

Invited Symposium

Learning as material formation

Organisation: Åsa Mäkitalo, University of Gothenburg, Sweden
Chair: Nathalie Müller Mirza, University of Geneva, Switzerland
Discussant: Alfredo Gil Jornet, University of Oslo, Norway

Abstract of the Symposium

Most studies of learning tend to rely on theoretical distinctions and methodological principles that separate not only the human subject from objects or things, but also content from matter and form. Anthropological, sociocultural, sociomaterial and multimodal approaches all have means to bridge such dichotomies and have introduced alternative analytical accounts to study learning as processes of becoming. This symposium aims to further qualify such efforts and discuss how we analytically account for materiality in studies of learning. While learning can be analysed by following material-semiotic processes of inscription and design (i.e. how we learn to impose form onto matter), how can we more seriously take into account the textures of experience we gain from working with material formations?

1. Designing Learning Experiences: An exploration of learning as material formation in fashion design

Todd E. Nicewonger, Virginia Tech

1.1. Abstract:

This presentation draws on two and half years of ethnographic fieldwork among fashion design students and teachers in western Europe. The curriculum used to train these students emphasizes the creation of inspirational sources as conceptual starting points for the development of wearable design forms. Through these practices students learn to identify interrelationships among the body, sociality, and fashion by experimenting with inspirational material and immaterial sources. These sources are collected from students own lived experiences as well as through research. In the process of carrying out these experiments students learn to transform inspirational sources into aesthetic forms and objects that they can later use to develop the wearable designs of their collections. What I want to draw attention to in this presentation is how these experiments serve as intermediate staging grounds for learning through material formation. In doing so, I will present three different examples, which I will analyze in dialogue with socio-cultural theories on learning and expertise. Next, I will extend this discussion to the field of transdisciplinary studies where scholars are experimenting with design methods to cultivate transdisciplinary activities for expanding the capacity of research teams. In making this connection I seek to provide descriptive insights into the learning processes of designers, while also situating these examples within wider efforts to break down disciplinary barriers and generate new methods for producing collective knowledge and inquiry.

1.2. Extended Summary:

The primary **aim** of this presentation is to present ethnographic findings on how learning as material formation figures into the training of a group of fashion design students that I previously conducted ethnographic research on. The students I worked with learn to express social claims and generate new ways of relating cultural ideals, values, and moral outlooks about the social world through fashion design. This includes learning how to carry out prototyping experiments that center around the creation of inspirational sources that can inform the development of wearable designs.

What makes these practices interesting for the purposes of this session is that in these design institutions varying discourses of expertise, shared schematics, and philosophies of creativity are used to teach design. These institutional practices mediate how students come to understand what counts and does not count as learning within these contexts. They are also open to ethnographic analysis because they are expressed in social interactions involving peers and during student-teacher exchanges. Thus, by deconstructing how and under what conditions these socializing practices are employed and learned, this presentation opens up a critical framework for examining learning as material formation.

The **methodology** informing this presentation largely draws on insights generated from participant observation of classroom and studio activities. This ethnographic approach is informed by anthropological theories of learning, which argue that interactions between novices and advanced practitioners are productive sites for observing embodied processes. Moreover, these interactions are productive for ethnographic analysis because they are often full of examples where embodied knowledge is explicitly exposed through talk and other communicative practices. For example, the teachers I observed often asked students to explain in detail the experimental methods they used to generate a design form. In the process of explaining these methods students would explain through talk as well as with gestures and other semiotic techniques (like improvisational sketches) their design process. In turn teachers would provide critiques using similar communicative practices. Through these interactions with instructors, students learned to identify new approaches for carrying out their design work. They also learned to deconstruct assumptions about the design process, which allowed them to better align their efforts with the pedagogical goals of the institutions in which they were study in.

Additionally, I conducted interviews with teachers and students at different stages in the design process in order to further contextualize my observations. These interviews were supplemented by analyses of institutional theories and practices that were published or circulated as texts and media by the faculty in order to communicate their school's philosophical approaches to the outside world.

The **findings** from this study include socio-cultural examples of learning processes that emerge out of the materializing methods used by design teachers to socialize students into particular ways of doing design. This includes insights into how varying forms of prototyping are used to generate learning contexts for critically reflecting on how socio-culture experiences influence design processes. It also includes examples of shared ways of communicating and analyzing design processes, including the relationship that communicative practices have to the ideals and beliefs of the communities of practice in

which they are used. Finally, this study illuminated a number of unanticipated insights about the moral aspects of making, which this presentation will highlight and reflect on in detail.

The **theoretical and educational significance** of this presentation is twofold: first this presentation contributes to the work on socio-cultural learning by examining the mediating effects of materializing practices on learning processes. Central to this presentation is the idea that prototyping can serve as an intermediate staging ground for the development of learning through the generation of material forms. Second, by offering a thick description of the practices that design students use to carry out this work, this presentation opens up an analytical framework for considering how sociality and making (under specific educative contexts) can be experimented with in other interdisciplinary contexts. In doing so this presentation ends by bridging its analysis of design pedagogy to debates taking place in the field of inter-/transdisciplinary studies where making/prototyping is being theorized as a “tool” for generating transdisciplinary methods and collaboration.

2. Students’ dialogical reconstruction of experience: a sociomaterial perspective.

Antonio Iannaccone & Elisa Cattaruzza, Université de Neuchâtel

2.1. Abstract

Examining the dynamic process of materialization – including material and discursive practices – through which things emerge and act (Fenwick, 2015), we adopt a sociomaterial perspective that decenters the individualized human as the strict focal point for psychology and education. We consider the material-dialogic relationship (Hetherington & Wegerif, 2018) by analyzing discourse and matter as a whole in the students’ learning process. The research context presented in this research was two semester-long courses attended by 40 master-level students of the University of Neuchâtel (Switzerland). During the courses, hands-on activities were provided focusing on the design and set up of four workshops opened to citizens, in particular to children (aged 4–11 years) and their parents in collaboration with a cultural association. The empirical data presented in this paper are drawn from five audiotape-recorded focus groups, each lasting about 1 hour, conducted by three course teacher-researchers at the end of the semester. The focus groups were transcribed and analyzed to observe how students interpret and re-construct their workshop experience. Findings show how students’ dialogical reconstruction of experience, connected to their role during the activity, is intertwined with the sociomaterial activity and how students developed a greater awareness of their work through a description of their *opaque* experience (Cesari, Iannaccone, Mollo, 2015 ; Mouchet, Cattaruzza, 2015). Theoretical and methodological implications for research on learning and education will be discussed.

2.2. Extended abstract

The aim of our work is to challenge the classical representations of learning process as solely social or material. According to that, we adopted a concept of learning in which objects and subjects are not considered separate entities but as elements that interact together (Fenwick, Edwards, & Sawchuk, 2011; Iannaccone, 2017). Examining the dynamic process of materialization – including material and discursive practices – through which things emerge and act (Fenwick, 2015), our perspective decenters the individualized human as the strict focal point for psychology and education (Hetherington & Wegerif, 2018). The research context presented in this paper was two semester-long courses attended by 40 master-level students of the University of Neuchatel (Switzerland). During the courses, hands-on activities were provided focusing on the design and set up of four workshops opened to children (aged 4–11 years) and their parents in collaboration with a cultural association. All the workshop participants were engaged with materials in a free exploration manner, without following top-down instructions. The pedagogical aims of these courses were threefold. First, to implement sociomaterial perspective in educational context. Second, to promote collaboration between the university and the local community, in order to encourage a new way of carrying out school work. Third, to give students the opportunity of a participatory learning experience by taking on the role of: a) *entertainers*, who introduced the activity, managed the planning and the material arrangement; b) *observers*, who were in charge of observing the situation, with the support of instruments created during the course by the students themselves (e.g. observational grids, maps); and c) *participants* actively involved with children and adults in the activity. The courses combined observations, focus groups and interviews in order to gain a deeper insight into students' experiences. Our research question was: how do we gain access to the students' experience by considering their interactions with human and non-human elements? The empirical data presented in this paper are drawn from five audiotape-recorded focus groups, each lasting about 1 hour, conducted by three course teacher-researchers at the end of the semester. The questions covered the following themes: a) a description of their workshop experience, b) the perceived opportunity for materiality learning, and c) a description of a significant episode within the atelier. We adopted as unit of analysis the post-hoc dialogues transcribed and analyzed to observe how students interpret and reconstruct their workshop experience, change their meanings, and create new meanings (Markova and al. 2007). Findings show three main elements. First, how students' dialogical reconstruction of experience, connected to their positioning during the activity (Cattaruzza, Ligorio, Iannaccone, submitted), is intertwined with the sociomaterial activity. Second how students developed a greater awareness of their work through a description of their *opaque* experience (Cesari, Iannaccone, Mollo, 2015; Mouchet, Cattaruzza, 2015). Third how the students construction of meaning appears as a continuous alchemy of material, social and psychological elements.

This study can contribute to a) advance in understanding learning as a dialogical process between different actors (humans and non-humans); b) redesign pedagogical practices by promoting students engagement; c) rethink our posture as educational researchers and teachers d) consideration of the pedagogical implications for future learning practices.

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3. How moments add up to lives: Flat CHAT assemblage, embodiment, and lifespan becoming

Paul Prior, University of Illinois

3.1. Abstract

Asking how multiscale development produces both persons and societies, Lemke (2000) highlighted "the circulation of semiotic artifacts (i.e., books, buildings, bodies) that enables coordination between processes on radically different timescales" (p. 275). A Flat CHAT assemblage perspective (Prior & Olinger, 2019; Smith & Prior, under review) argues such circulations depend on a rhizomatic, dialogic, material-historic architecture for *becomings* (Barad, 2007). Rejecting neo-Platonic reserves that escape relentless material motion, Flat CHAT assemblage means that no societies, languages, norms, discourse communities, activity systems, cognitive structures, or genetic codes sit placidly above the dispersed constantly flowing movement of historical materialities. Lifespan becoming then happens as embodied moments are dynamically, temporally but temporarily, accumulating and shedding. In this paper, I draw on a lifespan case study of a biologist to explore how affective intensities (Leander & Boldt, 2013) across moments built not only this trajectory of becoming a biologist but implicated the human and non-human networks through which that trajectory becomes textured into a recognizable lifeworld. Based on interviews (life-history, semi-structured, and text-based), participant observation, a collection of texts that

reach back to elementary school, and memory, I trace *resonances* (Stornaiuolo, Smith, & Phillips, 2017) across four moments in her becoming: a family pretend game focused on imaginatively saving animals, a response at age 5 to an episode of a documentary nature program, a day in a forest in Uganda with field guides observing a group of monkeys, and an interaction as she was writing an article that would become part of her dissertation.

3.2. Extended Summary:

Asking how "moments add up to lives" and "our shared moments together add up to social life as such" (p. 273), Lemke (2000) highlighted "the circulation of semiotic artifacts (i.e., books, buildings, bodies) that enables coordination between processes on radically different timescales" (p. 275). Accounts of learning and coordination often depend on identification of some human, social, or cognitive neo-Platonic architecture (e.g., universal language competence, societal norms, or schema theories). Linking Voloshinov's (1973) radical argument that "history is a purely historical phenomenon" (p. 82) to rhizomatic accounts of material-semiotic phenomena (Deleuze & Guattari, 1987; Latour, 1999, 2005) and CHAT (cultural-historical activity theory) accounts of activity and learning (e.g., del Rio & Alvarez, 1995; Engeström, 2006; González Rey, 2011; Gutiérrez, 2014; Vygotsky, 1987; Wertsch, 1991), I offer an alternative architecture, Flat CHAT assemblage (Prior & Olinger, 2019; Smith & Prior, under review). Flat CHAT assemblage argues that the coordinated circulations Lemke invokes depend on a rhizomatic, dialogic, material-historic architecture for *becomings* (Barad, 2007). Rejecting neo-Platonic reserves that escape relentless material motion, Flat CHAT assemblage means that no societies, languages, norms, discourse communities, activity systems, cognitive structures, or genetic codes sit placidly above the dispersed constantly flowing movement of historical materialities. Lifespan becoming then must be accounted for as embodied moments are dynamically—temporally but temporarily—accumulating and shedding.

In this paper, I draw on a lifespan case study of my daughter, Nora, a post-doctoral biologist, to explore how *affective intensities* (Leander & Boldt, 2013) across moments built not only her trajectory of becoming a biologist, but also implicated the human and non-human networks through which that trajectory has become textured into a recognizable lifeworld. The case study is based on life-history, semi-structured, and text-based interviews; participant observation; a collection of texts that reach back to elementary school; and memory. I trace *resonances* (Stornaiuolo, Smith, & Phillips, 2017) across four moments of affective intensity in her becoming: 1) a family pretend game focused on imaginatively saving animals from Cruella de Vil (the Disney movie villain who kidnapped baby animals to make a fur coat); 2) an evening when at age 5, watching an episode of a documentary nature program, she broke out sobbing at the plight of a young cheetah and announced that she would go to Africa to save animals; 3) an account of a day in a forest in Kibale Park, Uganda where she and field guides were observing and collecting fecal samples from a wild group of red colobus monkeys, and 4) a challenging moment from the writing process as she was working on an article that would become part of her dissertation. I argue that what coordinates these four moments is not only the resonance of identity-making affective intensities, but also the

convergence in each of a whole host of human and non-human material-semiotic artifacts and practices (e.g., children's books, bird-watching, multiple trajectories of scientific and technical production of knowledge and tools, home and school pedagogies of science, domestication of dogs and cats and practices of family pets, multiple forms of disciplinarity spread across public and home lifeworlds, etc.).

I will conclude by noting how difficult it is to sustain a Flat CHAT assemblage perspective as our languages index typifications that sabotage that perspective, repeatedly positing frozen things in unified spaces. Methodologically and theoretically, such typifications invite research that examines questions like how *science* is learned through talk, text, and gesture *in* classrooms, which implies science is a thing rather than evolving convergences of dispersed, fluid, rhizomatic phenomena; that communication can be neatly parsed among distinct modes rather than being embedded in embodied semiosis; and that social spaces (whether classrooms or disciplines) are unified and bounded spaces rather than profoundly laminated and distributed assemblages constituted by heterochronic-heterospatial trajectories flowing across imagined boundaries with varying degrees of speed, resistance, and consequence.

Pedagogically, Flat CHAT assemblage questions education as transmission, even transmission of supposedly authentic practices as in the Common Core project in the US. Instead, it suggests a focus on trajectories of semiotic becoming, where learning is embodied, dispersed, mediated, laminated, and deeply dialogic. Becoming then happens not *inside* domains, but *across* the many moments of a life. The spaces of becoming are never pure or settled, discourses and knowledge are necessarily heterogeneous, and multiple semiotic resources are so deeply entangled that distinct modes simply don't make sense. The questions this perspective invites then involve understanding and optimizing the resources and values that support diverse pathways of becoming.

4. Textures of experience in professional practice: Learning from working with material formations.

Åsa Mäkitalo, University of Gothenburg

4.1. Abstract

By following categorizing practices, inscription and design in the fields of endodontics, hypertension care, social work and IT support, the author of this paper has recurrently focused on learning as triggered by observable gaps between action and expectation in the coordinated flow of situated activities. This paper aims to further explore how *textures of experience* from working with material formations, can be productively conceptualized and analyzed by revisiting two earlier studies of sites arranged for learning: Case studio talk in a global IT support team, and focus group discussions with professional dentists specialized in endodontics. By noticing and revisiting earlier events and activities, and by re-minding professionals of their situated concerns, particular textures of experiences are made salient as work with material formations.

4.2. Extended summary

Background and aim. Since the late 1980's anthropological, sociocultural, sociomaterial, multimodal approaches have launched fundamental critique towards dichotomies that are still underpinning much research on learning. The reliance on theoretical distinctions and methodological principals that separate the human subject from objects and things and content from matter and form, will inevitably disconnect us from grasping professional learning. Through empirical studies of professional vision and categorization work and by analyzing the details of relevance to participants own projects and concerns, Goodwin (1994; 1999) has greatly contributed with an alternative approach to traditional studies of professional practices. Such studies have challenged theoretical and methodological ideas that separate human activities from their sociocultural, historical and material environments, and their social interaction and cognition from matter and form (Mäkitalo, Linell & Säljö, 2017). By documenting and scrutinizing bodily action-in-interaction with semiotic means in their material surroundings, this and similar analytical traditions emphasize learning as processes of becoming (Gherardi, submitted; Prior et al, accepted; Ingold, 2011). By following material-semiotic processes of interaction, inscription and design, the author of this paper has recurrently focused on learning as empirical instances triggered by gaps between action and expectation in the coordinated flow of situated interaction. This paper aims to further explore how textures of experience from working with material formations can be productively conceptualized and analyzed in professional settings.

Methodology. To gain a more thorough insight into such transformations two empirical studies of professional learning as re-mediation of daily work practice in IT support (Bivall & Mäkitalo, 2013) and endodontics (Mäkitalo & Reit, 2014) respectively, were re-analyzed. The cases were chosen as they constitute examples of work activities arranged to develop and articulate standards of current expertise by revisiting everyday work situations. The cases were analyzed with a more refined *focus on material re-mediation*, and the *textures of experience* gained from *material interruptions of projected action*. Projected action is pursued with expectation, i.e. with a sense of situated relevance and meaning in anticipation of its actual performance and situated response.

Results. The analyses of how material re-mediation of everyday tasks where made into a matter of joint concern, focused on instances where interruptions of projected action were salient in both empirical cases. Taking the participants' concerns into account in these inquiries, required simultaneous attention to the participants' accounts of the materiality of unfolding events on the one hand, and their meaning as socially emerging accounts of professional practices, on the other. Two analytical notions were generated for the purpose of making this distinction clearer. While the notion of projection lends meaning to action when pursuing work, the notion of social recollection transforms projected actions into retrospective accounts of what is considered professional expert practice. This paper suggests that the aim of conceptualizing and analyzing textures of experience, can be relevantly pursued by scrutinizing how social recollections of disrupted projected action are recast as relevant material formations of the actors' experience.

Relevance. This paper raises the question of how we as analysts can more seriously take into account the *textures of experience* participants gain from *working with material formation* within professional work. This is considered relevant, not only to push forward current research on learning but to gain a more thorough understanding of how learning transforms to knowing, i.e. into established professional practice. This is of relevance to professional learning *for* work (professional education) as well *in* work (in-service training).

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