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Synthesizing the face-to-face experience: e-learning practices and the constitution of place online

J. Maintz

Microsoft Deutschland GmbH, Stresemannallee 4b, 41460 Neuss, Germany

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Abstract. In this article, I observe the relational production of place online through the mobile practices of an e-learning course that combined interactions in physical and online environments. I use actor-network theory as analytical framework to explore element interrelations of this e-learning course, an International Cooperation project organized by Capacity Building International (InWEnt). The course involved participants from African, Asian, European, and Latin American countries. This transnational program included travel from different continents to Germany and South Africa for the participation in face-to-face workshops as well as online interactions. Face-to-face encounters strongly affected e-learning interactions. I show how course participants introduced face-to-face experiences online through associative impulses. I identify these associations that were contributed as texts to online forums as enactments of Law and Mol's concept of "fire space". Fire spatial impulses functioned as compensatory practices with respect to scarce sensory and symbolic information in online environments. Social cues associated with the sensory and symbolic information from physical spaces that learners introduced online highlighted the decisive role of face-to-face social stimuli in the constitution of online places. Results are based on ethnographic participation in the observed e-learning course.

1 Blending physical and media-generated social spaces

Computer-mediated communication has attracted attention for its potential to sustain collaboration since the 1980s (Hine, 2000:14). Advances in information and communication technology have in the meantime enabled information-sharing, communication, and co-work of distributed parties. Internet-based collaborative virtual environments have been especially adapted to the needs of spatially distributed learners in the case of e-learning platforms. The Internet thus has not only given rise to the transfer of information and communication, but enables encounters in online environments. Moreover, advances in computing and communication technologies promote media-generated interaction spaces, which overlap with face-to-face environments (e.g. the communicative spaces generated by the use of mobile phones; Sheller, 2004:46). The very interface of parallel, overlapping or merging media-generated and physical spaces are targeted by recent sociological and geographical work (see Cooper, 2002:22–26; Green, 2002:282–285, 290–291; Sheller, 2004:40, 48; Urry, 2003:156, 159, 171; 2004:28; Koch, 2005:12–13). Blended spatialities increasingly promoted by advances in communication and ubiquitous computing technologies indeed hold great potential for the advancement of geographical and sociological work.

The international phenomenon of increasingly mobile societies corresponds to a mobile lifestyle at the individual level. Individuals travel for professional or private reasons and are often *accompanied* by mobile devices that sustain their information and communication (basic!) needs. Mobile devices such as cell phones or laptop computers connect these persons to media-generated interaction spheres in addition to their physical environments (Urry, 2004; Sheller, 2004). The distinctness of media-generated and face-to-face socialities will be increasingly blurred, especially by advances in Ubiquitous Computing (Streitz and Nixon, 2005:33–35). Computing devices will pervade and permeate more and more spheres of human interaction, and will be increasingly integrated in people's daily lives. Today's often clearly distinguishable computing artefacts will be less visibly integrated in social environments and along with human accommodation will be perceived less as artefacts. The computer will "disappear" *physically* and *mentally*

Correspondence to: J. Maintz
(i-jumain@microsoft.com)

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(Streitz and Nixon, 2005:34). Mobile geographies[1] might merge with geographies of blended face-to-face and media-sustained environments in the future (see also the concept of "new spaces of circulation", Thrift, 2000:677–687; Amin and Cohendet, 2004:102–103).

This paper targets the interrelation of face-to-face and online environments when they are enacted as social spaces. How do online environments – as instances of media-generated spaces – and face-to-face environments interrelate, if social actors use both realms in their interactions? How do these spaces parallel each other, overlap or merge?

2 Actor-network interactions at the interface of physical and online spaces

The interrelation of physical and online spaces in social interactions is exemplified by the empirical case of this paper, a blended learning course. The concept of *Blended* Learning refers to the combination of face-to-face and online phases in the conception of e-learning programs. Trends in e-learning highlight the importance of such scenarios, which are assumed to combine the strengths of electronic learning with advantages of face-to-face teaching (see Dittler, 2002).

I approach the topic of interrelating online and physical environments by exploring the interaction of human e-learning course participants with objects and situation-specific influences of any kind that are related to their social activities. Such endeavour acknowledges that online spatiality can be conceptualized as constituted through relations of human and (technical) objects. Focusing on knowledge production processes, Amin and Cohendet (2004:86–111) describe the connection and disconnection of people and objects as taking place in physical and online spaces. They refer to practices of knowing as shaped by the relational proximity of unique constellations of humans and (technical) objects. Relational proximity could comprise the spatial proximity of elements, but would not depend on it. Spatial proximity then is a modality, but not a precondition for relations. Amin and Cohendet outline the potential of the actor-network concept to describe distributed interaction (Amin and Cohendet, 2004:103).

"[K]nowledge is not fixed to particular sites (geographical locations or network sites). The "stickiness" of knowledge in these sites, be they clusters or R&D units or brainstorming events, stems from the unique interactions and combinations of bodies, minds, speech, technologies, and objects that can be found there, crystallized in a set of local practices of doing, interpreting, and translating or perhaps even in a momentary flash of inspiration. It has little to do with "native" practices or locally confined assets. If there is a boundedness to the knowledge generated in each site, it is a feature of its entrapment and nodal position within specific actor networks of varying spatial composition and reach, not a feature of local confinement (Amin and Cohendet, 2004:102–103)."

I choose the relational approach of actor-network theory (ANT) to study the empirical case of the blended learning course allowing for the integration of elements of any kind.

Actor-network theory understands the world as a complex of heterogeneous elements involved in network-building processes. The reconstruction of network elements and their interrelations in the observed contexts is seen as the task of empirical work without having met prior ontological assumptions. Actor-network theory does not conceive qualities of elements as essentialist properties, but as produced in relation to other elements. Qualities are defined by context; difference and hierarchies are understood as effects.

"[. . .] I simply want to note that actor-network theory may be understood as a semiotics of materiality. It takes the semiotic insight, that of the relationality of entities, the notion that they are produced in relations, and applies this ruthlessly to all materials [. . .] (Law, 1999:4)."

According to ANT, *performativity* is part of the concept of *relational materiality*. As the form of elements is produced through relations including their position in a network of relations, form changes when network relations change (Law, 1999:4). In contrast to social constructivism that analytically and conceptually focuses on human actors, ANT observes networked socio-material ensembles including non-human elements (Jöns, 2003:95–96). The key concept of actor-network theory is the actor-network. "Actor-networks" are constituted by the ensemble of elements defined by their relations. Relations might be held stable for a certain time, or change in the process of connecting or disconnecting with new elements.

In this paper, I conceptualize the observed blended learning course as actor-network consisting of a group of human and non-human course members (virtual characters), time- and space-related conditions as well as the situation-specific influences relating to the course. I explore the circulation of e-learning course elements. How did the interrelating elements *blend* physical and online environments?

3 The empirical case: a blended learning course

The empirical focus of this research was the blended learning course "e-Learning Training and Management (eLTM)" offered by Capacity Building International (Internationale Weiterbildung und Entwicklung/ InWEnt, headquartered in Germany and partly financed by the German Federal Ministry for Economic Cooperation and Development). It took place from 16 April to 2 December 2003. The International Cooperation project involved participants from African, Asian, European, and Latin American countries. The aim of the course was to teach learners how to develop

[1] Grabher, Panel "Mobilities" at the 2005 Annual Meeting of the Society for the Advancement of Socio-Economics. I thank Prof. Gernot Grabher for indicating the importance of the concept of co-presence to mobile geographies.

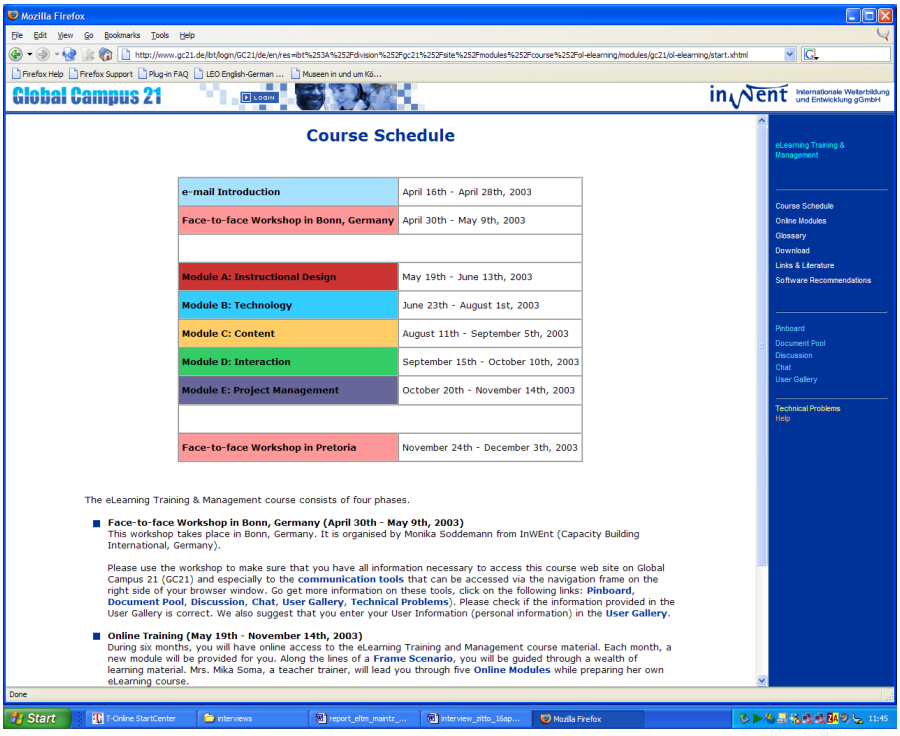

Fig. 1. Shared virtual workspace.
Source: http://www.gc21.de, access-restricted shared workspace "e-Learning Training and Management 2003", access: 1 December 2003, printed with the friendly permission of InWEnt.

their own e-learning projects for implementation in their individual work contexts. The blended learning course was compiled of two opening and concluding face-to-face workshops of about ten days, framing the course's six-month-online phase. The transnational project included physical travel from different continents to Germany and South Africa for the participation in the face-to-face workshops. Online interactions of the blended learning course were based on InWEnt's e-learning and e-cooperation platform Global Campus 21[2]. A shared virtual workspace was opened on this Internet platform for the blended learning course (see Fig. 1). It included synchronous and asynchronous collaboration tools: chat, pinboard, document pool, discussion forum, and user gallery.

I chose an ethnographic approach to study the blended learning program, in which I adopted a methodological sensitivity to principles of virtual ethnography (Hine, 2000). A reasonable knowledge of informants through contact during an extended period of time constitutes the base for ethnographic research. Hine proposes an ethnomethodologically motivated reflexive ethnographic experience through shared practice – here the use of the same collaborative tools as the informants – in the same intensity as the informants:

"A limited medium like CMC [Computer Mediated Communication; J.M.] seems to pose problems for ethnography's claims to test knowledge through experience and interaction. The position changes somewhat if we recognize that the ethnographer could instead be construed as needing to have similar experiences to those of informants, however those experiences are mediated (Hine, 2000:10)."

Methodological implications are to understand the concepts of "ethnographic participation" and "field site" as defined by shared experience, be it in physical or online environments.

This paper is based on data from face-to-face and online interactions. I collected data in the form of participant observation (Bogdan and Taylor, 1975), an online group discussion (Pollock, 1955; Dreher and Dreher, 1982), an e-mail survey, and face-to-face ethnographic interviews (Spradley, 1979; Heyl, 2001). The "ethnographic" nature of these methods consists in the duration and frequency of contact with informants and the quality of the researcher's relationship with informants (Heyl, 2001:369). Moreover, I examined online data that had been generated in the communication tools pinboard and chat in regular course interactions and were archived in the online environment. I analyzed these data by theoretical coding (Glaser and Strauss, 1967; Glaser, 1978; Strauss, [1987]1991; Strauss and Corbin, 1990).

[2]The Global Campus 21 (GC21) is accessible at http://www.gc21.de, for InWEnt's website see http://www.inwent.org.

	Physical environment	**Online environment**
Synchronous co-presence	face-to-face meeting	shared online environment
Asynchronous co-presence	*not possible face-to-face*	time-shifted use of the same online environment
Synchronous *and* asynchronous co-presence	synchronous co-presence in physical environment *and* asynchronous co-presence online parallel synchronous co-presence face-to-face *and* online	

Fig. 2. States of co-presence (author's design).

4 Co-presence

I define co-presence in this paper as synchronous or asynchronous encounters in the same environment, be it in physical environments or online. Co-presence in physical and online environments is considered of crucial importance for establishing and nurturing human relations (Urry, 2003:156–157, 161–172; 2004:29–36). The blended learning course participants enacted the following variants of co-presence: synchronous co-presence in a physical environment (face-to-face meeting); synchronous co-presence in an online environment (by way of sharing the same online environment, for instance when using the chat tool; video conferencing was not used in the empirical context); asynchronous co-presence online (time-shifted use of the same online environment); synchronous co-presence in a physical environment *and* asynchronous co-presence online; parallel synchronous co-presence in a physical *and* an online environment (see Fig. 2).

Synchronicity applied to the encountering of people face-to-face: the encountering of course participants at the face-to-face workshop locations and the encountering of individual participants with people in their face-to-face environments. Online encounters in chats were defined by a state of co-presence that approached synchronicity. When exposed to optimal conditions, virtual synchronicity would mean a minor delay in data transmission. Participants were often exposed to sub-optimal technological conditions restraining their Internet access. They consequently either faced slow data transmission, or they would be disconnected abruptly or be even unable to join co-present meetings at all. Frustration in these cases diminished the perception of scheduled synchronous events as motivating social experience.

Asynchronous online encounter was facilitated by the remaining communication tools of the shared workspace on the e-learning and e-cooperation platform: user gallery, pinboard, discussion forum, and document pool. In addition to containing photos and personal profiles of the e-learning course participants, the user gallery tracked the co-presence of participants by displaying when they had last left the shared workspace or if they were online. By informing users about synchronously co-present others when signalling "online", the user gallery in principle promised spontaneous and immediate encounter. This promise could not be realized due to the selection and functionality of available communication tools. Instant messaging, a tool that had not been integrated in this shared virtual workspace, would have directly notified a participant's synchronous co-presence and willingness to communicate – in the case of an optimal connectivity situation. In cases of deficient connectivity, instant messaging had led to communicative misunderstandings in InWEnt's previous e-cooperation groups, the case why this tool had not been included in the shared virtual workspace of the observed e-learning course. However, the integrated communication tools did not allow for the sensing where in the shared workspace another participant would be located, meaning which tool the respective person would be using. That is why it was a question of luck to meet someone "in" the tool the person would presently be using, and to send a message to this person to propose a spontaneous meeting, for instance in the chat. The design and selection of communication tools thus only partially sustained spontaneous synchronous and informal meetings.

Asynchronous co-presence lacked direct social exchange. This deficit apparently limited the course participants' use of and enthusiasm for asynchronous communication tools except for the purely informative tools, user gallery and pinboard. The pinboard allowed participants to post short text messages to all users of the shared virtual workspace. The user gallery and pinboard were popular due to their immediate accessibility; information could be obtained at a glance. The discussion forum, by contrast, employed a tree-structure design, which required time-consuming multiple double-clicks when unfolding contributions to discussion topics and submitting comments.

Course participants mentioned download speed and the corresponding spontaneity and immediacy of interactions, and awareness of those co-present as contributing to a positive co-presence experience. These factors accord with design characteristics for collaborative virtual environments described by Churchill, Snowdon, and Munro (2001:9) and Fisher (2003:10). Synchronous co-presence was moreover experienced as providing the crucial aspect of two-sided communications: "response-presence" (Knorr Cetina and Brügger, 2002) enabling immediate social exchange. The potential of chats for spontaneous and immediate social encounter was perceived to motivate subsequent asynchronous work.

Course participants stressed that meeting face-to-face was the key motivator of blended learning interactions. As described by Goffman with reference to Simmel (1908:647–648; Goffman, 1963:15, 89–93; 1971:11–14), bodily cues such as gestures and eye contact contribute to an integral impression of communicative exchange. Face-to-face exchange would lead to a rich impression of the communicative

intention, and moreover a perception of the person her- or himself. Urry develops the concept of "meetingness", which he interprets as a behavior pattern of networked sociality (Urry, 2003; Urry here refers to Wittel, 2001): Meetingness implies the nurturing of professional and private relationships at a distance by meeting in person. Recognized as essential for reviving relations from time to time, meetingness often involves travel over long distances (Urry, 2003:156). Attractive locations are often selected for these occasions. The practical realization of meetingness was highly appreciated in the blended learning program. Meeting face-to-face at a special location implied the development of personal relationships, a feeling for group dynamics, and the establishment of a repertoire of joint experiences. This repertoire was revived in explicit memories or associations (often as jokes) that gave a personal touch to online interactions. Social activities face-to-face in the context of leisure programs that included barbecues and parties as well as explorations of the cultural and physical environments around the workshop locations decidedly contributed to building personal relationships and joint experiences: a short, but joint, history.

Bodily cues functioning as social cues were missed in online communications. This became obvious by way of an ongoing discussion about participants' online photos. Participants commented repeatedly on one another's photographed expressions – especially on whether or not the mouths were smiling. They argued that photos could not replace the communicative experience of the face-to-face situation.

Face-to-face knowledge of the people someone would be talking to in online interactions was moreover described as essential for the maintenance of online relations for an extended period of time. Furthermore, a personal connection with the online counterpart would contribute to the smooth performance of online roles, such as the tutor role affording close contact with learners due to (and despite of) spatial distance. The personal connection was stated to be equally essential for the promotion of cooperation and co-work among learners. Periodic face-to-face meetings would regenerate online interaction.

Parallel exposure to face-to-face and online environments facilitated coordination of activities of both realms. In situations requiring synchronous co-presence in physical environments and asynchronous co-presence online, the coordinative challenge seemed to be relatively moderate. Participants would follow face-to-face interactions in physical environments and get involved in asynchronous activities online when possible and at their own pace. Participation in synchronous face-to-face as well as synchronous online copresent activities afforded an enhanced individual concentration. For instance, the doubling of outside professional commitments and activities for the e-learning course culminated in the synchronicity of professional meetings in face-to-face environments and of online course chats. The participants' coordination of activities in both realms often led to their reduced participation in either of the two. Reduced participation would affect interaction partners, face-to-face as well as online, sometimes resulting in perceived insult or neglect. This scenario of co-presence created potentially stressful situations for course participants who were required to be available in their professional and private face-to-face environments and synchronously online for course interactions. Absences of course participants were frequent when synchronous activities were scheduled online. In addition to connectivity cuts, participants mentioned problems with their personal time management as reasons for their absence. As observed in the course of this research, absence from and presence for co-present activities (due to personal and technological influences) were perceived in an articulated way in co-work situations, whereas participants reported only a vague impression of spatial distance.

5 Actor-network elements and spaces

Relational spaces have been conceptualized in science studies in various forms. Laboratory studies focused on the scientific practice of knowledge production and emphasized the constitutive role of local conditions (Latour and Woolgar, 1979:29, 152; Knorr Cetina, 1979:348, 357–361; 1981:37–40). Latour (1987) explored the transferability of scientific facts and artefacts through a reconstruction of the respective conditions of production. Insights from laboratory studies have influenced ANT's explorations concerning the stability or instability of the relationally constituted actor-networks (e.g. technical artefacts) with respect to their movement through different spaces. Various conceptions of space play a role in relation to actor-network processes: network space, physical space, fluid space, fire space (Law, 2000a; Law and Mol, 2001a). These spaces are conceptually related to forms of actor-networks: mutable mobiles and immutable mobiles. "Mutable mobiles" are actor-networks subject to changing constellations of elements. "Immutable mobiles" hold their form (stable) when moving through different spaces. The mutability or immutability of these mobile actor-networks stresses the influence of time and space as co-defining elements for actor-network form.

"Network space" as interpreted by ANT signifies the topological character of relations between elements constituting an actor-network. If we take the classical ANT example of the "vessel", we find that the vessel exemplifies network space as it is created by (actor-) networked elements. The vessel as topological structure moves through physical space, which can be approached as a geometric space, "Euclidean space".

The immutability belongs to network space: to a first approximation the vessel doesn't move within this. If it did, it would stop being a vessel. But it is that immutability in network space which affords both the immutability and the mobility in Euclidean space. To put it more strongly, it is the interference between the spatial systems that affords the

vessel its special properties. We are in the presence of two topological systems, two ways of performing space. And the two are being linked together (Law and Mol, 2001a:612).

The purpose of moving through physical space is one of the elements defining the actor-network "vessel". The vessel exemplifies the immutable mobile. It is mobile in terms of moving through physical space. It is immutable in the sense of holding its actor-network stability, the relations between its elements. It is immutable in its network spatiality.

A fluid object in contrast holds its form by the variability of its actor-network elements: "It is part of – it helps to enact – a fluid topology (Law, 2000a:8)." A fluid actor-network enacts network space. The actor-network constituting this fluid object can show a different meaning and performance in different contexts. An example for a fluid object is the "bush pump". It is a fluid technology defined by its purpose, the extraction of water, its technique of use, its material composition, its users, and its place of application. At different locations, the composition of the actor-network "bush pump" changes, but it still can be identified as a bush pump. The situation-specific conditions of its use define its composition. For instance, at one place the water extracted by the pump meets the guidelines for water quality. This leads to a different use of the pump as at places where water quality is measured or judged differently. The bush pump is a mutable mobile as it holds its form neither in (or as) network space nor in physical (Euclidean) space.

"The bush pump certainly exists in and enacts Euclidean space, and I've just suggested that it may also in some measure exist in and perform network spatiality. Perhaps, then, we need to say that it shuttles between these different topoi, performing relations between them (Law, 2000a:9)."

According to Law's concept, the bush pump cannot be judged as failing actor-network, but as mutable mobile defined through its character of changing composition (Law, 2000a:7).

Drawing on Bachelard ([1938]1964:13–14), Law and Mol (2001a) adopt the fire metaphor to develop the concept of fire space. "Fire space" relates to form as an effect of discontinuity. The "flickering relation between presence and absence" would constitute the very essence of fire spatial formations:

"As with fluid constancy, movement rather than stasis is crucial. Without movement there is not consistency. The difference is that, whereas in fluidity constancy depends on gradual change, in a topology of fire constancy is produced in abrupt and discontinuous movements. [...] [F]ire is a metaphor for thinking about the dependence of that which cannot be made present – that which is absent – on that which is indeed present. Or, as the poststructuralist literatures sometimes put it, the way in which the authority of presence depends on the alterity of Otherness. Topologically, then, our argument is that in fire space a shape achieves constancy in a relation between presence and absence: the constancy of object presence depends on simultaneous absence or alterity (Law and Mol, 2001a:615–616)."

With the concept of fire space, Law and Mol respond to major criticisms of actor-network theory. It accounts for the difficulty to include *otherness* in a network imagery. "[The network concept; J. M.] allows for no space outside. In effect, it leaves no room for alterity, and allows for nothing to stand outside the relations that it orders through its description of the world (network)" (Hetherington and Law, 2000:128). Even when part of networks, elements or subnetworks might be marginalized or less influential (Lee and Brown, 1994:784). Answers to criticisms of the (actor-) network concept stress that otherness – defined by intransitive relation(s) – could interfere in network relations and contribute to stability (Law, 2000b:147–148). Accounts on incoherence, ambivalence, and potentially otherness stress the fluidity of spatially constituted relations. They adopt images of fluid topologies: the "(im)mutable mobile" (see Mol and Law, 1994; Law, 1999; de Laet and Mol, 2000; Law and Hetherington, 2000; de Laet, 2000:155–156; Law and Mol, 2001a, b), the "rhizome" (Deleuze and Guattari, 1976:17–38; [1980]1988:12; Latour, 1999; see Grabher, 2006:16–18), "fire" (Law and Mol, 2001a). "[W]hat happens if presence and absence – or proximity and distance – are *not* opposed to one another [...] (Callon and Law, 2004:3)?" Absence as a form of presence is described as having "unsettling but transforming effects (Hetherington and Law, 2000:130)" and to occupy "blank spaces" (Hetherington and Lee, 2000:180–182). Absence is then ascribed a mode of agency (Hetherington, 2004:170). Or, as Singleton and Michael observe, incoherence and ambivalence rather than coherence might lead to network stability (Singleton and Michael, 1993:257–259; Singleton, 1998:100–103).

"The concern is neither with arguments "for" nor "against" actor-network theory. These are not necessarily very interesting in and of themselves. What *is* interesting are matters, questions, and issues arising out of, or in relation to, actor-network and the various approaches to thinking materiality, ordering, distribution and hierarchy with which it interacts (Law, 1999:9–10)."

6 Fire spatial impulses: face-to-face associations online

In the observed blended learning program, information circulated between face-to-face environments and the online environment. Knowledge produced online returned to the face-to-face sphere. Electronic network space linked material objects (e.g. hardware) in face-to-face environments. It enabled the exchange of digital objects between course participants. Relational spatiality, or network space in ANT terminology, was exemplified by the interrelating elements that were involved in the production and exchange of information between persons in the course context. When understanding these environments as relationally associated, individuals participating in both constituted node points between the interaction realms. Sensory and symbolic information from

contact with physical places diffused through these human node points, connecting physical and online environments. Persons absorbed face-to-face experience and transmitted it in the form of textual contributions to online forums to enrich the online experience. Elements that were associated with the face-to-face experience entered online interactions in synchronous and asynchronous co-present interactions.

This diffusion did not occur as constant phenomenon. It happened rather abruptly, like fire flaring up. Associative impulses from face-to-face social, cultural, and physical, especially natural, environments interfered online.

"Namibia is fine and very hot. It rained mid January and some suburbs were flooded in Windhoek. The Kavango and Zambezi rivers are also rising at a fast speed, so there are warnings of potential floods in the Caprivi and Kavango areas – close to the Zambian border (Ina, chat 2 February 2004; 16.08 h)."

I call these face-to-face stimuli enactments of Law and Mol's concept of fire space (Law and Mol, 2001a:615–616). They enacted absence and presence of associated qualities. Fire spatial enactment took place as transfer of associative information from face-to-face experiences at physical places to online environments (see Fig. 3). Course participants perceived online interactions as lacking sensory information in comparison to face-to-face interactions, which they judged as a socially less rich communicative experience. Sensory information from physical environments had a compensatory effect for scarce sensory information online. This transfer occurred in the form of contributions carrying associations of physical environments to the diverse online communication tools, including posts to online forums that carried explicitly visual or acoustic information. Thereby, social interactions introduced physical-material connotations to a technologically generated environment by importing associations of the physical-material. These associations enriched online interactions with sensory impulses that functioned as social cues. Moreover, symbolic meaning attached to the physical-material sustained social interaction online.

One focus of fire spatial impulses in their sensory and symbolic manifestations was *social activities*. Associations of social activities that had been experienced at physical places in face-to-face encounters, often nurtured by impressions of cultural and natural environments, flared up in online interactions.

"[Our barbecue; J. M.] was ten times better – apart from the singing and dancing, we even managed to persuade the fish out of the river, it jumped on the barbecue and we ate it instantly!! (Victor, 6 May 2003; 15.50 h)"

The apparent purpose of fire-spatial stimuli was the learners' compensation for lacking explicitly social activities online, such as informal leisure activities. They served to update joint history, to revive the course's social aspects. This behavior implicitly highlighted the fact that social activities were limited to face-to-face encounters. Social stimuli resulting from personal contact supported online learning. This

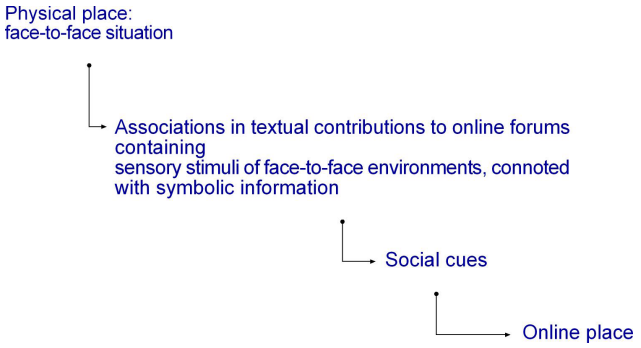

Fig. 3. Fire spatial impulses: Face-to-face associations online (author's design).

research indicates that personal relations exposed to online collaboration weaken, if they are not refreshed face-to-face after reasonable (context-dependent) periods of time. Co-presence face-to-face, practiced as meetingness, introduced important stimuli in blended learning interactions. Face-to-face meetings moreover were, as just described, the resource for associative posts to online forums that functioned as social cues and compensated for scarce sensory and symbolic information online.

A second application of fire space related to *distant others*. Distant others, persons not in direct course context, were linked to the "inner circle" communications between course participants by being mentioned by participants. These individuals did not show themselves in communicative and face-to-face situations in an unmediated form. Distant others seemed to function as intermediaries in inner actor-network communications. They operated as explanations for personal or professional commitments:

"I want to tell you that I am in the middle of my daughter's wedding, so it is a little bit messy my life in this moment. [...] I have not started doing my tasks, but I promise to do them next week when my daughter's wedding will be over (Ruth, chat 5 November 2003; 15.33 h)."

"I think I have to take a dive now, too, b4 my students impeach me! (Ben, chat 16 June 2003; 15.36 h)."

Distant others were mentioned in relation to the individual time management of course participants. Mostly, they were known only by the individual who introduced them in the conversation. Official course participants instrumentalized distant others in their communications with other "inner circle" course participants when trying to manage their personal time. Thereby, distant others performed fire spatiality by flaring up in course interactions. Mostly absent, these persons in indirect course context were only introduced in interactions briefly. They were mentioned and disappeared. This variant of fire spatial impulses from the face-to-face seemed to fulfil a direct and possibly strategic purpose. Most importantly, distant others were introduced to explain or excuse a participant's absence from an activity or failure to meet a

deadline. Distant others functioned as stress indicators for the coordination of parallel co-present activities face-to-face and online.

Participants were confronted with the need to regulate activities due to their exposure to the combination of synchronous encounters face-to-face and asynchronous or synchronous activities online. Thereby, they had to coordinate interrelations with two groups of persons, those online and those face-to-face. It seems that the second variant of fire spatiality applying to distant others occurred when participants were stressed by perceived demands to juggle parallel online and face-to-face professional and private activities. Course participants used distant others as excuses to cut themselves off interaction spheres when their personal time management was strained.

The constant availability enabled by computing and communication technologies has been described by the concepts of "presence-availability" (Giddens, 1990; Green, 2002:283–284; or "availability", Cooper, 2002:27–29). Cooper (2002:27–29) and Green (2002:283–284) describe (presence-) availability with respect to the individual's coordination of social spaces face-to-face and communicative spaces generated by mobile phones. The individual experience of "too many" opportunities and commitments due to the demand of "being available" in multiplied communicative spaces frequently resulted in retreat from either of the interaction realms in this research.

7 Conclusion: Online social places

When understanding space in relational terms, this research has highlighted that the online space variant of this topological structure was dependent on qualities of physical space: the communicative value of sensory impressions connoted with symbolic meaning that functioned as social cues, and the immediacy and spontaneity of interactions in face-to-face situations. A sense of place was intimately linked to an immediate, or reproduced face-to-face experience. Moreover, when participants described which factors would contribute to the perception of blended learning as a motivating experience, they highlighted characteristics which they associated with place: Places would enable *immediate* and *spontaneous social encounters*.

The (lack of) form of online space gave the impetus to these enactments of fire spatiality transporting sensory and symbolic information functioning as social cues. Face-to-face stimuli from physical space interfered and co-defined place online. The shape of the relationally produced actor-network "online space" was thus characterized by fire spatial impulses from the second topological formation "physical space". By the mechanism of fire spatiality, elements of the topology of "physical space", absent "other" to the online topology, sporadically interfered in the very constitution of "online space". By way of these translation processes between the two topologies, a social place was constituted online.

When understood as a relational ensemble or actor-network, place was a mutable mobile defined by changing compositions of physical and online space. However, it was always shaped by the quality of physical space, the face-to-face experience, in direct or in mediated form. I propose that the topological form of a mutable mobile can be enacted in the form of fire spatiality, meaning sporadic element influence. Likewise, in a topology of fire elements of the mutable mobile only temporally belong to a topological form. This flickering interference of elements in a topological formation constitute the "presence" and "absence" of elements in a topological context and moreover leads to the meaning of "otherness" in the respective context. When elements sporadically contribute to a topology, they are part of it, "present" in terms of co-constituting the topological form. When they are temporally "absent", they don't contribute to the very topological form of the actor-network in question. In this situation of not being part of a topology, elements represent "otherness". The topology of fire allows illustrating the integration of "other" elements. In this paper, "otherness" refers to the elements of two topologies, physical and online spaces, when not influencing the respective other topology. In the case of translation processes, "other" elements influenced the topological form that was before not co-constituted by these elements in question. An example of "other" elements influencing online space were posts to online forums containing information from interactions in physical space, i.e. elements originally "other", not characterizing, online space.

In application of Agnew and Duncan's (1989:2) differentiation of place as composed of the three aspects location, setting for interaction, and Tuan's sense of place (Tuan, [1977]1979:6), I conclude that the practices of information transfer, i.e. the mobility of information (from physical to online space) inspired by face-to-face meetings at physical locations of individuals that were mobile in physical space, constituted place online as a setting for interaction by introducing sensory and symbolic stimuli. The social quality of the mediated face-to-face experience moreover contributed to a sense of place of an environment located online.

Thrift (Thrift, 1999:314–315) understands places as dynamically and openly constituted through mobile relational practices. These may be embodied and disembodied practices involving people, material, and immaterial objects. The described blended learning program illustrates the relational production of place in mobile practices, which essentially relied on embodiment. Cognitive activity, sensory and symbolic, including emotional, performances such as associative impulses like memories, co-constituted the situation-specific quality of place. These interaction practices blended face-to-face and online spaces. Interactive constellations of human and non-human elements thereby defined human communicative activity. Online, communications were only partly

enabled through communication tools and were practically compensated by textual associative contributions synthesizing the face-to-face experience. Communication became a variable of mobile practices: "In non-representational theory language is, of course, performative, a virtual structure achieved through use, not a potential structure actualized by use (Thrift, 1999:315)."

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References

Agnew, J. A. and Duncan, J. S.: The Power of Place: Bringing together Geographical and Sociological Imaginations, Unwin Hyman, Boston, 1989.

Amin, A. and Cohendet, P.: Architectures of Knowledge: Firms, Capabilities, and Communities, Oxford University Press, Oxford, 2004.

Bachelard, G.: The Psychoanalysis of Fire, Beacon Press, Boston, [1938]1964.

Bogdan, R. and Taylor, S. J.: Introduction to Qualitative Research Methods: A Phenomenological Approach to the Social Sciences, John Wiley and Sons, New York, 1975.

Callon, M. and Law, J.: Guest editorial: Introduction. Absence – Presence, Circulation, and Encountering in Complex Space, Environment and Planning D: Society and Space, 22, 1, 3–11, 2004.

Churchill, E. F., Snowdon, D. N., and Munro, A. J.: Collaborative Virtual Environments: Digital Spaces and Places for CSCW. An Introduction, in: Collaborative Virtual Environments: Digital Places and Spaces for Interaction, edited by: Churchill, E. F., Snowdon, D. N., and Munro, A. J., Springer, London, 3–17, 2001.

Cooper, G.: The Mutable Mobile: Social Theory in the Wireless World, in: Wireless World: Social and Interactional Aspects of the Mobile Age, edited by: Brown, B., Green, N., and Harper, R., Springer, London, 19–31, 2002.

De Laet, M. K.: Patents, Travel, Space: Ethnographic Encounters with Objects in Transit, Environment and Planning D: Society and Space, 18, 2, 149–168, 2000.

De Laet, M. K. and Mol, A.: The Zimbabwe Bush Pump: Mechanics of a Fluid Technology, Social Studies of Science, 30, 2, 225–263, 2000.

Deleuze, G. and Guattari, F.: Rhizome, Minuit, Paris, 1976.

Deleuze, G. and Guattari, F.: A Thousand Plateaus: Capitalism and Schizophrenia, Vol. 2, translated by Brian Massumi, Athlone, London. First published 1980 as Mille plateaux, Capitalisme et schizophrénie, Minuit, Paris, [1980]1988.

Dittler, U.: Blended Learning als eine Form von eLearning, in: Innovation durch eLearning, 2. eLearning Fachtagung, edited by: Internationale Weiterbildung und Entwicklung gGmbH/InWEnt, Bonn, 40–54, 2002.

Dreher, M. and Dreher, E.: Gruppendiskussion, in: Verbale Daten, edited by: Huber, G. L. and Mandl, H., Beltz, Weinheim, 141–164, 1982.

Fisher, D.: Studying Social Information Spaces, in: From Usenet to CoWebs: Interacting with Social Information Spaces, edited by: Lueg, C. and Fisher, D., Springer, London, 3–19, 2003.

Giddens, A.: The Consequences of Modernity, Polity, Cambridge, 1990.

Glaser, B. G.: Theoretical Sensitivity: Advances in the Methodology of Grounded Theory, Sociology Press, Mill Valley, 1978.

Glaser, B. G. and Strauss, A. L.: The Discovery of Grounded Theory: Strategies for Qualitative Research, Aldine, New York, 1967.

Goffman, E.: Behavior in Public Places: Notes on the Social Organization of Gatherings, Free Press, New York, 1963.

Goffman, E.: Relations in Public: Microstudies of the Public Order, Basic Books, New York, 1971.

Grabher, G.: Trading Routes, Bypasses, and Risky Intersections: Mapping the Travels of 'Networks' between Economic Sociology and Economic Geography, Progress in Human Geography, 30, 2, 1–27, 2006.

Green, N.: On the Move: Technology, Mobility, and the Mediation of Social Time and Space, The Information Society, 18, 4, 281–292, 2002.

Hetherington, K.: Secondhandedness. Consumption, Disposal, and Absent Presence, Environment and Planning D: Society and Space, 22, 1, 157–173, 2004.

Hetherington, K. and Law, J.: Guest Editorial: After Networks, Environment and Planning D: Society and Space, 18, 2, 127–132, 2000.

Hetherington, K. and Lee, N.: Social Order and the Blank Figure, Environment and Planning D: Society and Space, 18, 2, 169–184, 2000.

Heyl, B. S.: Ethnographic Interviewing, in: Handbook of Ethnography, edited by: Atkinson, P., Coffey, A., Delamont, S., Lofland, J., and Lofland, L., Sage, London, 369–383, 2001.

Hine, C.: Virtual Ethnography, Sage, London, 2000.

Huysman, M., Wenger, E., and Wulf, V.: Communities and Technologies, Kluwer, Dordrecht, 2003.

Jöns, H.: Grenzüberschreitende Mobilität und Kooperation in den

Wissenschaften : Deutschlandaufenthalte US-amerikanischer Humboldt-Forschungspreisträger aus einer erweiterten Akteursnetzwerkperspektive, Heidelberger Geographische Arbeiten 116, Selbstverlag des Geographischen Instituts der Universität Heidelberg, Heidelberg, 2003.

Knorr Cetina, K. D.: Tinkering toward Success: Prelude to a Theory of Scientific Practice, Theory and Society, 8, 347–376, 1979.

Knorr Cetina, K. D.: The Manufacture of Knowledge: An essay on the Constructivist and Contextual Nature of Science, Pergamon Press, Oxford, 1981.

Knorr Cetina, K. D. and Brügger, U.: Global Microstructures: The Virtual Societies of Financial Markets, American Journal of Sociology, 107, 4, 905–950, 2002.

Koch, A.: Autopoietic Spatial Systems: The Significance of Actor Network Theory and System Theory for the Development of a System Theoretical Approach of Space, Soc. Geogr., 1, 5–14, 2005.

Latour, B.: Science in Action: How to Follow Scientists and Engineers through Society, Harvard University Press, Cambridge, 1987.

Latour, B. and Woolgar, S.: Laboratory Life: The Social Construction of Scientific Facts, Sage, Beverly Hills, 1979.

Latour, B.: On Recalling ANT, in: Actor-Network Theory and After, edited by: John, L. and John, H., Blackwell, Oxford, 15–25, 1999.

Law, J.: After ANT: Complexity, Naming, and Topology, in: Actor Network Theory and After, edited by: Law, J. and Hassard, J., Blackwell, Oxford, 1–14, 1999.

Law, J.: Objects, Spaces, Others, http://tina.lancs.ac.uk/sociology/soc027jl.html (download: 09-12-2000), 2000a.

Law, J.: Transitivities, Environment and Planning D: Society and Space, 18, 2, 133–148, 2000b.

Law, J. and Hetherington, K.: Materialities, Spatialities, Globalities, in: Knowledge, Space, Economy, edited by: Bryson, J., Daniels, P., Henry, N., and Pollard, J., Routledge, London, 34–49, 2000.

Law, J. and Mol, A.: Situating Technoscience: An Inquiry into Spatialities, Environment and Planning D: Society and Space, 19, 5, 609–621, 2001a.

Law, J. and Mol, A. (Eds.): Complexities in Science, Technology and Medicine, Duke University Press, Durham, NC, 2001b.

Lee, N. and Brown, S.: Otherness and the Actor Network: The Undiscovered Continent, American Behavioral Scientist, 37, 6, 772–790, 1994.

Mol, A. and Law, J.: Regions, Networks and Fluids. Anaemia and Social Topology, Social Studies of Science, 24, 4, 641–671, 1994.

Pollock, F.: Gruppenexperiment – ein Studienbericht, Frankfurter Beiträge zur Soziologie 2, Europäische Verlagsanstalt, Frankfurt/Main, 1955.

Sheller, M.: Mobile Publics: Beyond the Network Perspective, Environment and Planning D: Society and Space, 22, 1, 39–52, 2004.

Simmel, G.: Soziologie: Untersuchungen über die Formen der Vergesellschaftung, Verlag von Duncker und Humblot, Leipzig, 1908.

Singleton, V.: Stabilizing Instabilities: The Role of the Laboratory in the United Kingdom Cervical Screening Programme, in: Differences in Medicine. Unravelling Practices, Techniques and Bodies, edited by: Berg, M. and Mol, A., Duke University Press, Durham, 86–104, 1998.

Singleton, V. and Michael, M.: Actor-networks and Ambivalence: General Practitioners in the UK Cervical Screening Programme, Social Studies of Science, 23, 227–264, 1993.

Spradley, J. P.: The Ethnographic Interview, Rinehart and Winston, New York, 1979.

Strauss, A. L.: Grundlagen qualitativer Sozialforschung: Datenanalyse und Theoriebildung in der empirischen soziologischen Forschung, Wilhelm Fink Verlag, München, [1987]1991.

Strauss, A. L. and Corbin, J.: Basics of Qualitative Research: Grounded Theory Procedures and Techniques, Sage, Newbury Park, 1990.

Streitz, N. and Nixon, P.: The Disappearing Computer, Communications of the ACM, 48, 3, 33–35, 2005.

Thrift, N.: Steps to an Ecology of Place, in: Human Geography Today, edited by: Massey, D., Allen, J., and Sarre, P., Polity and Blackwell, Cambridge, 295–322, 1999.

Thrift, N.: Performing Cultures in the New Economy, Annals of the Association of American Geographers, 90, 4, 674–692, 2000.

Tuan, Y.-F.: Space and Place: The Perspective of Experience, Arnold, London, [1977]1979.

Urry, J.: Social Networks, Travel and Talk, British Journal of Sociology, 54, 2, 155–175, 2003.

Urry, J.: Connections, Environment and Planning D: Society and Space, 22, 1, 27–37, 2004.

Wittel, A.: Towards a Network Sociality, Theory, Culture & Society, 18, 6, 51–76, 2001.