja, 2010). To ignore or construct space as fixed, external, or neutral is to place a rein around our imaginations and movement towards more holistic and complex forms of justice (Soja, 2010).

Broadening and deepening our spatial imagination reflects a need for ongoing transdisciplinary theoretical and empirical engagement. In the context of addressing institutional diversity in higher education, there is a need for greater collaboration with not only the marginalized populations, but also with the additional users (e.g., faculty, staff, administrators, and board of trustees) and all spaces (e.g., physical, social, symbolic, and digital). This is critical as campuses consist of multiple layers of independent yet interconnected components that construct the meaning of the institution itself. Lastly, as a transdisciplinary approach is a crucial component in moving toward holistic and complex forms of justice(s), similarly there is a need to consider and to experiment with different ways of interacting and acknowledging different forms of knowledge and engagement, especially in the context of spatiality and institutional diversity in higher education.

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VISUAL DIMENSIONS OF PROTEST: THREE EXAMPLES FROM THE BALKANS

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ABSTRACT. This paper proposes a framework for understanding the visual cultures of protest beyond representative images. Through a performative reading the visual takes on a dynamic role, ultimately producing a variation of the reality that protesters are demanding. Through three examples from Slovenia, Greece and Serbia, the paper examines different dimensions of visual culture of protest. In Ljubljana the how and why of a protest of fans against their own club is examined. In Athens, we look at why activists insist on traditional poster making methods in the digital era, and how these posters then function in the city neighbourhood of Exarcheia. In Belgrade, we look at the uses of video production and distribution by feminist activists Women in Black (Žene u Crnom). Atmosphere, political posters and video activism from the three examples, through which we argue visuals connect the locally specific struggles to a global context, and creating a socially oriented, richer picture of the region without getting entangled in nationalist narratives. Each case also elaborates how and why protest was visualized adapting cultural signifiers and established protest forms to produce the performative reality they are seeking.

Keywords: protest; visual protest repertoires; performativity; posters; atmosphere; video activism

Introduction

Over the past few decades, visual cultural studies have rarely been discussed, challenged, or reworked in social movement scholarship. Only lately have visual methods started to gain attention by researchers interested in social movements and public protest (Philipps, 2012; Doerr, Mattoni, & Teune, 2013). As a result of the acknowledged paradigm shift that pays more attention to cultural approaches to social movements and focuses more on micro-level processes such as emotions and identity, visuals in protest movements are only now beginning to be understood.

Yet movements have always visualized. Through the visual they challenge official discourses and channels of communication by publicly presenting the alternatives. Research has tended to draw on these artefacts primarily as illustrations and representations. Movement-generated visuals may function more generally as expressive devices in the formation of group identity, community or subcultural solidarity. However, academic scholarship has only rarely relied on visual artefacts to examine the social movement's agency. The overemphasis on textual data points to the absence of a universally accepted methodological framework of analysis along with the increased difficulty in data collection. In addition, there is a universal textual bias that social sciences are a 'discipline of words' (Mead, 1995).

In this paper we seek to contribute to the ongoing inquiry and growing body of literature regarding the various ways visual elements interact with social movements by addressing this empirical and conceptual lacuna, focusing our attention on the Balkans. Here we are researching three distinct protests, football fans in Ljubljana, feminist video activists in Belgrade, and left-wing political posters in Athens. These developed out of our own personal connections to the region, and we frame these within what we call Visual Protest Repertoires, a concept that allows us to focus on the process and artefacts that produce the visual, as well as its performative nature.

The Balkans consists of an area with a highly contentious history, which is at the same time deeply embedded in global historical developments. It is locally specific, but also influenced by Europeanization, and global geopolitical struggles (see, for example, Todorova, 2009; Bjelić and Savić, 2005). The application of visual analysing techniques in relation to the regional struggles raises many avenues of research, yet, it has only scarcely been used for this purpose (e.g. Šuber and Karamanić, 2012; Kaser, 2013) and so far has been limited to a colonial imaginary. Here we employ a descriptive and interpretative framework for analysing visual protest materials through three different case-studies, namely general atmosphere, protest posters and activists' videos. There is thus a dual purpose to this article: First, how are visuals used and deployed in different contexts, and second, what kind of intentions do actors have when producing them. In what follows we present small-scale descriptions of how visuals have been one of the elements in thinking about protest.

Visual Studies and Social Movements

Following the "pictorial" or "iconic" turn (Boehm and Mitchell, 2009) in social sciences, visual studies has established itself as a distinct discipline in the last decades, and acquired significant reputation with its respectable journals, textbooks and university programs. However, only in the last years have scholars working on social movements started to pay attention to visual studies (e.g. Doerr, 2010; Doerr and Teune, 2012; Phillips, 2012). The reason for this reluctance is that academia in general remains highly sceptical about the usage of visual data, and that social movements are considered entities which produce claims against an opponent (e.g. the state) and that therefore their visual appearance is considered of secondary importance. It is perhaps surprising how little has been written about the visual aspect of social movements when the actions of social movements, especially their demonstrations are a highly visible act. Demonstrations, as Tilly argues, "illustrate the synthesis of campaigns, performances and WUNC (worthiness, unity, numbers and commitment) displays. They combine local symbols, practices, issues and personnel with forms of interaction that are visible and meaningful…" (2006: 188).

This passage highlights many visual elements of protest that are often left unexamined. In addition, one of the most known contributions in social movement literature is Tilly's concept of "repertoires of contention". These are defined as "the limited, familiar, historically created arrays of claim-making performances that under most circumstances greatly circumscribe the means by which people engage in contentious politics" (vii).

The concept of a repertoire captures the subset of tactics by which actors are making "publicly visible demands, complaints, attacks, or expressions of support" (Tilly, 2006: 49). Again, however, the central role of visuals as a dynamic component of the protest, although mentioned, is not taken into consideration. Visual information is largely neglected.

Building on these developments and adapting Tilly's concept, we propose the use of 'visual protest repertoires' (VPR) as a lens to examine activists' visual methods and practices as well as their own conceptualization thereof. Attention will be paid to the varied forms of agency linked to visuals, whether in the process of their production, distribution and consumption. This builds on the first category that Doerr et al. (2013) distinguished for the usage of visuals: a. the "visual (self-) expression" of social movements, b. the "visual representation(s)" of a social movement by external actors, and c. the wider visibility of social movements in a given society.

The performative lens is another crucial dimension through which we explore visual protest repertoires. The term 'performative' can be used in different ways in its application to the social movement protests and visuals. As such, we argue VPR's include three different elements: performative acts/practices, protest bodies, and performative protest objects. Equally, all three elements cannot work without the interaction with the audience: opponents, other activist, or onlookers.

Furthermore, it is not only that (artistic) performance can be a part of the social movements protest but protest and visual practices can also be examined as performances. Tilly (2008) describes collective contention "as a product of learned and historically grounded performances" (4). They are "relatively familiar and standardized ways in which one set of political actors makes collective claims on some other set of political actors" (Tilly, 2006, p. 14). This performative claim-making can include different elements like words, music, visual (protest) artefacts, bodies and actions. Visual strategies such as the usage of posters and videos by activists or the usage of flares and banners by football fans are developed to confront mainstream audiences or to mark an affiliation to a common cause with their symbols. These visual strategies are to be explored through the processes of conceptualization, production and distribution of visual materials.

Embodied protest or actions of the body (Butler, 2011, 2015) are also part of visual protest repertoires. These are also used to display dissent. A case in point is the global justice movement at the 2000 protests against the International Monetary Fund in Prague. The choice of colour in demonstrators' clothing represented a new and different approach to violence (Chesters and Welsh, 2004). In our case, activist performances such as those of the Women in Black in Serbia can be seen as a practice that makes feminist approach to post-war and gender struggles visible. For football fans the predominance of the masculine body and a strong physical presence of bodies generally are also deployed in a protest context, but equally, the absence of the body in a boycott, for example, renders their protest visible.

The third contribution of performativity theory to our framework is in the life of the images. Protest visuals can be regard as performative in the sense that these 'contentious images' do not only represent a given reality, but also change the very social reality they are describing: "images, signs and statements do not represent something but rather create possible worlds" (Lazzarato, 2003). In materializing struggles through visual means (see for example Virno, 2005), the visual is already producing the reality that activists want to bring into existence (Lazzarato, 2003; Maeckelbergh, 2011). Through their own life they sometimes prolong the communication and interaction between the producers and audience in different online and offline realities. Political posters in Exarcheia or activist videos in online platforms continue their own life which can have different effects on protest(s), activists and opponents.

Methodological Consideration

Though it remains an under-represented approach, the visual, and visual dimensions, in social movement studies and the social sciences more generally are growing in importance. Scholars of social movements are adapting established qualitative research methods to accommodate visual forms of documentation and to facilitate analysis of visual data. This includes, for instance, the 'visual framing' approach in social movement theory (Doerr and Teune, 2008), 'visual grounded

theory' (Konecki, 2011), and 'visual ethnography' (Pink, 2007). Yet systematic analyses of the visual or an integration of visual analyses within broader frameworks is still rare (Doerr, Mattoni, & Teune, 2013).

Following Melucci's (1989) argument that we cannot study social action as a mere 'thing' since action is a process which is socially constructed, we adopted a several methods to converge to activist's visual methods, tactics and practices and to contextualize them. In all three cases particular attention is given to the activists as producers of visual content as well as to the processes of production and distribution which are embedded in their local contexts. These processes can include transformation of individual bodies into the protest bodies (Fuentes, 2015) but also production and distribution of visual artefacts like posters or activist videos.

Living in and coming from our research sites means we were already initiated in our fields. This facilitated our start and enabled us to begin with an open, dialogic ethnography (Hamm, 2013). Ethnography supplies our work with a range of qualitative methods while providing a coherent approach and strategies to interact with actors in the field of research and to reflect upon such interactions. As ethnographers we conducted our research 'with' and not 'on' participants, we are interested in giving voice rather than simply voicing over. The research involved participant observation, face to face communication, informal contacts and in-depth interviews with small groups and individual activists and fans that took place within their 'natural' environment i.e. football stadium, a social centre or organization office rather than in a fixed artificial setting. As visual protest practices also take place online, some geographic fields were extended by relevant digital spaces for data collection and interaction (Budka, 2011; Hamm, 2011). This oscillation of visual elements (artefacts) between the different materialities of the physical-local and the virtual spheres is present in all three cases.

Visual ethnography enabled us use of audio-visual media and methods in producing visual representations such as photos and videos, and in collecting and examining pre-existing visual representations (Banks, 2007; Pink, 2007; Philips, 2012). Furthermore, archives composed of collected political posters of the Greek radical scene were a source of knowledge and a place to contact the material fabric of the history we draw on. Thus, the methods and methodology of our research mirror the means of activist to produce, collect, and store their visual repertoires.

In the following section we present our three case studies of VPRs. We start with the broadest case, the atmosphere generated by protesting football fans. From there we move into two more particular examples: creation and use of traditional political poster making in the contemporary radical left community of Athens, and video production and distribution by activists of the Women in Black in today's Serbia.

Football Fans Protests and the Role of Atmosphere

Football fan groups, whether they are Ultras (fans that actively support their team with song, movement, choreographies) or not, are a diverse community, composed across class, ideological, and identity lines. This is true of the Green Dragons, Ultras at the football club Olimpija Ljubljana. Being a football fan is not primarily about protest, and many fan groups attempt to remain open, balancing the different and often deeply contradictory opinions of their members by claiming to be non-political. As such, political acts or statements by some of their members should not necessarily be equated as being the opinion of all fans, or even all those in their particular group. There is, however, a frequent intersection of fans and protest (Kennedy, 2013; Numerato, 2014). In some cases, these protests do revolve around the identity of the fans, such as where they embrace a clear political line (such as the fans of NK Zagreb 041, a left-wing fan group) or where they actively oppose changes to stadium regulation (such as the German fan protest "Ohne Stimme, Keine Stimmung" – which I return to briefly below). In other cases, the politics emerges as the struggle of the fans over the conditions of being fans at a particular club, at a particular time. The latter case is what we explore in this section, through the Green Dragons and the fight for their vision of Olimpija.

What I am chiefly interested in here is the fact that fans use their particular visual repertoires and familiar environment, the stadium, to perform their protest. This section contributes to the increasing research into fan protests by dissecting a particular protest, that of the Green Dragons, over the course of two seasons, the atmosphere they created in their protest, and its wider context, asking how and why the fans protested.

Fan Protests across the Balkans

The stadium and fan scene has historically been a frequent venue for engaging in political action, including political and ideological sloganeering (for multiple examples see Kuper, 1994; Goldblatt, 2006). In the former Yugoslavia, where my research is taking place, Dinamo Zagreb's Maksimir stadium was the site of a violent clash between Dinamo and Red Star Belgrade fans in 1991 that was embedded in growing nationalist sentiments across the state (see Brentin, 2013; Đorđevic, 2012). More recently, protests in Cairo, Istanbul and Rio di Janeiro, among others, have all witnessed the participation of fans in social uprisings, or protests occurring at the intersection of football and politics (Dorsey, 2016; Nuhrat, 2013; Zirin, 2016).

Within the fan community Ultras have distinguished themselves by emphasizing active supporting, usually standing and singing for the entire game, using large flags, and designing and executing complex choreographies during matches. "Ultra" thus refers to a particular way of being a football fan. There exists extensive literature on the history of the Ultras movement (for example, Thein and

Linkelmann, 2012; Ruf, 2013), and on their visual style, particularly their fashion (such as Thornton, 2003). Now there is also a rapidly growing focus on protests coming out of the Ultras scene. Historically, many early Ultras groups in Italy, particularly in Bologna, Turin, and Livorno, were connected to workerist movements, often using the stadium to express solidarity with struggling workers (Doidge, 2013; Sommerey, 2012). One of the first organized fan groups at Juventus Turin had left wing sympathies and took the name Autonomia Bianconera, suggesting a link between Juventus fans and Autonomia, the political movement sweeping Italian activist and worker organizations in the 1970s (Zugaro, 2011). This politicization of fans has become more complex in the intervening years, but these roots in protest movements and the particular visual style suggests protest is not foreign to the very identity of Ultras.

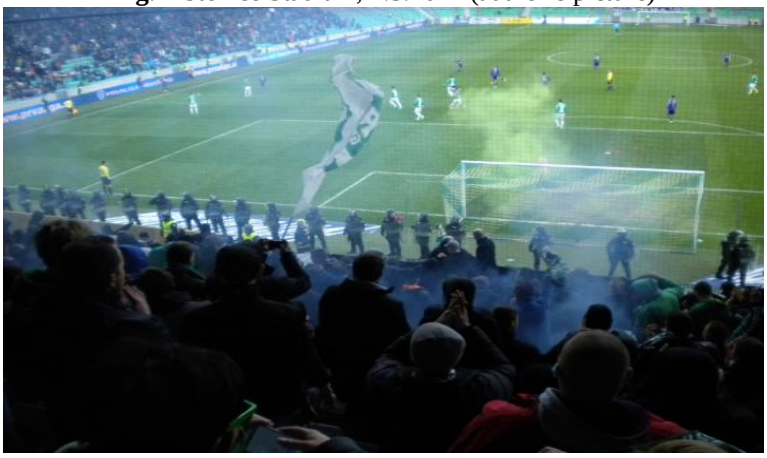
In contemporary Southeast Europe, protest and football ultras have intersected in a multitude of struggles. In the case of Romanian Ultras, Dinu Gutu (2015) writes about the complexities and contradictions of the struggle against "modern football", a term widely used in the fan scene to refer to negative developments of the game, such as commercialization and securitization of stadia. In the Croatian context Dario Brentin (2014) has written critically on various ongoing fans' struggles, while Andrew Hodges and Paul Stubbs (2013) have researched the contentious political subjectivity of the Ultras.

Thus far fan research in the Former Yugoslav region and the Balkans generally has not focused particularly on the visual dimension, on the atmosphere generated by these protests. The general atmosphere is an important dimension of the visualization of protest, yet in social movement research there is virtually no study into atmosphere as a component of protests, though some scholars are starting to consider how we might conceptualize it. In work that covers atmosphere as such, for example in a sports stadium (Uhrich & Benkenstein, 2010), the focus is on the psychological dimensions and its affective side; how people experience the protest in a positive or negative fashion. In the only paper found that directly addresses protest and general atmosphere the research is around the perceived atmosphere and emotional experience of individual participants (van Leeuwen et al., 2015, 45). Yet in the protest context atmosphere is a critical site composed of materialized demands for changes in social relations and the re-appropriation of space (among others). Throughout the interviews I conducted, fans consistently talked about the atmosphere on the stands where Ultras were as key to their returning to the stadium. We are thus viewing "atmosphere" as the overall composition (tangible and not) of a protest, including the movement of bodies, banners, the colours, etc. When it comes to this general atmosphere, our questions are thus what are the material (i.e. visual) components brought together for a particular protest? How do these then signify protest? In the rest of this section I give some substance to these questions with a particular look at the Green Dragons protest.

Ljubljana's Dragons Go on Strike

The Green Dragons, an Ultras fan group of Olimpija Ljubljana that was founded in 1988, started their protest during the second part of the 2013–14 season. At home against rivals Maribor in early March, the fans on the *tribuna sever*, the north stand, opened a conflict with the club management, and owner Izet Rastoder in particular. The fans used a multitude of repertoires over the course of the next season and a half, including protest banners, songs, pitch invasions, and importantly a physical boycott of the stadium. The protest culminated with Rastoder resigning and selling his stake in Olimpija to Milan Mandarić, a Serbian-American businessman.

Fig. 1 Stožice Stadium, 2.3.2014 (author's picture)



According to one Green Dragon Ultra interviewed for this paper, the idea was to stop the whole game, preventing it from being concluded. On this cold and damp day in early March they were almost successful. The stadium was unusually full for this particular season. It was expected, however, as the match pitted Olimpija against their main rival. I stood towards the back of the north stand with the Dragons, approximately where I had stood at each home game (see figure 1) over the course of the season. The first disruptions came around the 25th minute when a multitude of flares were lit and thrown onto the field, as were a number of fire crackers, causing the referee to halt the game.[1] Banners were held up that bore a message of solidarity with the treatment of club workers, in particular Arif Behrić, a long standing member of the back room staff who, according to fans interviewed, had been cheated by Rastoder. Another banner bore a statement that fans were the vision of club, in reference to the Izet Rastoder refusing to publicly discuss his vision for Olimpija.

In the second half, the strategy was similar, but this time the fans directed much of their ire towards a particular player, Dare Vršič, who had previously played for Olimpija but now played for Maribor. The fans set fire to a large plastic doll

wearing an Olimpija shirt with Vršič's name on it. As the palpable tension continued to grow, and the vocalization of struggle went unabated, an Olimpija fan jumped the barrier and began to run towards Vršič, only to be diverted by security, while another made his way towards the directors' box. The match was again stopped for a time. As the game came to an end some fans within the Dragons block directed monkey noises at Jean Mendy, a French national playing for Maribor. It was not the first time Mendy was subject to such abuse in the season, and beyond Ljubljana this type of racism presents a significant problem across European stands, where even a small group of individuals can condemn the whole stand to stadium bans and fines.

The fact that this was the biggest rivalry in the domestic Championship meant there would be a lot of media attention on the game. It was thus a perfect platform for drawing attention to the problems the fans had with management, particularly as the media had largely ignored the fan grievances up to that point. In taking advantage of such potential exposure, the fans continue in a long tradition of protest related to football.

The Green Dragons used the space in and around the stadium to materialize their protest both through presence and absence. Through the interviews conducted with the fans, it emerged that this protest was in the making over a number of years. The fans had initially been hopeful of a positive change when Rastoder took over the club. At that point the club had been relegated to the Slovenian fifth league due to financial irregularities. Rastoder did invest, and the club climbed quickly back into the first division. Yet there was a sense that as president he was not respecting club traditions nor taking care of the youth teams. His player purchases were erratic and seemed to come at the expense of the wages for necessary back-room staff, all of which lead to a slow boiling conflict with the Ultras.

Following the match, the stadium atmosphere declined significantly. The Dragons were banned from the stadium due to the match disruptions and the racist chant. Shortly after they returned to the stadium, at a home game, a few fans infiltrated the east stand opposite the directors box and held up a large banner that read "Izet, stick a banana up [the coaches] ass and piss off from Olimpija." The banana is a reference to Rastoder's main business as fruit importer (Derby Banana), and it is thus deployed here to further ridicule the president. There is also a clear homophobic dimension to it that further denigrates both Rastoder and the then coach Kosanović. This a troubling dimension of fandom, where a problematic masculinity is dominant within the wider Ultras scene (see King, 1997; Sülzle, 2011; Hodges, 2015). But we want to stress again that such homophobic statements, or the monkey chant, should not be conflated with fandom per se. The diversity of the fan base in Ljubljana means that though ideas such as homophobia and racism are present, they are far from representative.

Shortly after this game, the Dragons announced a boycott of all home games to remove their voice from the stadium, thus also targeting the income generated by

ticket sales. According to interviews, this was something previous generations of Green Dragons Ultras had also used in conflicts with management. Over the rest of the season and into the next, there were no significant changes. Fans stayed away from the stadium, supporting the youth teams and going to away games. Online the fans posted protest pictures, often of banners demanding Rastoder leave the club. The also used their web site and spaces like facebook to publish statements about their actions, such as their website and facebook (green-dragons.com and facebook.com/greendragonsljubljana). Throughout the management maintained a hostile stance, refusing to deal seriously with the demands of the fans. In the interviews, the Green Dragons suggested that the management refused any meeting with the fans, and was intentionally slow in responding to communications.

The fans used social media forums to digitally communicate their protest, but in the stadium it took shape with a combination of banners, flares, and match interruptions through some fans entering the pitch throwing firecrackers and flares onto the pitch. But on another day, these same items will also often appear in the stadium, just not as part of a protest. Rather these are also simply part of the visual culture of the fans.

As the season drew to a close, the stadium stood empty in an intentional boycott. Watching a football match with an active group of fans in the stadium and one without such fans are two different experiences. It is also worth noting that, in each interview I conducted, the fans all spoke about how influential the atmosphere was in drawing them to the Ultras when they first started attending matches. When we thus consider the general atmosphere as an important dimension of a football match, particularly in a large stadium, then the refusal of fans to generate that atmosphere is a direct attack on one aspect of what makes people come to the games week in and week out. German fans in the first and second Bundesliga adopted a similar strategy to protest security reforms proposed by league authorities. They even went so far as to reference the importance of the fans voice in their campaign slogan: “Ohne Stimme, Keine Stimmung” (*Without a Voice, No Atmosphere* – playing on the fact their voice had largely been ignored in the reform proposals).

In this section we have seen how fans transformed a space they know well, the stadium, into a stage. They did this first by using a variety of visual artefacts that are already common in the repertoire of Ultras’ visual culture. Second, they then transformed the environment by entirely denying it their voice. Visually, Ultras culture naturally lends itself to a protest context (and vice-verse), some fans will also be familiar with confrontation with police and how to (collectively) engage in such confrontations, and they have mobilizing structures (networks). Like social movement actors, the fans draw on their particular context, framing messages in a discourse that will resonate (even when it is problematic), and they use artefacts, networks, and tactics that are developed in their daily lives (as fans), turning them into protest repertoires.

This gives a short overview of how the fans deployed their visual repertoire in one particular case, but we are left with further considerations for future research. By focusing on how the atmosphere was generated in the stadium in Ljubljana we come to important questions for further research around how subjectivity is formed through participation (both the preparation and the execution – i.e. the practices of generating atmosphere), and how such moments are also "good business" for social and mainstream media outlets.

Political Posters as Visual Symbols of Protest

In this section we provide a brief overview of the way printed posters are used by activists under a crisis context. The following campaign is an illustrative example. Sunday, November 3rd, 2013 marked the first day of a contentious pilot program Greece launched to help spur consumer spending in its bleeding economy. Under new reforms, commercial stores were supposed to be open seven Sundays in the year, while smaller, independent shops could open every Sunday, depending on local authorities. A nationwide 24-hour strike was organized the same day which was followed by a demonstration in most of the big cities.

From that day on, and for the next two years, a campaign was launched led by the Athens-based grassroots union of book workers. Their strategy was quite simple: every Sunday that the shops should open, they organized a mobilization followed by a strike in their sector. Their mobilization included not only a demonstration but also a symbolic blockade of shops of the main commercial streets of Athens. In order to achieve this goal however, high numbers of participants were required, which was not possible on union mobilization alone. For this reason, the union launched a media campaign that targeted not only the public but also the social movement milieu of Athens. This campaign was organized mainly through posters that were fly-posted to the streets of Athens and particularly in the highly politicized neighbourhood, Exarcheia, where its headquarters are also situated. The campaign proved to be effective since the union managed to achieve sufficient numbers for consecutive mobilizations, making this specific issue a central issue to the movements' agenda. It also allowed for the formation of an initiative called "Coordination for the Sunday Holiday" (*Syntonismos gia tin Kuriakatiki Argia*) with labour-related grassroots collectives, unions and activists that dealt exclusively with the Sunday opening of shops.

The protest campaign went through many phases, with ebbs and flows, but managed to suspend temporarily the Sunday opening of shops, three months after a change in government. The activities of the activists follow a certain premeditated visual strategy that included the usage of posters that had a specific image – along with text – that became the logo of the campaign and acted as visual marker. The sketch was a woman wearing a coverall suit with a head scarf, showing her fist while looking angry. This particular image accompanies all posters of this specific campaign until today and is immediately recognizable from almost all people

embedded into the Greek social movement milieu. The old-fashioned drawing of this woman was however not entirely new, it was taken by a totally different context, a WWII Australian propaganda poster that had as its purpose to recruit women to work in wartime industries such as ammunitions factories.

Fig. 2 Posters in Mesologgiou Street in Exarchia neighbourhood (author's photo, December 2016)

In this part we examine movement-related media by focusing on the genre of posters produced by the social movements in Greece during the financial crisis, with an analytical focus on the transformation of the iconography of posters in comparison with the previous period. Was it possible to develop an independent, positive depiction of resistance in the context of protests against the austerity measures?

Anti-austerity uprisings have been conceptualized in different ways and to varying degrees both as related phenomena and as signifying a new wave of global contention (e.g. Glasius and Pleyers, 2013; Castells, 2012). Emerging in the context of the 2008 financial crisis, resisting neoliberalization, reflecting a wider generalized crisis of representative democracy, and demanding social justice, democracy and dignity, this cycle of contention has highlighted the emergence of new subjects in political arena, such as the un(der)employed, educated, urban youth etc.

Significant to the posters is the issue of space or spatiality. In Greece, social movements took and continue to take place mostly in an urban setting. In Athens it's situated in the district of Exarcheia, a neighbourhood close to Athens' centre that during the late '70s, in the aftermath of the dictatorship emerged a particular subculture with counter-cultural characteristics. It represents the territorial and physical expression of political and cultural milieu, positioned between the Polytechnic school and the University of Athens and has until today a strong leftist

presence. It constitutes of what Haunss and Leach (2007) termed as a 'movement scene' and Melucci (1985) as 'movement networks' or 'movement area'. Looking at the autonomous scene of the autonomous movement in Germany, Haunss and Leach (2007) see social movement scenes as spaces in which social movements encounter countercultures and subcultures. Melucci (1985), at the same time, looking at the *Centri Sociali* (Social Centers) in Italy during the '80s, applies the term 'movement area' that 'take the form of informal networks of groups and individuals sharing a conflictual culture and a collective identity' (798–9) that are dispersed, fragmented and submerged in everyday life, and which act as cultural laboratories. Exarcheia today is the focal point of street art and the default location for larger political meetings and can be considered the central location of the wider social movement 'community' that links activists who act locally, in the urban spaces of the city. In short, it carries a vivid political symbolism (Iakovidou, Kanellopoulos and Kotronaki, 2010: 145) which is manifested in occupied spaces such as squats and social centres, benefit parties, activist workshops and other similar spaces. The 'scene' is visibly marked by political posters, which are abundant on walls, fences, and any other suitable surfaces that signify the construction of a sense of locality and territoriality in the urban space (Gerbaudo, 2014). Fly-posting is common political practice for various groups to express their identities and disseminate their (mostly but not limited to) political messages. The walls provide an ideal communication platform for activists of any kind as they can change an ordinary wall into a colourful medium overnight.

Poster as Visual Medium

The poster, defined as a visual communication composed of dominant images that incorporated words (Iskin, 2014, p. 35), is a highly effective form of visual mass communication and has been used mostly from the late 18th century until the 1980s. Due to new, at-that-time, technologies of printing, among whom lithography played an important role, the poster became an affordable medium that could be reproduced in multiple copies (p. 29). The study of posters has been so far restricted to graphic design and communication propaganda studies (e.g. Timmers, 1998; Iskin, 2014) but has been largely neglected in the fields of social movements or alternative media. Few researchers have focused on materials produced by social movement organizations (SMOs) themselves (Martin, 2010).

As a visual micro-object at the intersection of several contemporary cultural practices, it is an ideal case study to research the transformations of artistic languages from printed to the digital age from a social, aesthetic, and economic point of view. When viewed as social practice intrinsically concerned with the processes of knowledge production, exchange, and legitimation/delegitimation, posters as activist media are always both political and pedagogical.

First of all, it can be a means of enlightening and educating oppressed people about the political situation. Secondly, it can be employed to advertise and support

certain political groups, parties, individuals and political trends. Thirdly, it serves to announce political events (protest activities, elections etc.) and at the same time mobilize and organize either the broad mass of the population or a selected subgroup (such as students, workers or women) to participate in those events. Further it functions as a weapon to attack and denounce one's opponents. Finally, the posters articulate the discourses, desires, fears and collective imaginaries pertinent to the various political identities being formed and transformed during the financial crisis and protests sparked.

Academic interest in civil society-based, self-organized and non-commercial media is fairly new. Recent works in alternative media (Atton, 2002; Coyer, Dowmunt and Fountain, 2007), radical media (Downing, 2001) and community media (Hollander et al., 2002; Milan 2009) combine 'old' and 'new' media activists practices, however, the prime concern of these studies is with the production of content, not the producers of the content themselves. It is acknowledged that grassroots groups are an integral player in the broader field of civil society media as defined by Hadl and Hintz (2009). They adhere to the main characteristics of the sector, such as collective ownership and control; non-profit, social-oriented objectives; non-hierarchical and participatory structures; and most of them either provide alternative content or assist others in doing so. Social movements have long been engaged in the production of their own media which is central to collective practices of identity construction (Downing, 2001; Atton, 2002; Melucci, 1996). We are talking about those nano, micro and everyday media – leaflets, posters, stickers, flyers – which are most of the times so ubiquitous in social movements and in other groupings but which have hardly received any attention.

Political posters constitute an important set of data for investigating a movement's cultural work (Johnston-Klandermans, 1995: 12). However, this cultural component has seldom been examined explicitly in the social movement or broader sociological literature. Posters, flyers, fanzines, stencils, banners and graffiti are the 'street media' of the movements but also the internal cultural resources of social movements including 'worldviews, values, frames, symbols, skills, experiences and motivations' (della Porta and Rucht, 1991, p. 7, as quoted in della Porta, 1995, p. 25) as well as a form of individual or collective expression in the city's social space that generally reflects the preference for non-hierarchical, not profitable, collectivist-democratic structures of "self-administration" that are autonomous from the dominant institutions of the society. Most often, they have a counterhegemonic culture that arises out of dissent and providing a countervision of society that within it lies the dynamic of political resistance. Activists, as visual practitioners of urban space, produce mostly posters to visually frame their actions and diffuse their counter-hegemonic discourse. Posters, like media text, are a key strategy used by protesters to communicate with audiences. In an era where the centrality of communication in contemporary society constitutes a common ground, posters are a central component in the symbolic construction this

'community' because it represents the way in which has been developed, and the way identity is bestowed upon its members. Poster making is a form of visual representation, a visual text, and it plays an important role in creating and communicating a collective narrative by interpreting a situation and suggesting a course of action, articulating the identity of creator(s).

Fly-posting, as an activist media practices and ritual, not only stresses the significance of the medium in the 'movement culture', but also of being able to communicate one group's messages to others within this 'scene'. Posters, in addition, are the only form of communication that uses the well-defined physical space of a community to send information about upcoming events. Paraphrasing McLuhan's (1964 [1994]) famous phrase, if 'the medium is the message', their location in the public space is crucial for any interpretation of the information they transmit, and the purposes they have in their campaign. It is a group-specific normative form of behaviour that has a functional sense; it generates and fosters solidarity by bonding members and channels emotions (Collins, 2004; Johnston-Klandermans, 1995).

Video Activism as a New Form of Political Intervention of the Women's Movement in Postsocialist Serbia

Activist videos are a visual protest repertoire gaining increasing attention in protest settings and also in our everyday lives. This is especially the case through online social media platforms. Video activism as a form of political participation has a long history in social movements. Once reserved for those who had technical skills and access to technical equipment, with the development of digital technology and digital distribution channels video activism became a widespread practice.

Today we see a vast amount of digital videos produced by individuals and organizations calling for social change. They are used to empower and document, to educate or to present alternative news, and also for mobilization and communication within and outside the groups producing them (Askanius, 2013; Hamm, 2005). Today most of the activists' videos can be found online, on various social media platforms, video-sharing or organisations websites. They are also used in different offline contexts.

In portraying Women in Black's video activism we want to illustrate how and why women activists in Serbia adopted this form of visual protest repertoire as an important part of their activism. On the analytical level we are concerned with the production and content of visual materials of insider video activists, who are producing and applying videos, addressed to the intern and external audience, within a movement, as a part of their collective work (Harding, 2001). Practices of video activism will be presented by following the processes of production and distribution of activist videos.

Even though video activism has been part of the visual repertoires of social movements since the 1960s (Harding, 1998, 2001), only recently has it started to be

more and more subjected to scientific analysis. Most of the relevant studies have been conducted in the context of media and communication studies (Askanius, 2010, 2012, 2013; Brandstätter, 2012; Chanan, 2012; de Miguel Wessendorf, 2006, 2009; Hamm and Zeiser, 2000; Howley, 2010; Mateos and Goana, 2015) with some recent works pointing particularly to the emotional aspects of video activism (Askanius, 2012; Razsa, 2014, 2016) and the importance of comprehensive categorisation and typologies (Mateos and Goana, 2015) which should provide a sufficient basis for new empirical and comparative studies in this complex and diverse field.

Women in Black's Video Activism

Women in Black (WiB) describe themselves as a Women's Feminist-Antimilitarist Peace Organization. They were formed in 1991 in Belgrade as a reaction to the ongoing wars in former Yugoslav republics (specifically Croatia and Bosnia-Herzegovina). Over the last two decades they organized more than 1500 peaceful actions on the street: protests, performances, campaigns, etc.[2] struggling against militarization, growing nationalism, all aspects of violence towards and discrimination against women and other oppressed and marginalised groups in the patriarchal, post-war and transitional Serbian society.

In 2010 WiB founded the first professional women's video activist group in Serbia. A group of 10 activists from the regional WiB network were trained by Rastko Novaković, a professional filmmaker and activist from London. The first workshops covered theory and practice of video activism including topics like: fieldwork, montage, movement (flow) discourse, forms and influence of video activism, archiving, digitalization, distribution, subtitle etc. (WiB, May 2010). Since then the group has produced more than 150 video clips, shorter and longer documentaries. The camera became an important part of their events and interventions, and the produced activist videos became a significant supporting tool in their online and offline activities.

Fig. 3 8th of March 2014. Protest march – Women in black, Belgrade

Production and Content of Activist Videos

Most of the content of the videos presented by WiB is self-produced. The actual videos come in a wide range of aesthetic forms and narrations. They can be longer or shorter, show scenes from protests, activist events, artistic performances, conferences and interviews, or be a story told through photographs. Some videos include music, narration and different fictive elements which refer to the stories being told. The aesthetic and the atmosphere of the videos are embedded in WiB's general approach to the protest: as a contentious but nonviolent action.

The material presented in this work was captured during the online ethnographic fieldwork, which included collecting activist videos available online, their review, following their online life and reading the WiB's quarterly reports, which provide sufficient information about the produced videos and context of their use. The content of the produced video material have been classified by WiB in five groups covering the main topics they take issue with.

The aim of the first videos made by WiB in 2010 was to make visible the effects of various models of transitional justice, especially of the feminist approach to justice – promoted by WiB – to the broader public, and to facilitate a change of values, ideas of peace, justice and solidarity (Women in Black, 2011). This initial group of videos includes the presentation the Women's Court,[3] a unique feminist model of transitional justice in the region of Ex-Yugoslavia, developed to offer a different safe-space for all women (witnesses, activists, and academics), for their voices to be heard. This group also contains videos documenting processes of conceptualization, implementation, and discussions of the Women Court.

The second group consists of videos documenting and presenting various forms of street protests, performances and actions which were organized and performed as reminders of crimes committed during the war (in different parts of Former Yugoslavia). A particular focus was on those perpetrators who were left unpunished. This remains one of the main topics of WiB's activists' videos (more than a third of videos are concerned with this issue). 'Confronting the past' and the question of moral responsibility for the crimes which are and have been committed, as they say, 'in our names,' are largely ignored in post-conflict public discourses.

The third group of videos documents and displays a variety of antimilitarist, antiracist, and antifascist actions, such as protests, marches and performances made by WiB or in cooperation with local and regional activists (like, for example, Labris – an organization for lesbian human rights –, or the Women's Roma Network). These actions are often organized around the international days connected with the women's and peace movements. For example, a couple of videos cover actions around the International Women's Day and women workers' issues.

The fourth group are videos presenting the work and achievements of WiB. This group also includes videos made as homage to the WiB former members who have passed away, who dedicated their life to human rights activism and whose life and work is still an inspiration for the activist work.

The fifth and final group includes videos of WiB's actions dealing with the most relevant current topics, such as support actions for asylum seekers and refugees passing through Serbia since 2014, performances in support of the Russian punk band Pussy Riot (2012), or protests against war in Syria (2014). This group also includes videos with international/global topics, for example, the positions of women in Senegal, India, and the Gambia in the informal economy, or WiB's support actions for women in Spain fighting for abortion rights.

Although form, narration, and content of the videos contained in these groups can be different, all groups have one common trace: producing a women's alternative history which includes challenging the dominant discourses around presented topics and including and making visible the one's who are left out of them.

Distribution-Exhibition of Activists' Videos

Women in Black have developed practices of distribution or communicative practices (Mateos and Gaoana, 2015, p. 18) which provide occasions to interact with the audience. Here, three main activities can be identified: online activities, offline activities, and the wider concept of the work of the WiB video activist group.

Facilitating the online circulation of their videos are the group's homepage and youtube channels. The online social life of these videos reflects the position of the organisation within the Serbian society. The virtual has become a new field of struggle for activists: Youtube allows users to comment on each entry, and most of the comments of the online audience of WiB's videos are critical and aggressive. The first youtube channel, which included over 100 of their videos, was reported and blocked by some people or groups who disagree with their work. This happened after they posted a witness video of them being attacked, from the activists' perspective, by one right wing group during their protest in 2014 in Valjevo, a small city in West Serbia. Experiencing this act was a continuation of the pressure WiB are exposed to in their everyday life and work. In order to continue to present their videos to the broader public online, they opened ten new youtube channels with different names, and uploaded a smaller amount of videos on each channel, grouped by different topics. This was a strategic decision: in case something happens to one of the channels, some of the other videos will remain available to the audience.

Not all videos are presented online to the broader public. Some are used for self-documentation, for educational purposes or for informing about and presenting their own work, or to introduce different topics during internal, regional and international meetings and conferences. Moving images play a significant role in the communication of the movement.

Finally, the video activist group is not just producing and distributing activist videos. It also engages in the translation of their own videos into different

languages (in English, Italian, Spanish, Macedonian, and Albanian), making them available to an international audience. Their work also includes translation into Serbian language of some international videos, documentaries and fiction movies with topics relating to activism and human rights, as well as the organisation of different political and cultural events where these movies and videos are presented and discussed.

Video Activism as a Performative Practice

Women in Black's video activism are an example of an institutional political production (Mateos and Goana, 2015, p. 16). Their primary aim may not be audiovisual activity. However, by forming the video activist group (in 2010), videos are strategically produced, distributed and integrated in WiBs (to date) 25 year long struggle to: make visible non violent resistance, to build a women's solidarity network, to demand a permanent confrontation with the past, to demand demilitarization and disarmament, and produce a women's alternative history and inscribe the invisible others into history.[4]

Using the proposed concept of Visual Protest Repertoires, WiB's video activism can be analysed as a tactical and subversive performance through its production and distribution practices. Video-making includes a number of practices such as gaining professional training, strategic planning of filming processes, creation of content through specific visual language, interaction in and outside the group etc. The distribution of activist videos in local and transnational contexts also requires different strategical practices of how to reach the adequate audience in line with the objectives of the group and the message they should disseminate. As we can see, all these practices have become an important field for activist subjects and their political agency.

The effectiveness of activist videos is directly linked to their performative character. Protest visuals should not be seen only as representation; rather, they can also have their own life, potential and power to create possible worlds (Lazzarato, 2003). Thus activist videos can under certain circumstances produce countervisuality (Mirzoeff, 2011), produce political subjectivities (Razsa, 2014), articulate opposition or resistance and thus renegotiate or even reverse power relations. The degree of performativity reached by videos or, in other words, the credibility and resonance of the statements and claims they expresses, depend greatly on its context (speaker, setting, and timing) and coherence (Virno, 2005). For claims and demands to be taken seriously the women's movement needs to position itself as a credible speaker in an appropriate socio-cultural setting (ibid.). As an anti-military peace movement, WiB strongly emphasize protest as a nonviolent action. Activist videos can be seen as a tool of nonviolent protest in their content and form. In a harshly environment they are providing some kind of safe-space for action and interaction between the activist and the audience. Further contribution of the videos is in their capacity and role in women's efforts to write

an alternative women's history. Picturing their actions and re-visiting past events through a feminist lens is inspiring and a revolutionary step to the future which is yet to be explored and documented.

Discussion

Our research is situated in a region that can broadly be defined as the Balkans. Rather than simply apply the label as a geographic moniker however, we come to this designation through the recent history of the region, and in particular, the recent social movement history. In other words our region is a common space defined by a complex and common history of interaction and struggle, and, recently, a wave of contention that has largely ignored questions of national identity in favour of those related to the needs of daily life in the region instead (Arsenijević, 2014; Milan, 2016; Razsa and Kurnik, 2012). As such we look at the visual culture of protest that is unique and yet relevant/readable in a wider context at the same time. This active definition enables us to find commonalities in both recent political experiences and social responses to these. Through all three cases we encounter protests that have organized around profound, relatively recent, changes in the society. In all three places the entry or attempted entry to the European Union has laid down a deep reform of social, political and legal institutions (Bojkov, 2005; Grabbe, 2003; Živković, 2014).

This perspective makes particular sense when we consider our positions as researchers. In all three cases, what we examine is the result of existing relationships and experiences, rather than coming to the questions through particular research interests. In a sense, we were already caught up in the field, and it is from this position that the research questions began to form. Anthropology has largely overcome the challenges of losing oneself in the field with a variety of methodological tools based on reflexivity (Brković and Hodges, 2015; Hamm, 2013; Macbeth, 2011), while also stressing the importance of the politics of the relations between researcher and the field (see for example, Biehl and McKay, 2012; Lowenhaupt-Tsing, 1994). Furthermore there are convincing reasons why this has in fact enabled us to succeed in this particular research at all. We were and continue to be trusted by our interlocutors due to this proximity; the sensitivity with which we are able to represent the movements and struggles, while resisting neocolonial relationships is again made possible due to our position. Finally, we do not erase our own presence in the research. Instead we acknowledge our influence and subjective position by at times using the 'I' form, and recounting personal experience in a reflective manner.

In our three sites we see changes manifesting in forms of gentrification, modernization, and increasing disciplining of life both through institutions and on a social level. In Belgrade, radical feminist activists confront the conservative and patriarchal turn in the society where nationalism both attempts to silence public debate of recent war crimes and marginalize minority voices and subjectivities.

Activist videos have become a means both to share the struggle where mainstream media space is non-existent, but also to engage the activists in the process of making different realities. As with the fans and activists in Athens, participation in the process of visual production has been key.

In Exarcheia the financial crisis that followed the credit bubble is felt in the general impoverishment of the population, also leaving social space for contested right and left political discourse. Though not an innovation *per se*, Athenian urban space has become part of the struggle to find alternatives. The activists are acting in their local environment, and finding ways to express political ideas, and to inform, much as interventions in the stadium and online have done in our other cases.

The Ljubljana stadium and the dislocation of a football team from its roots are part of a wider financialization of the society that is able to profit off the images and atmosphere that fans produce out of passion and love for their team. Fan opposition to the change in direction occurred within the stadium, using signs and artefacts that are also part of their repertoire for supporting the team on any other day. Critically they also withdrew this particular form of labour from accumulation through a boycott of matches. This refusal and the use of common artefacts has a performative dimension that resonates more widely with the other parts of the society in that it posits alternative, yet broadly understandable, manifestations of social relations into the public discourse.

We have argued that protests have always visualized, and the forms that our protests took are not exceptional in that sense. The resonance of VPRs and increasing centrality of visuality to protests in other parts of the world is thus in the increasing centrality of the visual to our everyday lives. As a concept, VPR needs further development and broader application in order to justify its usefulness. Three cases is a limited number to say the least. However, in our work it has provided useful to illuminate some new aspects of our research fields. In each case it pushed us to view different material objects beyond either their value as representation, or in and of themselves. We are thus better able to represent their performative function as visual artefacts that make the protest's visuality more dynamic, and activate the artefacts, rather than leaving them as innate objects deployed by people. In this sense the atmosphere in a stadium during a protest produces the relationships fans desire with their club, the players, and each other; they achieve this by turning their visual culture into resistance and materialization of their vision. Activist videos are implemented as a tool of nonviolent protest which can influence the interaction in and outside the group and mediate a new, feminist approach to the past and present events. Street posters are a means of educating and organizing, while also articulating political discourses and desires; drawing on the social environment it materializes the fears, hopes, and visions of the creators in a strategic way.

Conclusion

There has been an undervaluation of the visual dimension of protest beyond its representative dimension. Recently, Doerr et al. (2013) have identified three main areas where the visual functions in social movements struggles: visual expression of movements, visual representation of movements from outside actors (media, for example), and visibility of movements in the wider society. Our project finds itself among the first and third category, focused on expression and the question of how visual choices relate to local and global contexts. They argue "... visual materials are repositories of shared – and sometimes contested – activist identities and cultures that are able to link different generations of protesters and different waves of contention" (xiii–xvi).

The Green Dragons used a repertoire from within their own fan culture to visually materialize their protest and stake a claim over their importance in generating atmosphere so critical to football. The Women in Black and other feminist video work the focus is on oppression, segregation and militarism in the society, while the posters in Athens are adapting international icons to call people to the street over everyday life struggles under a regime of austerity.

In our cases the visual is mobilized and functions to position activists within a local context, but one that is struggling against issues that are recognizable across the region and beyond. By examining these sites of contention in the context of visual culture we contribute to a richer picture of the region, in the world. This undermines essentializing narratives about Balkan exceptionalism, while also avoiding the need to place the region in either a European frame or an 'eastern', 'oriental' one.

However, our project also goes beyond the view of the visual as only a tool of contention. Our engagement with the visual is to see it as something that (also) projects the worlds, the values, the relations that activists are working towards and at the same time has a particular ability to challenge and to change the social reality – the world, values and the relations – and the subjectivities who produce them. Our field work is thus geared towards this performative character, tactics and potentials of visual protest repertoires.

Declaration
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NOTES

1. Much of this moment is captured in this YouTube video: https://www.youtube.com/watch?v=RQ33uXPb7wQ
2. See http://zeneucrnom.org

3. See www.zenskisud.org
4. See http://zeneucrnom.org

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CODING THE COMPLEXITY OF ACTIVITY IN VIDEO RECORDINGS: A PROPOSAL FOR CONSTRUCTING CODES FOR VIDEO ANALYSIS USING ACTIVITY THEORY

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ABSTRACT. This paper presents a theoretical approach to coding and analyzing video data on human interaction and activity, using principles found in cultural historical activity theory. The systematic classification or coding of information contained in video data on activity can be arduous and time consuming; however, it is one of the ways to make sense of complex information, which in turn can add value to the process of exploring selected themes. By reviewing earlier attempts at using Activity Theory as a tool for guiding the examination of human activity in human–computer interaction by Susanne Bødker's in 1996, three possible areas of expansion to Susanne Bødker's method for analyzing video data were found. Firstly, a technological expansion due to contemporary developments in sophisticated analysis software, since the mid 1990's. Secondly, a conceptual expansion, where the applicability of using Activity Theory outside of the context of human–computer interaction, is assessed. Lastly, a temporal expansion, by facilitating an organized method for tracking the development of activities over time, within the coding and analysis of video data. To expand on the above areas, a prototype coding scheme, based on the theoretical principles of activity theory, was constructed in a video analysis software program, as a tool for coding and analyzing video data, without being too descriptive or prescriptive and in a variety of research fields. As of now, the coding scheme is a prototype developed for use in analyzing video data on educational activities; with plans for exploring its detailed application and usability in future work.

Keywords: video analysis; video data; coding; activity theory; cultural historical activity theory; human–computer interaction

1. Introduction

In 1996 Susanne Bødker wrote a chapter about the application of Activity Theory (AT) to video analysis. She explored how to analyze artifacts in human–computer interactions (Bødker, 1996). Bødker argued that AT allows for the structured analysis of artifacts in use, but without being too predictive and prescriptive during the analysis. By using the theoretical concepts of AT, Bødker presented a way of conducting video analyses, which foregrounds the development of activity through what she defined as breakdowns and focus shifts in human–computer interaction, while being continuously reminded about the context and history of the activities in focus. Bødker's work concentrated on examining human–computer interaction, which is a very specific focus. This opens the possibility to explore whether using AT for video analysis could be used in a broader educational context.

AT has been argued to be particularly useful as an analytical tool, to examine human interaction and the development of activity and the environment in which people conduct activities (Nardi, 1996). AT has been used to guide the analysis of educational research that has utilized video as a source of data (for example Sezen-Barrie, Tran, McDonald, & Kelly, 2013) or video for studying human–material interactions (Otrel-Cass, Khoo, & Cowie, 2014). However, the approach to use AT to frame the coding of video material has not been picked up since Bødker's work, which will be elaborated on further in this article.

This article is organized in the following way: we will start with a short introduction to the main concepts of AT and Cultural Historical Activity Theory (CHAT) to then examine Bødker's work closer and its relevance to analyzing video data. Leading to a presentation of three areas of expansion of Bødker's 1996 work to propose how CHAT can be applied to the video analysis of human interaction, using modern coding technology that has become available in recent years. Furthermore, we will unpack the basic concepts of the Activity Theory Checklist, developed by Kaptelinin, Nardi, & Macaulay (1999), since the checklists' concepts, along with the theoretical principles of CHAT, make up the theoretical foundation of the coding scheme, presented herein. Hereafter, we will review the arguments behind coding qualitative data, with emphasis on video data, which leads to a thorough review of the method behind constructing the coding scheme. Lastly, we will discuss the three areas of expansion of Bødker's work and how our coding scheme, could be used as valuable tool for coding and analyzing video data from theoretical position, without being too descriptive or prescriptive and in a variety of research fields.

2. Activity Theory, Cultural Historical Activity Theory and Video Analysis

AT has its roots in the German philosophies of Immanuel Kant, Georg Wilhelm Friedrich Hegel and Johann Gottlieb Fichte, and the significant role of human actions. Philosophers Karl Marx and Friedrich Engels elaborated the concept of

activity to identify that human practice and the changes thereof occur when the conditions of life change (Marx, 1845/1967; Marx & Engels, 1978). Marx writes in the Theses on Feuerbach (1845/1967, p. 169): 'The production of ideas, of conceptions, of consciousness, is at first directly interwoven with the material activity and the material intercourse of men, the language of real life.' AT developed further during the 1920's school of Soviet psychology, with key scholars including Lev Vygotsky, Alexei Leont'ev and Alexander R. Luria who started using the term 'activity' (Leont'ev, 1989). Through the interest of Scandinavian scholars, notably Yrjö Engeström and others, AT was opened to communities outside the Soviet Union. Engeström (1987) proposed 'Learning by expanding' and by doing so expanded on the conceptualization of AT.

At closer inspection, the articulated thinking around AT may be organized into three generations: Vygotsky's 1920's and 1930's work focused on the individual and the significance of culture in understanding activity. While Leont'ev (1978/1981) concluded that to understand, activity requires a consideration of the collective, mediational tools and the division of labor that shape the historical process of activity. The third generation of AT is signified by extending the theoretical thinking to CHAT (Engeström, 1978; Cole 1996) to highlight the significance of dialogue, multiple perspectives but also cultural diversity. The focus on material objects and activity is closely linked to development and change. Cole writes: 'An artifact is an aspect of the material world that has been modified over the history of its incorporation into goal-directed human action' (1996, p. 117).

Important to note, is the misnomer in the term Activity Theory, which is neither about understanding activities in general terms, nor is it a theory per se but rather represents an analytical lens, to examine activities of interest. Nardi (1995, p. 24) writes that AT is a 'philosophical and cross-disciplinary framework for studying different forms of human practices as development processes, both individual and social levels interlinked at the same time'. As such, CHAT is an analytical tool to understand and explore activity, where subjects, be it an individual or a group of individuals, act within a given activity system towards an object consequently resulting in a specific outcome.

The basic principles of CHAT include that an activity system is described to be bound by a subjects' motives, mediating artifacts and sociocultural rules. These components play a significant part in what makes up human activity and as such cannot be separated (Kaptelinin, Nardi, & Macaulay, 1999; Nardi, 1996). The basic premise of CHAT is that human interaction is the context, in which the human mind exists and can be understood (Kaptelinin et al., 1999). It is this concurrence of mind (or consciousness) and activity, which is the object of CHAT (Nardi, 1996). Also, human interaction is socio-culturally bound and human interaction or activity is oriented towards either 'things' or 'people' (Kaptelinin et al., 1999; Nardi, 1996). This object-orientedness is often viewed as the directedness of human activity, where a specific motive directs the activity towards a specific

object. This consists of both physical objects existing in the world and socially and culturally determined properties, like a particular motive or psychic process (Engeström, Miettinen, & Punamäki, 1999; Kaptelinin et al., 1999). CHAT has been used as an analytical lens in many research studies, including those concerned with teaching and learning (Gedera & Williams, 2016), work practices (Chaiklin & Lave, 1993; Engeström et al., 1999) and human-computer interaction (Kaptelinin et al., 1999; Nardi, 1996) giving rise to specific tools such as the Activity Theory Checklist (Kaptelinin et al., 1999).

In 1996 Susanne Bødker published a chapter entitled 'Applying activity theory to video analysis: How to make sense of video data in human–computer interaction' (HCI). Here she presents a way of conducting AT-based analysis of HCI, in a project with the Danish National Labor Inspection Service (NLIS). She starts by arguing for the applicability of AT as a tool for understanding how human activity is the human need to achieve specific goals, through actions and operations, using various mediating artifacts, towards an object. Bødkers' understanding of how activity gives meaning to our actions and operations and her specific focus on the interplay between activity, actions and operations, has shaped the way she used AT as a tool for analyzing video data on HCI. More specifically, Bødker was interested in situations where consciously conducted actions transform into operations and vice versa, since situations where the occurrence of transformation point towards some sort of issue in reaching the desired object of the activity, a transformation which Bødker defined because of either breakdowns or focus shifts. By asking specific questions corresponding to the activity, action or operation, namely 'why' and 'what' takes place as well as 'how' something is done, enabled Bødker to discern when breakdowns or focus shifts took place in the activity. This systematic separation of the activity, actions and operations led to her way of understanding how her research participants used VIRK, the NLIS' centralized computer system for recording interactions with other companies. Furthermore, the two key concepts, breakdowns and focus shifts, were perceived as useful for understanding artifacts in use, as both of are tied to an artifacts' success in focusing the human attention towards a certain object. More so, Bødker also takes note of the importance of perceiving artifacts as historical devices that are continuously changing based on how they are used, the occurrence of breakdowns and focus shifts. This development both affects the artifacts in use as well as the activity itself, while shaping how new artifacts might be taken into consideration if previous artifacts were in fact inhibiting specific activities, more than supporting them. Bødker applied these principles in her study on how a specific software program, VIRK, was used in the NLIS web of activities.

Together with interviews and observations of employees' usage of VIRK, video data was collected and analyzed by Bødker using AT. Through ethnographic and interaction analysis, four short episodes were selected and the actions in each episode were mapped using the aforementioned why-, what- and how-questions, in a two-dimensional system, paying attention to breakdowns and focus shifts,

combined with narrative descriptions of use situations and annotations of each subject's physical actions. Following this mapping, focus shifts were identified as lines running from one object to another, which enabled Bødker to analyze each use situation to understand if the focus shifts were due to breakdowns caused by the artifact in use or work content. By identifying patterns in focus shifts, breakdowns and routine situations that in some instances transformed into non-routine situations, Bødker identified VIRK's implications in impeding employees in their work. Bødker also situated VIRK in a historical context to understand how its use might have changed over time, due to how contemporary labor inspection work practices, had changed towards a more qualitative inspection of labor and registration of information.

Thus, it was discovered that the analysis of VIRK's use enabled the identification of multiple situations where the use of VIRK could be changed to better fit the needs of its users. Firstly, the analysis contributed to a rework of VIRK, based on some the issues that were found. Secondly, it was found that better training in the use of VIRK, employees would be able to circumvent many of the issues that were found during the investigation and thirdly, certain user-interface changes could be done based on the analysis of VIRK. In conclusion Bødker found that AT was indeed applicable as an analytical tool to understand and structure her analysis of how NLIS employees use of VIRK, without being either too reductionist or prescriptive in her study on human-computer interaction. By utilizing key aspects of AT connected to the interplay between activity, action and operation, she could identify important situations where the artifact in use, VIRK, was in fact causing confusion, breakdowns and focus shifts, instead of mediating the activity.

Following on from Bødker's (1996) approach, we were interested in locating other research that had drawn upon either AT or CHAT as a tool for video analysis. For this reason, a search was conducted using Google Scholar and ERIC. An advanced search on Google Scholar for literature citing Bødker's text from 1996 resulted in a total count of 181 citations. However, on closer inspection none had elaborated on the Bødker's use of AT as a tool for coding video data. A search on the Education Resources Information Center (ERIC) using the keywords: video analysis (1) video coding (2), CHAT (3), AT (4) was conducted. The search was limited to publications after 1996, since it was of interest to locate work that used AT or CHAT for video coding. This search resulted in 131 hits, most of which were in the fields of education or clinical practice. Focusing on the top-ranking descriptor 'video technology', which was present in 60 of the 131 original hits, 33 journal articles and 32 research reports were examined, none of which had elaborated on the key ideas presented in Bødker's research specific to the coding of video.

Since Bødker's work using AT for video analysis the coding scheme hasn't been further developed leaving a number of areas for expansion: Firstly, a technical expansion, since software development since 1996 has led to more sophisticated

software analysis tools. For instance, audio-visual data can be unpacked and organized, in more sophisticated ways for example with a program called Elan (Davidsen, 2014; Freitas, 2015). Programs like (or similar to) Elan (http://tla.mpi.nl/tools/tla-tools/elan/) is capable of giving researchers a concise overview of their data without having to use separate tools for e.g. organizing large amounts of data, cross analyzing multiple video or audio recordings and enabling researchers to present their findings (Brugman & Russel, 2004). Secondly, a conceptual expansion using the CHAT framework for coding video, to examine activities not limited to the analysis to human-computer interaction, but to learning situations in general. Thirdly, a temporal expansion, since Bødker focused primarily on isolated situations of use and the development of actions and operations in each of the activities selected. By incorporating a temporal dimension in the analysis of activity, patterns may be traceable over time that could explain the history of the activity and the actions of the individuals. Notions of the temporal development of activity is present in Bødker's use of event logs to index observed events chronologically and her interest in the historical development of using VIRK however it lacks an accommodation of the temporal development, that goes beyond that of nested her participants' actions and operations in their specific activities with VIRK.

3. Coding and Analysis of Video Material

Before presenting how CHAT-based video coding could expand the work of Bødker (1996), we will review key aspects of coding video material and conducting video analysis.

Coding is the systematic classification of information (Bowker, 1999; Saldaña, 2015). It is one of the ways to make sense and organize complex information, and can add value to the process of foregrounding and exploring selected themes. Codes are qualitative descriptions, often in the form of a word or phrase, which allocate a portion of language or video-based data, a cumulative, thematic or suggestive characteristic. Depending on the nature of the research, most kinds of qualitative data can be coded while the amount of coding depends on the design and focus of the particular study (Saldaña, 2015).

The systematic classification (coding), and analysis of video data, is an extensive undertaking due to the inherent wealth of information contained within an audio-visual recording. Unlike coding a transcript of an interview, where words, phrases and themes are categorized to gain in-depth understanding of the information gathered through interviews, coding video data, adds several additional layers of information that can be systematized, organized and analyzed (Derry et al., 2010). Video analysis is an iterative and social process, of observing, transcribing, coding, annotating, organizing and managing what the researcher perceives as important to the research focus, different types of technology supports certain phases of this process (ibid.). Since in-depth coding of an entire video

corpus, is both arduous and time-consuming, unpacking video data for further analyses is often desirable and starts from the moment fieldwork is initiated by writing field notes, time indexing, macrolevel coding or narrative summaries (ibid.). This unpacking or selection of meaningful episodes helps researchers stay true to the observed activity, since this initial level of coding or selection takes place in the field, when observations and recordings take place. When returning from the field, episodes of interest can then be selected for further analysis (Nardi, 1996; Pink, 2013; Schubert, 2006). Research that takes an interest in the complex intricacies of human interaction may benefit from utilizing an analytical framework, like CHAT that helps to unpack and organize video data for further analysis.

How and if qualitative data should be coded, depends on the specific research paradigm and the nature of the research questions. In its basic form, a code is the assignment of interpreted meaning to data in order to detect patterns across the coded data corpus (Saldaña, 2015). Codes are typically researcher-generated and depending on the nature of the research, are often words or phrases that give specific meaning to segments of data, linking data collection to explanation and meaning. Coding in qualitative research can be done for numerous reasons, some of which include coding for detecting patterns, coding as a heuristic and codifying (or categorizing) qualitative data.

The act of coding is generally to discover or explore data for further analysis, which means that coding is only a part of the analysis process of data and not the analysis of data. As such, coding is one of many methods for exploring qualitative data, but has in some cases been critiqued for being too reductionist or objective, while distancing researchers from the data (Packer, 2010). However, since the applicability of coding depends on the way the coding is undertaken, the research field and personal pre-perceived views on coding, such critiques are to be taken lightly (Saldaña, 2015). Coding can be appropriate, when data needs to be arranged in a systematic order through categorization or to incorporate selected theoretical positions into the analysis of data material. A particular issue that arises is the consideration of the amount of data that should be coded, with some qualitative researcher's arguing that every aspect of qualitative data could potentially be worthy of coding, since even the smallest of details in the data material should be considered, to avoid overlooking important aspects, that were not initially considered (Friese, 2014). Conversely, others argue that only the most significant elements pertaining to research questions should be coded (Guest, MacQueen, & Namey, 2012), therefore removing the seemingly unimportant data, to focus the attention of the researcher on what is seen as important for the research focus. However, by ignoring what is at first perceived as unimportant, could potentially complicate future analyses, since the at first 'unimportant data', might actually contain useful information, which had not been found during initial analyses and selection (Saldaña, 2015).

Regardless of the amount, any analysis or coding of qualitative data reflects the presuppositions of both the methodological and theoretical perspective of a research study as well as the individual researcher conducting the analysis (Heath, 2010; Saldaña, 2015). Coding involves a degree of subjective (de-)selection in order to ascertain what should and what should not be coded, what codes to use, and how to use them. In particular, when using video material as a complementary data source in qualitative research, the nature of selection (and de-selection) is present throughout the process of inquiry, ranging from design to analysis and presentation of a research study (Green, Camilli, & Elmore, 2006). Connected to the process of selection, are numerous methods for organizing and analyzing episodes of interest that have been selected, some of which are narrative summaries, transcription, macro/micro level coding. Macro level coding of video material is used to make summarized records of the video data, attempting to mark events or information contained in the video for further analysis. While micro level coding is used to unpack the finer details of selected episodes, depending on the nature of one's research. Micro level coding also enables researchers to do ever-increasingly in-depth analyses of a chosen episode of interest, if such is found applicable (Derry et al., 2010). No matter the method of analysis, using video data requires some forethought especially if the aim is to conduct in-depth analyses on selected episodes of interest, as will be discussed hereafter.

In video ethnography, initial analysis of video material begins when fieldwork commences, since the first time a researcher is able to view, and code, the video material is during the time of data collection. In turn this means that preliminary coding and organizing, through different techniques, such as time-indexed field notes, macro level coding and narrative summaries can be done in the field, in order to pre-organize and select what might be interesting to analyze when returning from the field (Derry et al., 2010). This pre-coding or organization of video material, helps for an easier overview when fieldwork has ended and analysis begins, since video is generally considered a rich source of complex data (Green et al., 2006; Heath, 2010). The density of information contained in video material facilitates analyses of social interaction by reviewing recorded interactions and activities repeatedly and from multiple perspectives, in turn enabling researchers to view the subtle nuances that are often difficult to observe in the field. Subtle nuances of verbal and non-verbal communication that make up a large part of social interaction are often implicitly expressed and can be difficult to detect through more traditional ethnographic methods like participant observations etc. (Goldman, Pea, Barron, & Derry, 2014; Green et al., 2006; Heath, 2010). Due to the richness and density of data contained within video material, analyses of such data can prove difficult if not done in a structured and organized way, which has led to the development of a wide range of coding software e.g. The Observer XT (2016) and Elan (2016). Such tools offer different possibilities for data management and organizing, coding and annotation to help researchers in analyzing and using video. From our experience, Elan has shown to be very

versatile when working with video material to support in-depth analyses of video material and to explore the expansions to Bødker's work Elan was used in this analysis.

4. Constructing the Coding Scheme

To go through the details of producing a coding scheme based on CHAT we focus on one specific tool, Elan. However, other programs available will operate similarly; for example, Observer XT or Studiocode (2016); however, those two programs are perhaps not as useful if there is an emphasis on including transcripts. Elan in contrast is a tool specifically tailored for transcribing, annotating and coding video segments for analysis purposes (Freitas, 2015). It is free-to-download/use and this availability and its features make it a useful tool for those who seek to analyze video data. As a standard, Elan does not require any particular setup to start coding and basic functions, like segmenting, annotating and transcribing/coding are immediately available Elan allows for several layers of coding, depending on both the information contained in the video material and the research focus (Freitas, 2015). Since the aim of this coding scheme is to enable researchers to code activities in a structured manner, it is necessary to start by creating the coding scheme structure and an initial setup. The categories that are identified are defined based on the terminology found in the theoretical concepts of CHAT and form the basic structure of the coding scheme, so that the structure fits the overall theory.

For this coding approach the Activity Theory Checklist was used that consolidates, the main concepts of AT into four categories: 'means and ends', 'social and physical aspects of the environment', 'learning, cognition, and articulation' and 'development' (Kaptelinin et al., 1999). 'Means and ends' defines an activity based on Leont'ev's three levels of interaction (1981). This means that activities are undertaken to fulfill a motive, through specific actions or goal directed processes. At the lower level of the hierarchical level of interaction are operations, the unconscious processes and automatic subunits of actions (Kaptelinin et al., 1999). 'Social and physical aspects of the environment' unpacks how subjects interact with objects within their environment to achieve a motive. Objects in this case can be either things or people and should not be mistaken for the overall object of the activity, but instead mediating artifacts, mental and physical tools and social connections that are used on different levels of the three levels of interaction (ibid.). When subjects are carrying out an activity, through actions and operations these actions and operations include internal and external components that are in constant transformation, moving between internal processes to external processes (ibid.). This process of transformation is connected to the third category of the Activity Theory Checklist; 'learning, cognition and articulation', which encompasses also the way a subject uses failed attempts to reach a specific goal, through the process of internalization. This is so because, to

review why an earlier attempt failed, actions are transformed to externalize new ways of reaching the desired goal of the activity (ibid.). Lastly, the checklist looks at the constant development of activities which stems from the inherent focus on historicity, development and intentionality of CHAT (Nardi, 1996) to trace how activities endure constant developmental changes. Kaptelinin, Nardi and McCaulay (1999) write that through the careful analysis of past activities, including changes in the environment and actions of individuals, the historicity of activities can be revealed to identify the factors that influence how activities develop over time.

4.1 Basic Coding Scheme Structure

To help present the theoretical concepts that went in to constructing the CHAT-based coding scheme, a prototype has been developed. The structure of the coding scheme should act as a guide for the presentation of the CHAT-based coding scheme hereafter. Reviewing the principles of CHAT shows that activity can be broken down into: subject(s) actions within an activity, which is directed towards an object, consequently resulting in a specific outcome (Bødker, 1996; Nardi, 1995). This led to the basic structure of the prototype coding scheme (see figure 1), where two CHAT-based categories, 'activity' and 'development' and one non-CHAT-based category, 'visual transcript', are connected directly to the object of the activity being examined. The visual transcript-category (see figures 1–2) allows the recording of information and a general description of what was occurring in the video and is not only based on the visual and audible information contained in the video, but also observational details gathered by the observer in the field. To understand e.g. the activity, any specific motives behind the subjects' actions or to add additional information, not immediately available from viewing the video recording, the visual transcript-category allows researchers to add their field notes, general descriptions of occurring activities, or specific points of interest to the coding scheme. Since e.g. field notes offer rich descriptions, captured at a specific point in time, where the observer witnessed something of interest, adding these to the coding scheme, could allow for a more detailed understanding of the activity, based on what was observed in the field and not only from what can be seen in the video. This information could prove useful when additional analyses are conducted, either using present coding scheme or in later analyses of the video data, while also storing field notes inside the coding scheme for further use. Additionally, having a general description of the video, can in most cases speed up the process of locating segments of video that are of interest, as reading is generally faster than having to scan through the video data, allowing users who might not have done the initial coding, to find specific segments of interest for further analysis. The additional

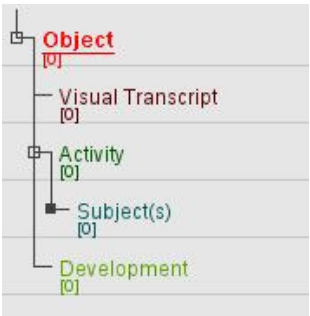

Fig. 1 Basic Prototype Coding Scheme Structure

information added to this category, ties well into the specification of subjects being coded, since specific notes, information pertaining to the subjects outside of the CHAT framework, could allow for better identification of connections between subject(s) and the overall activity system being analyzed. The intricate connections between subjects, their actions and motives, the activity and its object, means that adding additional information, could prove useful to detect or understand patterns found in the video data.

4.2 Advanced Coding Scheme Structure

Structure, visualizes the advanced structure and how each individual category is connected to the object of the activity. The activity-category enables the coder also to code multiple activities individually and how they are connected to objects, as well as the development between these. This leaves the specific subjects, pertaining to each activity, open for in-depth coding. Depending on the context of the research, any number of subjects can be defined, connected to which are the following four categories: audio transcript, means and ends, environment and learning, cognition and articulation (see figure 2). The audio transcript may not be important for all kind of research, for instance when there are no words spoken or when there is focus on an individual working on their own or there is an interest in gestures, so this category may be adapted to suit the specific research needs. However, the audio transcript provides a category to trace communication. Following are CHAT specific coding categories to identify and unpack a subjects' actions, tools used, the environment in which the activity took place, rules and the division of labor. The key difference shown between figure 1 and 2 is the depth of analysis that can be done by using the proposed coding scheme, depending on one's research focus. Without being too prescriptive, the aim here is to propose a structure where CHAT-based principles act as categories that enable the user to decide the amount of activities to be coded, the depth of the analysis for each activity, as well as determining its connection to the object and the development between activities.

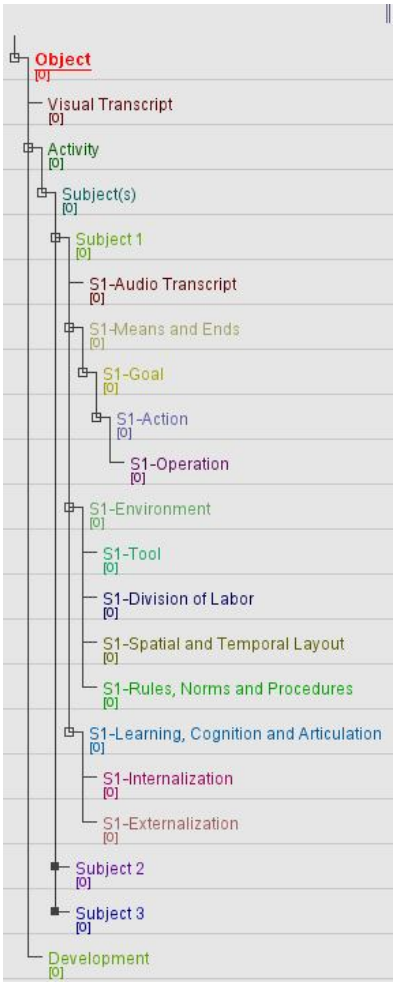

Fig. 2. Advanced Prototype Coding Scheme Structure

Due to the object-orientedness of CHAT, in which human activity is directed towards a specific object means that the object should be at the forefront when analyzing human activity (Bødker, 1996, Kaptelinin et al., 1999). This needs to be made clear in the coding scheme. The object of the activity is a determining factor in how the connected activity is understood and depends on three main factors: (1) what can visibly be seen and/or heard in the video recording, (2) any statements or material received from subjects detailing the object and (3) and information obtained through observations conducted in the field. Understanding the object is often defined through ethnographic interpretation, which can be based on field observations and earlier reviews of the video data, as well as any other data that has been collected, e.g. field notes or interview material. Taking the case of classroom observations, this could also include written teaching plans or teaching goals etc. that contain additional information in regards to the object of the activity. The importance of understanding the object of an activity means that the object-category (seen in figures 1 and 2) is positioned as the category, to which all other categories are directed towards, since this key concept should be reflected within the coding scheme structure. This allows the analysis, of a given activity, to stay research-specific, with the level of coding and analysis only dependent on the research focus, while keeping the object of the activity at the forefront, to keep to the object-orientedness of CHAT. By defining the object, the activity and the development of the activity or activities should enable an initial unpacking of the activity. Giving the user an overall perspective of the recorded activity, the object of the activity and the development of activities, before moving into more detailed coding.

Since CHAT is not about understanding activity, but rather examine activity the coding scheme should help to identify and unpack the intricacies of an activity of interest and each of its constituents. The activity-category (see figure 1) should mark the occurrence and duration of an activity of interest for further analysis. In the prototype coding scheme, the activity-category connects the subject(s) to the activity, the object of the activity and the development between activities, while situating the subject(s) and the remaining CHAT-based categories within the activity, without having to go into depth with coding the intricacies of the activity and the remaining CHAT-based categories. This allows the researcher to get an overview of the activity system and the resulting outcome, before continuing with the in-depth analysis of any activities of interest.

The outcome of an activity or development between activities is an important aspect of CHAT, since the importance of understanding the historicity of artifact use and development between activities shape how the historical process of activity can be examined. As such, we created the development-category, which functions as a link between multiple activities and adds the ability to code causal development of activities in the prototype coding scheme. It does not necessarily require in-depth coding of each additional category, but can stand alone if understanding the development between activities is in focus. In addition, by

examining the development between multiple activities, could potentially uncover interesting patterns in subject behavior that could lead to uncovering of additional points of interest and information contained in the video that were not initially selected for analysis.

4.3 Unpacking the Advanced Coding Scheme Structure

The next step involves more detailed unpacking of activities. It starts with specifying the subject(s) present in the activity. Since CHAT acknowledges both individual and group activities, we created the subject(s)-category, to define the type of subject(s) in focus. For this article, only three subject(s)-categories (see figure 3) were created, to keep the complexity of the prototype to a minimum, since the argument in here is to propose and review the applicability of a CHAT-based coding scheme. It is possible to create an unlimited number of subjects, by creating additional subject(s)-categories in the coding scheme. The subject(s) category acts as a boundary category for more in-depth analysis using the remaining CHAT-based categories, which are 'means and ends', 'environment' and 'learning, cognition and articulation', all of which are derived from the Activity Theory Checklist (Kaptelinin et al., 1999). Each of the connected sub-categories to the subject(s)-category is expanded further, enabling detailed subject-specific coding, while leaving the level of analysis to be determined by the researcher. Depending on the level of analysis needed, the researcher can pick and choose between the number of subjects to examine, as well as how in-depth the subject-specific analysis should be, tailoring the analysis to the specific needs of the researcher. In figure 3, the subject(s) category and the connected sub-categories have been illustrated in order to give a sense of the depth of the coding possible.

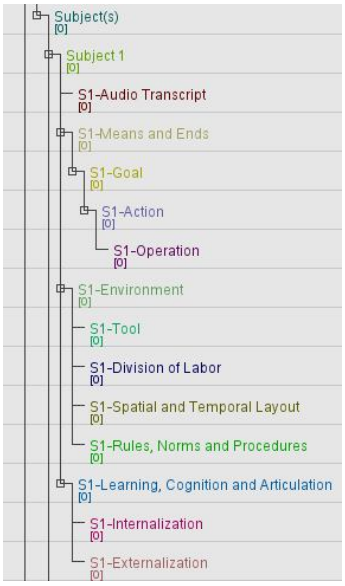

Fig. 3. Subject(s) category

The remaining non-interconnected categories are all based on CHAT, with terminology derived and adapted from the Activity Theory Checklist leaving the research focus as the determining factor in which categories should be used for analysis.

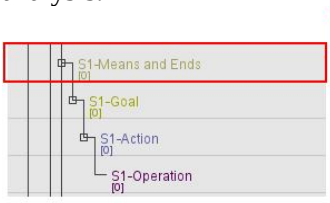

Fig. 4. Means and Ends

Fig. 5. Environment

Fig. 6. Learn. Cogn. and Articul.

Each of the three categories (se figures 4–6); [1] ‘means and ends’, [2] ‘environment’ and [3] ‘learning, cognition and articulation’ are separated into multiple sub-categories with [1] focusing on the actions and operations of a subject towards a specific goal. [2] Connects to the physical and social environment, in which the activity is occurring, governing rules surrounding the activity, the division of labor, as well as any transformation of objects done by the subject(s). [3] Allows for coding any occurring processes of internalization and externalization connected to the subject in its attempt to reach specific goals, carrying out actions and operations and the learning process connected to the transformation of actions. This structure of separating the overall categories [1], [2] and [3] into non-interconnected categories, leaves the coding scheme open for a variety of research foci, if the aim is to unpack and analyze episodes of human interaction or activity. For example, if the aim is to examine the spatial environment connected to a given activity, the user might not need to code each individual category extensively, even though such extensive coding is most certainly possible, given the needs of the user. More so, due to the structure of the presented prototype, each of the categories links back to the subject, the activity, the object of the activity and the development between multiple activities.

This coding scheme facilitates both general and in-depth coding of qualitative video data on human interactions and activities, without being to descriptive or prescriptive, while situating the analysis of video data in the established theoretical model of CHAT. The level of coding is entirely dependent on the research being done and the aim of the analysis, with room for exploration in terms of letting any emerging patterns from past analyses, reveal additional information contained in the video. The above presentation aims to give an understanding of the arguments behind the construction of a CHAT-based coding scheme and expands the work of Bødker (1996), through the identification of the technical, conceptual and temporal dimensions of examining activity.

5. Discussion

AT has been found useful as an analytical tool to unpack the intricacies of human activity (Nardi, 1996). By unpacking activity based on key theoretical principles, AT has been found applicable in several fields of research, for example in educational research (Gedera & Williams, 2016), which is why it was chosen for this research and human-computer interaction (HCI) as was the case for Bødker’s (1996) work. More so the applicability of AT for examining human activity resulted in the work of Kaptelinin et al. (1999) in their construction of the Activity Theory Checklist. More so, AT has also been used to guide educational research using video as a source of data (Sezen-Barrie et al., 2013), but besides Bødker’s (1996) application of AT to the coding and analysis of video data on Human Computer Interaction, it has not been used to frame and guide the analysis of video data.

Since video data is rich in information, making sense of such information can prove difficult and having a strong theoretical tool to guide one's analysis of video data, could prove valuable to those working with video. Using video as a method for collecting qualitative data on human activity, is not merely setting up cameras to capture the activity, but involves a process of inquiry that stretches beyond that of the field (Derry et al., 2010). The proposal of this coding scheme should not take away from the significance of planning the process of inquiry takes place before, during and after fieldwork is conducted. Rather this proposal should aid researchers to think about a range of issues that shape the research process including e.g. technological needs (where to set up cameras) and other factors. Data analysis starts from the moment data collection and observations take place in the field, through the writing of field notes, time-indexing video and notes, macrolevel coding and through narrative summaries (Derry et al., 2010). However, structured and coded analyses of video data beyond that of field notes and narrative summaries could prove useful, to unpack the many nuances of human activity by applying a strong theoretical tool to guide the analysis. This notion of using a strong theoretical tool to guide one's analysis and has been the main principle behind AT making it a valuable tool in human-centric research.

In 1996, Bødker (1996) applied AT to the coding and analysis of video data, which led to her concluding argument that AT was found to be a strong tool to structure her analysis, without making the analysis too reductionist or prescriptive. She also argued that AT allowed context and development to be kept at the forefront, preventing her from viewing situations in isolation. Through our review of Bødker's work, we saw the potential for expanding on Bødker's use of AT to guide her analysis and coding of video data in three areas. A technological expansion by assessing contemporary technological developments of sophisticated data analysis software. A conceptual expansion, by adopting the theoretical principles of Bødker's work and CHAT, but situating them outside of the field of human-computer interaction. Lastly, it was seen that a temporal expansion could be done, by constructing a coding scheme that facilitates a convenient way of examining the development between multiple activities. The three possible expansions presented here, led to the construction of the above prototype coding scheme which is based on CHAT and with terminology derived and adapted from the Activity Theory Checklist (Kaptelinin et al., 1999). Since contemporary technological developments of software programs have made it possible to analyze qualitative data in an organized way, sophisticated software tools like Elan give users the ability to store different types of data, be it visual, audio or written, in essence creating a multi-media data set. In turn, enabling researchers to cross-reference multiple types of data, in order to locate any emerging patterns, while also being able to use these software tools for in-depth visual and contextual coding of a variety of qualitative data if needed. Contemporary analysis tools have enabled the construction of versatile coding schemes, which can be tailored to the needs of multiple users, as was the aim with the proposed coding scheme above.

The CHAT-based coding scheme prototype, proposed here was purposely constructed as open-ended as possible, however still adhering to the theoretical principles of CHAT, to allow for a contextual expansion of the work done by Bødker (1996).

The contextual expansion is not only connected to the way Bødker structured her analysis, but also in the assessment of the applicability of using CHAT in different contexts, while expanding the principles used to frame the analysis of a given activity. In the theoretical frame of CHAT, activities are object-oriented and mediated by subjects' interaction with different artifacts within a specific environment. This way of examining human activity, enables those using CHAT to unpack human activity in an organized way to examine activities of interest (Nardi, 1995, p. 24). Simultaneously the understanding the historicity and development of activities is the key to understanding how activities evolve over time, while focusing on the way subjects act in a given activity to reach a specific goal. In our case, by including, the subject-specific categories derived from the Activity Theory Checklist (Kaptelinin et al., 1999) (see figures 4–6), we attempted to facilitate a theoretically sound way of examining activities of interest in depth, while stile giving researchers room to decide what and how they want to analyze their data. In the attempt to keep the descriptiveness and prescriptiveness to a minimum one could argue that a CHAT-based coding scheme would always be somewhat prescriptive. This concern is acknowledge insofar that anyone who would see interest in using the principles described here, would probably already be inclined to using CHAT as part of their research. Instead, what we have proposed here is the expansion of the basic principles found in Bødker's (1996) work to extend beyond that of human-computer interaction, to include perhaps a wide variety of research fields that focus on human activity. Since Bødker's original work was set in the context of human-computer interaction, her method of analysis and her use of AT was shaped by this context, however, the above coding scheme attempts to go beyond the field of human-computer interaction. The proposed coding scheme prototype presented here adheres to the principles of CHAT, by making sure sufficient coding connected to each of the theoretical principles found in CHAT and the Activity Theory Checklist, is available to the researcher.

The temporal expansion is an attempt at facilitating an organized way of tracking the development of activities over time, within the coding and analysis of video data. Often times, when analyzing video data, researchers need to review multiple videos, multiple times, and as such, keeping track of the temporal development across multiple video or activities can prove difficult. However, by using the coding scheme proposed here, we argue that this temporal development could be coded in an organized way, while being able to continuously track the development or outcome of activities through the development-category that allows for the detection of temporal patterns across activities while still being connected to the activity and its object. This is not as much a direct expansion of Bødker's work, as it is a combination between, the development of contemporary

software tools that allow for multimodal data analysis and how Bødker potentially could have supported her work had she has such tools available. She too was interested in how the use of artifacts and activities developed over time, but as has been presented here, the possibility for analyzing multiple activities within the same coding scheme, together with the development between these, patterns might emerge and be easier to detect by having the analysis contained in a single tool. Subsequently, by reviewing the connection between categories and the codes herein might enable researchers to detect patterns based on information scattered across the variety of data being analyzed, connecting back to the technological development in software, which has enabled researchers to conduct multimodal analyses. More so, the visualization capabilities of contemporary data analysis tools, results in an extensive overview of the entire coded data set. As should be apparent in the coding scheme presented here, by positioning the development category, at the bottom of the coding scheme, the argument is that, researchers should be able to follow each activity, the object of each activity and the development between them, in an organized way, to locate developmental patterns, if such is the aim of the analysis.

6. Conclusion

In conclusion, the aim of present article was to propose using a CHAT-based coding scheme to analyze video data on human activity. By expanding on Bødker's original idea of using AT not only to frame research on human activity, but also to use it as a tool to structure the analysis and in this case coding of video data, by constructing a coding scheme which could see use in multiple research fields. As coding is research dependent and not always applicable in all types of research, one argument to coding video data, is that coding could potentially uncover hidden gems of information, not initially found either in the field or when recorded videos are reviewed at later stages of the analysis. More so, by applying the principals of CHAT as tool for coding recorded videos as well as other forms of data, i.e. field notes and interviews, allows researchers to gain an understanding of the contents of the data, more quickly, while being able to use this newfound information, to detect new emerging patterns. Combining the above expansions with the principles of CHAT strengthens the argument that a theoretically based coding scheme could be a strong methodological tool for exploring, unpacking and organizing video data on human activity in a variety of contexts. For now, the coding scheme prototype has been developed for use of analyzing educational contexts. What is needed now and will be explored in future work is the detailed application and the review of the usability of the coding scheme. Here is where future research would greatly contribute to testing, evaluating and reviewing the applicability of this coding system for video analysis in educational contexts such as the one we based this argument on (classroom settings), to review the usability of Elan or other software programs but also to examine whether this coding scheme can be used in other

fields of investigations where CHAT is used to guide and structure the analysis of qualitative video data.

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LEARNING FROM DIGITAL VIDEO CASES: HOW FUTURE TEACHERS PERCEIVE THE USE OF OPEN SOURCE TOOLS AND OPEN EDUCATIONAL RESOURCES

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ABSTRACT. The purpose of this study is to explore ways in which future teachers perceive issues related to the use of open source tools and open source educational resources. While the reflective use of digital video in teacher education is commonly recognized as a way to bridge the perceived gap between theory and practice, in this study, digital videos are used to facilitate learning by making conceptual content more understandable and initiate later discussion about the open source issues. The primary objective of this study is to determine a change in knowledge and perceptions of the use of open source tools and open source educational resources demonstrated in the online discussions among future teachers. The research was conducted during the four-week Distance Education graduate course taught in the blended format. In the given timeframe, students were required to participate actively in the two teacher-led online discussions. The first discussion focuses on the open source tools issues. Open educational resources are the theme of the second discussion. The collected data are analyzed by the use of the Interaction Analysis Model – IAM. The research findings indicate a change in future teachers' knowledge and perceptions of the usability of open source tools and open educational resources in their future classrooms.

Keywords: digital video cases; future teachers; online discussions; Interaction Analysis Model; knowledge construction; blended courses

1. Introduction

Digital video cases may serve as a teaching tool in diverse university level classrooms. They can be used as an additional learning tool in regular face-to-face

classrooms, but could also be used in online courses or as a part of blended courses. While digital video cases are widely recognized as a tool which supports principles of constructivist learning environments and is commonly used in teacher education programs, the question is to what extent learning or a change in knowledge may be initiated by their use.

Here, by selection of the digital video cases dealing with the issues of open source tools and open source educational resources, we attempt to explore ways in which future teachers perceive issues related to the use of open source tools and open source educational resources in the blended Distance Education graduate course for future teachers. Student perceptions are evaluated through online discussions, a tool that has a high potential for facilitation of future teachers' reflections.

2. Theoretical Background

2.1. Digital video cases

Digital video media provides an important resource for learning. Laurillard (2013) states that a narrative form of the traditional educational methods assures coherence between parts of the text. In that matter, the use of structural cues in both textual and video educational materials allows learners to maintain a sense of the overall structure and understand the meaning. The researchers agree that the gap between theory and practice in teacher education can be reduced through the use of digital video which provides rich information that supports students in making connections.

Although the video is in its essence a linear presentational medium, it is possible to recognize a tendency to characterize the video as interactive media in the literature, which may be linked to the potential for conducting different activities between watching sections while pausing the video. The video can bring together experience and description of that experience, and provide students with the opportunity to reflect on what they are doing (Laurillard, 2013).

The studies on the efficient use of videos in teacher training programs provide both guidelines for the use of video cases and explanations on their potential benefits (Masats & Dooly, 2011; Kurz, Batarelo & Middleton, 2009). Kurz, Batarelo, and Middleton (2009) researched the perspectives of pre-service teachers, and their understandings of the kinds of learning and assistance video cases can provide in their methodology courses. The analysis of teacher reflections suggests that pre-service teachers need solutions that they can apply in their classrooms, tips how to engage students, plan and develop lessons and reach a diverse population of students. Furthermore, Masats and Dooly (2011) argue that when viewing video cases, student-teachers are placed in the role of both a teacher and a learner, allowing them to co-construct teaching knowledge and gain digital competencies.

The commonly researched themes are the classroom use of digital video cases, comparison of video and text-based materials, and different modes of digital video

presentations that affect learning (Merkt, Weigand, Heier & Schwan, 2011; De Leng, Dolmans, Van de Wiel, Muijtjens & Van Der Vleuten, 2007; Kirkley & Kirkley, 2005; Kamin, O'Sullivan, Deterding & Younger, 2003). In studies comparing students' views on the benefits of video case usage compared to text-based cases, the video cases are at least equal or more effective than text-based cases (De Leng et al. 2007; Merkt et al. 2011). While working with students using problem-based learning format in different environments, researchers find that the video enhances critical thinking in both face-to-face and virtual classrooms (Kamin et al., 2003) and that video cases are perceived as a valuable stimulus for group discussions (De Leng et al. 2007). Advanced digital video technologies show potential for supporting the principles of the constructivist learning environment by including the elements of authentic context, collaboration, and opportunities for inquiry-based learning in a safe environment (Kirkley & Kirkley, 2005).

2.2. Online discussions

For several decades, online discussions serve as a platform for reflection in higher education. The use of reflection in future teacher training is based on strong theoretical postulates. John Dewey emphasized the importance of reflection in education. He argues that 'while we cannot learn or be taught to think, we do have to learn to think well, especially acquire the general habit of reflection' (Dewey, 1933: 140).

While acknowledging that reflection may be an important feature in teacher education (Hatton & Smith, 1995), it is necessary to emphasize the importance of appropriate design and development of meaningful learning activities which are part of online discussions (Collins & Berge, 1997). The use of additional tools such as digital video cases could serve as a prompt for reflective contributions. Digital videos could be one of the ways for overcoming the challenges of engaging students in deep conversations in online discussion forums, which were recognized by Dennen and Wieland (2007). Shared viewing and discussion of the video may help future teachers in learning about and reframing pedagogical problems, interpreting different information sources and thinking critically about different pedagogical issues (Christ, Arya & Chiu, 2015).

In different subject areas, a variety of frameworks for online discussion evaluations is offered. For example, researchers commonly focus on the types of discussions which occur in online political forums (Freelon, 2010; Strandberg, 2008). Freelon (2010) examines online political forums that address the shortcomings of prior approaches by identifying three distinct, overlapping models of democracy that forums may manifest: the liberal, the communitarian and the deliberative democratic. Strandberg (2008) considers four ideal types of online discussions: truly deliberative, potentially deliberative, non-deliberative with wide audience discussion and non-deliberative with narrow audience discussion.

In education, the evaluation of online discussions may provide insight on the impact of online discussions on future teachers learning. In teacher education,

online discussion frameworks emerge from different starting points. For example, Bain (2012) proposes a framework which relies on the analysis of learners' experiences while emphasizing the opportunities for collaboratively informed thinking. Johnson (2007) believes that the instructor must build a framework around the notion of online discussions and facilitate access to the course materials. The relevant educational research studies are based on different frameworks and classifications for the evaluation of online discussions. For instance, Henri (1992) uses a classification that examines the quality of online postings through four dimensions: social, interactive, metacognitive, and cognitive. Also, the cognitive dimension is broken down into five types of reasoning skills: elementary clarification, in-depth clarification, inference, judgment, and strategies. Garrison, Anderson, and Archer (2001) propose a structure for characterizing high-quality online interactions, which contains three elements: social presence, teacher presence, and cognitive presence. The existence of all three presences is necessary for a successful online learning experience. Gunawardena, Lowe, and Anderson (1997) set up the *Interaction analysis model (IAM)* that focuses on the evaluation of the levels of knowledge construction in online discussions. The model consists of five phases of knowledge co-construction: sharing/comparing, dissonance, negotiation/co-construction, testing tentative constructions, and statement/ application of newly-constructed knowledge. These phases occur during a discussion and characterize negotiation of meaning where participants are engaged in the social construction of knowledge in a constructivist learning environment.

The literature review indicates that the IAM model (Gunawardena, Lowe & Anderson, 1997) is a foundation for numerous research studies exploring influences on higher level knowledge construction in online discussion forums (Hew & Cheung, 2011a; Hew & Cheung, 2011b; De Wever, Van Keer, Schellens & Valcke, 2010; Lang, 2010; Sing & Khine, 2006). While focusing on the frequency of interactions that occur at different knowledge levels, Lang study findings (2010) indicate the predominance of online discussion interactions that fall into the first phase, with a smaller number of interactions in the subsequent phases of the IAM model. Attempting to determine influences on knowledge construction in online forums, De Wever et al. (2010) focuses on the impact of roles on online discussions. While stressing that roles in online discussions are not permanent, the research findings indicate a positive effect of role assignment on students' social knowledge construction at the start of discussions. Furthermore, the messages from moderators and summarizers suggest higher levels of knowledge construction at the beginning of discussions (De Wever et al., 2010). The findings of the studies exploring the impact of the group size and length of discussions indicate that there is a significant positive correlation between the group size and the frequency of higher level knowledge construction occurrences, but there is no correlation between the duration of online discussions and their frequency (Hew & Cheung, 2011a). Another study conducted by Hew and Cheung (2011b) explores the issue of online discussions facilitators' awareness of their thinking, accuracy, open-

mindedness, and position taking. The study findings show that student facilitators who display these habits more frequently may promote higher levels of knowledge construction in online discussions. When comparing different models of online discussion analysis, Sing & Khine (2006) emphasize that knowledge building process, analyzed by the IAM coding scheme, is highly influenced by the initial question, which then pushes discussion towards higher phases of cognitive development.

The research findings indicate that in an educational environment online discussions can serve for different purposes. Online discussions allow students to interact with each other, build strong ties and relationships with each other without being in a classroom (Al-Shalchi, 2009). Different online discussion facilitation strategies have a direct influence on students' roles and learning (Wilson, Pollock & Hamann, 2014; Baran & Correia, 2009; Murphy, Mahoney, Chen, Mendoza-Diaz, & Yang, 2005). Student interactions in online discussion settings have a positive impact on knowledge construction, and high-quality postings made early in the discussion have a positive effect on subsequent postings compared to groups where no such postings were made early in the discussion (Wilson, Pollock & Hamann, 2014). Baran and Correia (2009) explore student-led facilitation strategies described as inspirational, practice-oriented or highly structured, which enhance the sense of learning community, and encourage student participation in online discussions. The use of the constructivist model in online forums, where the instructor fosters the development of volunteer teaching assistants into coaches, and of student discussion facilitators into facilitators of learning, encourages student facilitators to suggest creative ways for online instructors to manage different types of teaching responsibilities (Murphy, Mahoney, Chen, Mendoza-Diaz & Yang, 2005).

3. Study Design and Research Questions

The research about students' behavior during learning processes commonly focuses on the application of interaction models to analyze the content of asynchronous discussions and assess their quality (Lucas, Gunawardena & Moreira, 2014). In this study, students' learning is researched by analyzing the discussion posts. The phases of the IAM model are used for the analysis of student interactions (Gunawardena, Lowe & Anderson, 1997).

The research goal is to understand the relationship between peer interaction and learning outcomes in online discussions. In the content analysis studies, such as this one, it is possible to make conclusions based on observations of interactions between learners, levels of participation, the collaborative activity between learners, and their level of knowledge construction. Two research questions are:

(1) What type of notes do students post in online discussion forums?; and
(2) What is the extent of learning based on students' interaction in two analyzed online discussions?

The research was conducted during the four-week Distance Education graduate course for future teachers taught in the blended format. During face-to-face lectures, students were introduced with the expectations from the online discussion activities. Nevertheless, before the online activity, they did not receive additional instruction on the open source tools and open educational resources. In the given timeframe, students were required to actively participate in the two teacher-led online discussions which were linked to three selected digital videos.

The first discussion focuses on the open source tools issues and is linked to two digital videos revolving around exposing, sharing and remixing works using free public licenses. The first five-minute long animation video explains CC licenses (Creative Commons Aotearoa New Zealand, 2012), while the second video, lasting approximately six minutes, describes some of CC's success stories (Creative Commons, 2007). The purpose of the videos in the context of the Distance Education course is to familiarize students with the main elements of the open source tool licensing. Also, upon viewing these short digital videos, students were prompted to answer following questions:

(1) Do you believe that open source tools stimulate innovation?; and
(2) Is it fair to expect software developers to create and distribute their intellectual products without restrictions, while we do not expect the same from other inventors or producers?

Open educational resources are the theme of the second discussion. It revolves around a five-minute long digital video dealing with issues of turning a resource into an open educational resource. The digital video case on open educational resource issues was created by OERIPRSupport (2012). In the second discussion, students are asked to watch the digital video and answer the following questions:

(1) Do you believe that these digital stories provide you with insight into main characteristics of open educational resources?;
(2) According to your opinion, are short digital stories appropriate materials for learning at the university level?; and
(3) What are the possible advantages of open educational materials usage for teachers teaching at different levels of the education system?

4. Method and Findings

4.1. Content analysis

The online transcripts are analyzed using the content analysis method, wherein the data is examined within a specific context in view of the meaning that participants attribute to them (Krippendorff, 1980). In this study, the researchers use the standard content analysis procedure encompassing six steps: design, unitizing, sampling, coding, drawing inferences and validation (Krippendorff, 1980, 1989).

During the first step – the *design*, the analysts define study context and describe the required observational conditions. During the *unitizing step*, the focus is on

defining and identifying the units of analysis of the available data. While using a dynamic approach to unit analysis (Schrire, 2005), in this study, the unit of analysis is set by the research question. For the purpose of this study, the researchers have identified a consistent unit of meaning which is a part of student posts at a certain moment in discussions and have recognized this as the unit of analysis (Henri, 1992). The *sampling step* in the content analysis method should prevent the statistical biases inherent in the analyzed material. In this research, the sampling is not necessary since student online entries are bound to two discussion threads. *The coding step* includes a description of the recording units and their classification into the chosen categories. As suggested by Rourke and Anderson (2004), instead of developing new frameworks and/or coding schemes, researchers may rely on the use of schemes that have been developed and used in previous research. Hence, in this study, we use the *IAM* coding scheme consisting of five phases (Gunawardena, Lowe & Anderson, 1997), as detailed in Table 1. During the *step of drawing inferences*, the researchers focus on the interpretation of correlation between the coded data and the researched phenomena. The final, *validation step* of the content analysis results, relies on researchers' ability to make conclusions on issues not observed directly.

Table 1 Coding scheme of the IAM (Gunawardena, Lowe & Anderson, 1997)

	Phase	Operations which occur at this stage include	
1	Sharing/comparing of information	A	Statement of observation or opinion
		B	A statement of agreement from one or more participants
		C	Corroborating examples provided by one or more participants
		D	Asking and answering questions to clarify details of statements
		E	Definition, description, or identification of a problem
2	The discovery and exploration of dissonance or inconsistency among ideas, concepts or statements	A	Identifying and stating areas of disagreement
		B	Asking and answering questions to clarify source and extent of disagreement
		C	Restating the participant's position, and possibly advancing arguments or considerations in its support by references to the participant's experience, literature, formal data collected, or proposal of appropriate metaphor or analogy to illustrate a point of view.
3	Negotiation of meaning/co-construction of knowledge	A	Negotiation or clarification of the meaning of terms
		B	Negotiation of the relative weight to be assigned to types of argument
		C	Identification of areas of agreement to overlap among conflicting concepts
		D	Proposal and negotiation of new statements embodying compromise, co-construction
		E	Proposal of integrating or accommodating metaphors or analogies
4	Testing and modification of	A	Testing the proposed synthesis against "received

	proposed synthesis or co-construction		fact" as shared by the participants and/or their culture
		B	Testing against existing cognitive schema
		C	Testing against personal experience
		D	Testing against formal data collected
		E	Testing against contradictory testimony in the literature
5	Agreement statement(s)/application of newly constructed meaning	A	Summarization of agreement(s)
		B	Applications of new knowledge
		C	Metacognitive statements by participants illustrating their understanding that their knowledge or ways of thinking (cognitive schema) have changed as a result of the conference interaction

According to Gunawardena, Lowe, and Anderson (1997), the first phase of the IAM begins with a low demand tasks, sharing and comparing of information and proceeds through cognitive dissonance, to higher cognitive assignments, negotiation of meaning and co-construction of knowledge. Further phases of the IAM deal with the testing and modification of co-constructs and application of newly constructed meaning. While each phase consists of some operations, the advancement from lower to higher mental functions may occur through the series of contributors' posts. Nevertheless, some operations that are positioned in different phases can happen concurrently. Also, some messages may be positioned between phases.

4.2. Findings

The findings of the analysis of two discussion threads are presented in two tables, one per each discussion thread. When explaining the findings, we attempt to simultaneously answer both research questions, the question of the type of notes posted in online discussion and the question of the extent of learning based on students' interaction. The tables provide data on the frequency of the discussion posts that occurred during the particular phase of knowledge construction and selected excerpts which are representative of the student notes in a certain phase.

Table 2 The first discussion

	Phase	Related discussion posts count	Discussion excerpts
1	PhI/A	119	Open educational resources stimulate innovation in different ways, especially because the software is free or very cheap and in that way accessible to users. In my opinion, the interchange of supplementing and upgrading is the foundation of modern creativity, and without someone else's previous work we cannot create in a faster, better and a more useful way.
	PhI/B	53	Open educational resources stimulate, *by all means*, innovations because they are accessible, free and can be personalized and

			adapted to the user. Contemporary digital technologies certainly make sharing of works easier if authors want it. As my colleague has said, the notion that they helped someone and contributed to the development of something will be enough to some people. Others, however, will ask for a compensation and more specific incentives for their future work.
	PhI/C	38	My colleague has stated a marvelous example of her brother, who, despite the obstacles encountered at the faculty, successfully managed to write his thesis with the help of open educational resources. As my colleagues have previously stated, accessibility of materials, contents, information, etc. provides an excellent foundation for the dissemination of one's knowledge.
	PhI/D	31	…does every next intervention exert influence over the value of the original work and in what moment the sense of the very idea of open educational resources ceases to exist? How can we prevent a wave of reckless use of information from the Internet? Do open educational resources exert the influence over the deterioration of the creative development of a person in the same way?
	PhI/E	8	The problem is that in the document I have downloaded anything could have been written. However, I would like to emphasize the difficulties I encounter regarding accessibility of such materials.
2	PhII/A	22	They provide an idea, a clue how to proceed further, *push in the right direction*, although there are people who will attribute that to themselves and use it. I do not have an overall opinion about this. On the one hand, I think it would be OK to compensate people for their effort, but on the other hand, I also think it would be OK to help others by publishing the works without claiming the compensation.
	PhII/B	7	Isn't it more important that a job is well done and that the final product is a success rather than who participated in getting the job done? Of course, we cannot forget to respect copyright and the importance of preventing any misuse of available information.
	PhII/C	7	…a fact that advertised applications, including the use of all tools, in most cases, are not for free cannot be disregarded. Personally, I was in a situation where I was the author of some new products… (a colleague of mine) forwarded everything to our director and presented it as her work. Only then did I realize to what extent taking over other people's ideas can be painful and insolent.
3	PhIII/B	1	Someone who has been doing research for years and invested time and effort as well as certain resources, should not publish his/her work just like that.
	PhIII/C	18	On the other hand, there are people to whom money compensation is more important than the sense of knowing that they have helped

			someone and that someone will benefit from that. Easy accessibility to information is one of the most important advantages in the modern world, but we must not forget that it also brings a great responsibility which stimulates us to use them carefully and in line with rules and regulations.
	PhIII/D	19	However, if we manage to achieve something in the process, write good papers that will benefit others, in my opinion, it is only additional motivation. However, the use is accompanied by the responsibility to use correctly open educational resources.
5	PhV/A	6	All those are important activities where actions for the sake of community's wellbeing do not exclude care for one's existence. So a better awareness of children and involvement of teachers can prevent plagiarism since the earliest age.
	PhV/B	2	Therefore, if they consider it appropriate that their intellectual results are shared without any/with certain limitation, we should give them our support and possibly call upon other creative professions to follow, where possible, their example.
	PhV/C	2	Therefore, the need to stress and emphasize constantly that plagiarism is not OK will be reduced, and students will be encouraged to be creative and innovative.

Table 2 indicates the results of the first discussion analysis. The findings show the presence of students' entries at different levels of knowledge construction. The majority of the discussion posts that indicate some knowledge construction falls into the first knowledge construction phase (sharing/comparing of information). A significant number of student postings falls into the second (the discovery and exploration of dissonance or inconsistency among ideas, concepts or statements), third (negotiation of meaning/co-construction of knowledge) and the fifth phase of knowledge construction (agreement statements and attempts to apply the newly constructed meanings). The researchers did not find posts that would be categorized as the fourth phase, which refers to testing and modification of the proposed synthesis or co-construction.

Table 3 The second discussion

	Phase	Related discussion posts count	Discussion excerpts
1	PhI/A	161	In my opinion, these stories can be an additional aid to teachers in their teaching. Also, I think that technology is good for *breaking* a little bit teaching monotony to which students are exposed on a daily basis. Open educational resources make it possible for people to learn anytime anywhere.
	PhI/B	61	I share the opinion of my colleagues that open educational resources open ways to a greater democratization of education. I would agree with my colleague that it is primarily necessary to educate teachers how to use open educational resources.

	PhI/C	5	Speaking from my experience, I consider content to be more interesting if it is supplemented with an interactive material.
	PhI/D	1	Isn't that the case with other sources of knowledge?
	PhI/E	4	You can find more information on open educational resources at: https://www.youtube.com/watch?v=-xGRztrWv-k I would also like to emphasize another problem in teaching, and that is that not all students have the same level of English proficiency.
2	PhII/A	26	However, regarding practice, the situation is completely different. While I was thinking about open educational resources, it didn't occur to me at all that they could be an excellent solution for tackling the problem of inequality in education.
	PhII/C	4	…however, there was not stated everything that should have been stated; I had an impression that I needed to watch another story, a video that explains additionally everything that has been indicated in this video. …and I think it would be beneficial to our future work if we were introduced to the story from some other perspective as well.
3	PhIII/B	4	The use of open educational resources helps teachers immensely to organize their teaching. In my opinion, the more we use those methods (digital storytelling), the bigger is the risk of consequences that I have mentioned previously (decreased focus on a written text). Of course, I encourage the use of these ways of learning as well, but I also think that we should be careful about to what extent we use them.
	PhIII/C	48	In my opinion, technology will never replace face-to-face teaching, but it can make it at least a bit more interesting. Although equality is increased at a certain level, it is still not achieved fully.
	PhIII/D	28	If the contents we viewed and heard in this video were told to us by a teacher, we would probably lose concentration, and we would not have heard some information. Regardless of economic difficulties and social inequality, almost everyone can access the Internet easily today.
5	PhV/A	1	In conclusion, open educational resources can be of great help if people know how to use them properly, if they have a meaning, and are not used for the sake of themselves.

Similarly to the first discussion thread analysis, the overview of the second discussion which is provided in Table 3 indicates the presence of different levels of knowledge construction. For this discussion thread, when compared to the first discussion thread findings, it is noticeable that teacher education students more frequently discuss negotiated meaning/co-construction of knowledge (phase III). The obtained higher levels of knowledge construction may be attributed to the type of the postings from the course teacher and the flow of the two discussions. Nevertheless, there are no statements which could be recognized as testing and modification of the proposed synthesis or co-construction (phase IV), and just one

student have made a comment that may be linked to the application of newly constructed meanings (phase V).

4. Discussion

In this study, we have explored the effects of digital video cases in initiating teacher education students' online discussion postings that went beyond stating opinions. Two methodological models have been selected as a framework for this study. The study analysis is based on the content analysis method, designed by Krippendorff (1980; 1989) and the Interaction analysis model (IAM) proposed by Gunawardena, Lowe, and Anderson (1997). The two selected models are interrelated. While the first model refers to determining the steps of content analysis, the IAM model serves to discover the levels of social presence and cognitive development. Consequently, the IAM model directly influences the final steps of the content analysis, which are drawing inferences and validation of the findings (Krippendorff, 1980; 1989).

While attempting to answer the research question about the type of notes posted in online discussions, and the question about the extent of learning based on students' interaction, according to the IAM model analysis, we have found that students most commonly discuss at the level of knowledge construction related to sharing and comparing of information. The primary objective of the study is to determine a change in knowledge and perceptions of the use of open source tools and open source educational resources, based on the level of discussion that students reached. According to the study findings, it is possible to conclude that a change in knowledge has occurred. Nevertheless, the highest level of knowledge construction connected with testing and modification of the proposed synthesis or co-construction has not been reached. When triangulating findings with the existing literature on the presence of different phases of the IAM model in online discussions, it is possible to recognize trends that contribute to the general knowledge about online discussions. The findings are in line with the existing knowledge on the use of the IAM model, confirming the impact of the methodological model on the study. In the Lang study (2010), the majority of online discussion interactions fall into the first phase and a smaller number of interactions in higher phases of the IAM model.

In this case, the design step of the content analysis method (Krippendorff, 1980; 1989) correlates with the actual sequence of the discussion. The analyzed online discussions do not have previously assigned student facilitators, and all students have the same role in discussions. The course teacher has facilitated the discussions and tried to trigger students' discussion at a higher level with postings during the first week of the study. Taking into consideration the postings from the course teacher, the sequence of the two discussions and the common topic shared among the students, it is not surprising that the second discussion posts have a somewhat higher number of students' entries, which fall into the third phase of knowledge

construction (negotiation of meaning/co-construction of knowledge). The higher level of knowledge construction in the second discussion thread may also be attributed to the sequence of two discussions, and the common topic shared among the students. These findings are in line with findings of other related studies, indicating the achievement of higher levels of knowledge construction which is dependent on the type of questions and the way of moderating discussions. In the De Wever et al.'s study (2010) the messages from moderators and summarizers reflect higher levels of knowledge construction at the beginning of discussions. Also, Sing and Khine (2006) emphasize the importance of the initial question and stress that the moderator might post a question in a way that the discussion immediately starts in higher phases.

Besides, ethical consent from the discussion forum participants to use their anonymous comments has been obtained. When reflecting on other attributes of the study, it is important to emphasize that the digital videos used in the discussion threads are created by different authors, and, hence, do not have the exact design. Also, the digital videos are not developed for the purpose of this course and the study, so it is possible to question further how selected materials have influenced discussions. Further research on the use of digital video cases in encouraging online discussions and triggering knowledge construction should include interviews with selected participants to ensure triangulation. Additionally, the study may be enhanced by replicating it with other teacher education students, while using some online discussion facilitation techniques in a more structured way.

In the social context, it is important to understand the status of the open access movement in transitional countries. The participants' comments raise the important question of the role of open educational resources in decreasing inequalities concerning educational opportunities. While the researched topics are not directly related to the Croatian school system, the participants are part of the Croatian education system and their previous experiences with online discussions, especially the expectations from teachers concerning the actual participation of students in class discussions, may differ from their peers' experiences in other countries. It may influence students' willingness to express their opinion or speak deliberately.

5. Conclusions

While relying on Dewey's theory and recognizing the role of reflection in education, this study focuses on the potential triggers that help to initiate and shape meaningful online discussions in teacher education. According to the reviewed research literature, digital video cases may be considered to be a valuable and efficient tool for initiating students' critical discussions. Emerging research on the use of digital video cases in teacher education classrooms has also pointed out to the potential of digital videos in producing desired learning outcomes and contributing to student satisfaction.

The findings corresponding to the type of online discussion notes and the extent of learning based on students' interaction are in line with findings of other related studies, particularly those using the IAM model analysis. The first discussion focused on the open source tools issues indicates the presence of students' entries at different levels of knowledge construction. However, in their discussions, students have not reached the highest level of knowledge construction correlating with testing and modification of the proposed synthesis or co-construction. Open educational resources are the theme of the second discussion, which builds on the first one, and the initial questions posted at the top of the discussion thread are more complex in comparison to the first discussion. Consequently, in the second discussion, it is noticeable that teacher education students have reached higher levels of knowledge and have discussed more frequently negotiated meaning/co-construction of knowledge. As elaborated in the discussion section of the paper, the study findings should be viewed in the scope of main study limitations, video case design and previous educational experiences of study participants.

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BOOK REVIEW

COLLECTIVE KNOWLEDGE ARISES FROM MULTIMODAL, DIALOGIC INTERTEXTUALITY: *LEARNING IN THE AGE OF DIGITAL REASON* (2017) BY PETAR JANDRIĆ

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Learning in the age of digital reason weaves the threads of Petar Jandrić's dialogues with diverse critical thinkers into a compendium of contemporary transdisciplinary approaches to digital media and learning.

The book is divided into five thematic sections determined by the major field of interlocutors' contribution, albeit it can be argued that most chapters offer cross-sectional insights: History and Philosophy, Media Studies, Education, Practice and Activism, and Arts, each consisting of three chapters. Petar is himself interviewed in the final chapter, reflecting back on the book and the making of it.

The book's author, Petar Jandrić, is an emerging critical thinker to be aware of, having published a number of thought provoking pieces, often collaborating with recognised authors in critical theory, educational philosophy and technology. He is throwing a (dialogic) party in *Learning in the age of digital reason* with interlocutors chosen in line with personal sensibility, many of whom are friends and fellow thinkers, mainly working in leftist/radical/critical/Marxist/activist traditions, opposing the global neoliberal agenda and capitalist tendencies in education and technology mediation.

The soul of this party is a distinctly critical, historical and personal examination of the relationship between education and technology from various vantage points and rich experiences. Jandrić's interlocutors have made and are making a lasting legacy in contemporary approaches to learning and schooling (in order of appearance in chapters): Larry Cuban, Andrew Feenberg, Michael Adrian Peters; Fred Turner, Richard Barbrook, McKenzie Wark; Henry Giroux, Peter McLaren, Sian Bayne; Howard Rheingold, Astra Taylor, Marcell Mars, Tomislav Medak; Paul Levinson, Kathy Rae Huffman, Dmitry Vilensky; Christine Sinclair and

Hamish MacLeod. Conversations in the section on Arts are enhanced by collaboration with Ana Kuzmanić and one by Ana Peraica.

The substance of the party is its dialogic form that provided the author with an opportunity to display a compelling richness of knowledge when it comes to his interlocutors' work, as well as a wide range of related references and examples provided by him and all discussants. I turn to this explicit intertextual value of Jandrić's book to emphasise this engaging work. I do so after a succinct overview of thematic sections that cannot do justice to the layered wealth of insights and points raised and provided in the chapters, but will hopefully generate interest to read Jandrić's book.

Each chapter starts with a biographical note on the interlocutor, hence providing a useful interlude to the dialogue. The first section (Chapters I (Cuban), II (Feenberg) and III (Peters) considers critical, historical and philosophical underpinnings of the relationship between education and technology. The very words in the title of the first two chapters clearly signal the critical attitude to the hype of technology in education: 'the dubious promise (I)' and 'the bursting boiler (II)' with chapter III providing reflections on free speech, the politics of the internet and the value of collective creativity and intellect, the staple value of this book's style and content.

The following section focuses on digital education more from the perspective of media and communication theory and history by Turner (IV), Barbrook (V) and Wark (VI). This section, as expected, emphasises the importance of various media in knowledge building and countercultures, discussing, among other topics, Wired magazine, radio activism, McLuhan, Sillicon Valley, the Anthropocene, and gaming. Section three unpacks ideas from critical education thinkers (Giroux, McLaren and Bayne) raising questions and reflecting on whether and how education has been changed by the digital from critical pedagogy, human and posthuman perspectives, and why it is important to engage in digital education from these perspectives. The fourth section in dialogue with Rheingold, Taylor, and Mars and Medak, tackles practice and activism, raising important questions on the relationship between the mind and technology, (de)institutionalisation of education and the importance of doing activism, not just being critical. The final thematic section considers the role of the arts in digital education (Levinson, Huffman and Vilensky), contemplating the arts in relation to science, science fiction, curation, collectives, emotions, discipline and the quest for equality. It is an important section, especially in light of the constant devaluation and marginalisation of the arts in neoliberal education, whereas the book's message is that the arts are intrinsically embedded in education and technology, especially as critical practices.

The closing chapter delegates the 'interviewer' or better to say the dialogic lead role to Sinclair and MacLeod, who lead the dialogue with Jandrić, wrapping up the ideas in the book and interrogating the processes of book creation and the work of

the author. It is hard to summarise the book's content within a limited review space, since it is literally bursting with thought-provoking ideas and commentaries.

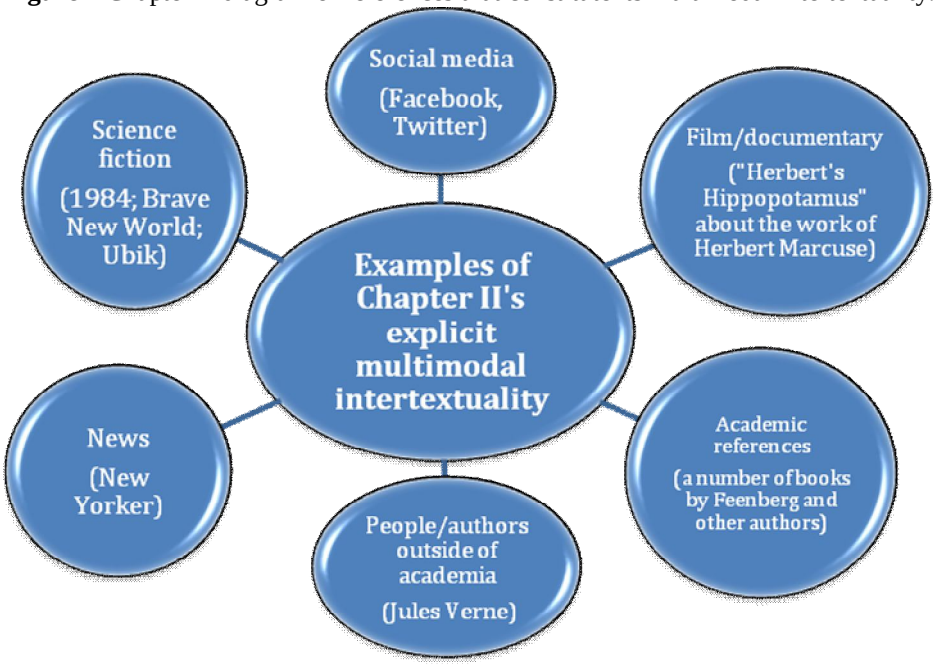
Going back to my intention to explain the value of intertextuality in *Learning in the age of digital reason*, evoking the fields that the book does not (overtly) cover (semiotics and multimodality as distinct approaches to communication), I must first say that intertextuality is a complex and contested term. Here, intertextuality serves the purpose of highlighting the relational nature of knowledge in the book's dialogic form, the view akin to Bakhtin (1981; Todorov, 1984)'s, and Barthes' (1971; 1975) synthesised by Kristeva (1980) who coined the term. The core idea of relational knowledge in intertextuality adopted in this review is the one of text depending on the 'figure of the web, the weave, the garment (text) woven from the threads of the "already written" and the "already read". Every text has its meaning in relation to other texts' (Allen, 2011, pp. 5–6). The internet is such an intertextual web. It is important to note that intertextuality exists at the cross road of references, inspirations, interpretations and associations located both in the text (provided, intended, unintended, implicit, explicit) and in the readers' mind (the cognitive side of intertextuality), emerging from an accumulation of all the information, seen, heard and read, conditioned by socio-cultural circumstances. The reading and ideological meaning of intertextuality is important to note, but for the purpose of this review, the focus is on explicitly provided references to the work of others.

An academic text is a particular case of explicit intertextuality since it commonly contains explicit references to the work of others. Jandrić's book clearly exemplified how dialogue is developed via intertextuality – by references to other texts provided in the book and embedded in Jandrić's questions to his interlocutors, by associations they evoke in them (commonly providing references to further texts) and certainly by readers' associations to other texts. What is distinct about explicit intertextuality of academic text is that it operates within disciplinary codes and it provides a direct source of the writer's interpretation of that source. The readers, if they are not familiar with it, but want to learn more and form their own interpretation, can find and read it. In a dialogic book such as Jandrić's, various references also serve the function of a dialogic prompt, a trigger, an elicitation tool for dialogues. Such dialogues involve constant interpretations of intertextual references by the participants in each one, and by the reader as the third interpreter.

Text here is defined not only via the linguistic mode, but via various modalities that mediate communication and meaning, and are interpreted by readers. Therefore, intertextuality is also multimodal. Multimodality (Kress, 2009; Jewitt, Bezemer and O'Halloran, 2016) of intertextuality is exemplified via references in a linguistic, academic text to texts in various other media and modes, such as film, fiction, science fiction, news, art, performance, architecture, scientific and technological artefacts. Some multimodal intertextual references feature in more than one chapter of Jandrić's book (e.g. Neuromancer (science fiction), and Wired magazine).

To illustrate the mentioned explicit multimodal intertextuality, I took as an example Chapter II dialogue with Andrew Feenberg. I created a diagram of various references mentioned in that chapter (Figure 1), including academic references that add to the multimodal mix.

Figure 1 Chapter II diagram of references that constitute its multimodal intertextuality.



The dialogues in all chapters are built around a rich tapestry of multimodal intertextuality, evoking, for example Frankenstein, The Economist, Space Odyssey 2001, cyborgs, libraries, and the Little Prince, to mention but a few! In that sense, *Learning in the age of digital reason* is a clear example of how knowledge can only be built in relation to other people, their work and artefacts. This reminded me of the idea of "lone genius" challenged by Dean Keith Simonton, Professor Emeritus at University of California, Davis, who stresses the importance of social networks for the growth and creation of knowledge and the rise of an exceptional creator. This is contrasted to the importance of individual traits and genius that are highly overstated in the society (Kalb, 2017). Indeed, social and communal networks' actions, activism and bases of knowledge provide conditions for the flourishing of individuals and their knowledge, who in turn should not only contribute to the self(-success/-power/-prosperity) but also to the society. This is in line with the author's and many interlocutors' stance and at the heart of this book, reminding the reader that our individual creations are at the same time products of collective knowledge, circumstances and networks, including material artefacts.

Some readers might not share all of and the same critical/radical/leftist/Marxist perspectives, some might want other critical lenses such as feminist, or might wish for more diverse interlocutors (e.g. non-white, more females, albeit Jandrić is explicit that ideally that would be the case and admits that the book lingers more towards male and western thinkers), and more synthesis of the chapters' inter-relational message and linkages in the closing of the book. Yet, this is arguably an inspirational book for every reader, academic and student, interested in and contemplating the big question of what it means to learn, think and live as mediated by technology. As summarised in Turner's words, 'this book is a document of our times' (Jandrić, 2017: 367). Written with captivating honesty and passion, *Learning in the age of digital reason* is a work of major collective educational effort and imagination: an event I greatly enjoyed; an intellectual party par excellence.

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