Material Manifestations of Dislocation and (Re)connection

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Abstract. This workshop focuses on the material qualities of *dislocation*. The process of humans becoming separated from each other is likely to have diverse consequences; from shifting frequency, modes, or routines of communication and collaboration, to completely alternate means of connection. In this workshop, we aim to discuss a broad range of material manifestations and implications of (researching and designing for) dislocation. While engaging with material qualities of dislocation, we will reflect on the state of the art, discuss research gaps and potentials, and explore hands-on how design can create opportunities for (re)connection in response to dislocation through the creation of tangible interfaces.

Introduction

Humans are social beings, having a *"fundamental need to communicate, to form, maintain and enhance social relationships"* (IJsselsteijn, van Baren, & van Lanen, 2003). There are, however, many situations when individuals are dislocated from each other; families, friends, or work colleagues may not share the same place. Dislocation can be spurred by family members or friends marrying internationally, by health, economic or political conditions, or by work colleagues being relocated, either short or long term. Social connectedness is a concept that underpins the importance of maintaining awareness of each other's whereabouts and activities, with technological means aiming to bridge dislocation to facilitate a *"feeling of being in touch with the other"* (IJsselsteijn, van Baren, & van Lanen, 2003). While there are many such technological means available to bridge distances and (re)build connections (e.g., Aal, Weibert, Schubert, Sprenger, & von Rekowski, 2018, or Gurevich, Lanir, & Cohen, 2015), they are quite often limited to visual and verbal interactions (e.g., Vitak, 2014), although attempts have been made to include other modalities in connecting over distance (e.g., Singhal, Neustaedter, Ooi, Antle, & Matkin, 2017, Pan, Neustaedter, Antle, & Matkin, 2017, Mueller, Vetere, Gibbs, Kjeldskov, Pedell, & Howard, 2015, Kowalski, Loehmann, & Hausen, 2013, Tsetserokou, 2010, or Kaye, 2006).

Still, (re)connecting people over distance heavily relies on video-mediated communication systems (such as Skype or Hangouts). Dislocation, therefore, may be considered a process of divergence and (re)connecting socially or in terms of mutual awareness (Markopoulos & Mackay 2009) a process of convergence. However, (re)connecting may also be inspired by and draw on our physical world; dislocation may be an opportunity for new engagements and innovative ways of connecting – as opposed to a view that considers dislocation as a damaged state in need of correction. This is the premise this workshop starts from.

The proposed workshop covers several areas of dislocation and reconnection. Keeping up distant intimate relationships is one such arena of research and design that experiments with material mechanisms for reconnecting. Most of the artefacts that stimulate intimate remote interactions rely on simulating touch through familiar soft objects close to the skin. Visual cues merely allow the transition from the social awareness of the other to experiencing intimate communication. For instance, the HEY bracelet[1] allows touch communication over distance with a loved one through touch.

Reconnecting interpersonally has also been described for remote co-work, such as Kim, Billinghurst, and Lee's (2018) video-mediated remote collaboration system, where they investigated different views (through virtual / augmented

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[1] https://www.heybracelet.com

reality) for the remote participants in different collaboration styles (expert and non-expert; mutual collaboration). Another system is called Lazy Suzan (Wesugi & Miwa, 2006), a communication system that allows dislocated persons to operate a remote disk with their hands and visualize the interactions of the other person, in a shared virtual space. The Remote Active Tangible Interactions system (Richter, Thomas, Sugimoto, & Inami, 2007), a distributed tangible user interface (TUI) links physical objects for remote collaborative tasks (here: placing furniture) to increase social presence.

Another area of work centers around dislocated games and play. Designers use familiar everyday objects that remote participants can experience synchronically or a-synchronically, to instill a sense of co-presence for playful motives ("playing together"). For instance, the Magic box cultural probe (Vetere, Davis, Gibbs, & Howard, 2009) supports distributed intergenerational play by exchanging meaningful physical objects by a 'magic fairy'. Peek-A-Drawer (Siio, Rowan, & Mynatt, 2002) is a furniture-like communication device that supports lightweight communication between dislocated people. It takes a picture of objects put in a drawer at one location to show it in the drawer at the other location. Rope Revolution (Yao et al., 2011) aims at fostering remote and co-located collaborative experiences by using actual ropes that allow physical activities connecting players across virtual spaces.

In the lives of families with children, the new area of **Internet of Toys** brings plush cuddly toys, play cubes, board games and figurines to life (Holloway & Green, 2016). It adds a new dimension to children's play practices as being more personalized, interactive and materialized; its connectedness to the internet opens new ways to connect to play objects, across several (online/offline) environments (Zaman, Van Mechelen, & Bleumers, 2018) and places (e.g., home, school, friend's home, see e.g., Manches, Duncan, Plowman, & Sabeti, 2015) and challenges the ways we connect to others via play objects (see e.g., Bleumers et al., 2015).

Workshop Theme and Goals

The workshop takes a materials-first approach to exploring themes of dislocation and connection. Different materials, from leather (Tsaknaki, Fernaeus, & Schaub, 2014), to concrete (Lee, Goh, & Park, 2017), to interactive tablets (Raffle et al., 2010) or interactive collaborative environments (e.g., Benyon & Mival, 2015) make particular aspects of the dislocated other present for connection. The way these materials move, respond, behave and their cultural associations and symbolism can be leveraged by designers to support new ways of "being together" that embrace the conditions of dislocation on their own terms (Hollan & Stornetta, 1992).

The aim of this one-day workshop is to explore how new forms of connections uniquely emerge in situations of dislocation, and what digital and physical materials and materialities are appropriate when designing for such situations (Fuchsberger, Murer, & Tscheligi, 2013). We therefore focus on how to design for (re)connecting in response to dislocation. The workshop's goal is to create a landscape of dislocation that informs and inspires future designs for material (re)connection, including

- qualities and kinds of dislocation that have been studied within HCI and CSCW
- new promising territories and opportunities, for example in terms of marginalized communities; across cultural boundaries; or between unlikely pairs
- qualities and practices of (re)connection

Thus, the key questions that guide the workshop are as follows:
- Which physical / socio-cultural / material practices do exist, whether technologically mediated or not, to reconnect in case of dislocation?
- Which materials or which interactive qualities are promising to be used for reconnecting?
- How can material qualities account for the (often invisible) networked digital apparatus surrounding dislocated interactions?
- How can we study the way material qualities in dislocation are actively adopted in everyday practices and how people give meaning to them?

Workshop Activities

The workshop will kick off by an introduction: the organizers will give an overview of the topic, including their own readings of dislocation and reconnections. Afterwards, the participants will be asked to briefly present their positions. After each position presentation, the organizers, together with the participants, will map those positions on an initial landscape of dislocation qualities, employed materials, and reconnection practices. Subsequently, the group tries to create a coherent landscape based on these positions; potentially, this will also lead to an identification of blind spots. In the afternoon, a session where we play with materials is planned. This session will be done in subgroups that will create ideas for material reconnecting tactics. Therefore,
- we will create spaces for playing with the materials where we simulate dislocation (e.g., being in two separate rooms / locations)
- we (and the participants) bring along materials to play with, such as: balloons, wooden construction kits, ropes, etc. to build "material tactics for (re-) connection" via physical movements, pneumatic mechanisms, electronics, …

- we prepare several questions to guide this exploration, such as:
  - What role does synchronicity / asynchronicity play?
  - What actions can be created, what practices can be supported, what is felt / experienced?
  - How immediate are actions and reactions?

After this exploration session the groups meet again to discuss the explored concepts and qualities and to map them on the previously established landscape. Finally, the workshop will close by discussing how to proceed in terms of (a) underexplored research areas, (b) new design directions, and (c) dissemination of workshop results.

Table I. Envisioned Time Schedule

09.00 - 09.30	Welcome & introduction to the workshop
09.30 - 10.30	Participants' positions
10.30 - 11.00	Coffee break
11.00 - 12.00	Sketching a landscape of dislocation
12.00 - 12.30	Material play (working groups' explorations) #1
12.30 - 13.30	Lunch break
13.30 - 15.30	Material play (working groups' explorations) #2
15.30 - 16.00	Coffee break
16.00 - 16.30	Material play (working groups' summaries)
16.30 - 17.00	Wrap up & goodbye

Organizers

Konstantin Aal is a PhD associate and a research assistant at the Institute for Information Systems and New Media, University of Siegen. He is part of come_IN, a research project which founded several computer clubs for children and their relatives including refugees. Currently he is one of the project leaders of the Nett.Werkzeug (which translates to "a tool to be nice"), a platform to provide orientation and information for newcomers in Germany especially refugees. Another project tackles the Human-Wildlife-Conflict in the Northern part of Botswana and how the conflict can be mediated using ICT.

Janne Mascha Beuthel is a PhD student at the Center for Human-Computer Interaction at the University of Salzburg. Her research builds on combining practices from the making of clothes and textile crafts with wearable technologies. The people she is designing for, and their individual needs, are involved in different stages of design processes, for example, in ideation, but also in the making and iteration of prototypes.

Laura Devendorf designs, develops and studies technologies that destabilize practice in order to prompt creative, thoughtful, and attentive engagements with the everyday. Whether questioning the role of material experience in fabrication or studying playful engagements with body-worn displays, she uses design research to reflect on norms and demonstrate opportunities for the future. She is an assistant professor of Information Science and an ATLAS Institute fellow at the University of Colorado, Boulder where she directs the Unstable Design Lab.

Verena Fuchsberger is a Postdoc at the Center for Human-Computer Interaction at the University of Salzburg. She focuses on the agency of human and non-human actors in HCI and interaction design – in particular, she is interested in the materiality of interactions. Verena has published on interaction Design, the future of work, the ageing society, grandparents-grandchildren relationships, materiality in HCI and interaction design and more.

Alina Krischkowsky is a Postdoc at the Center for Human-Computer Interaction at the University of Salzburg. In her research she is interested in theoretical and empirical accounts towards technology appropriation and other, non-anticipated forms of use, including non-use as well. In particular she is interested in understanding the diversity of technology use, beyond designers intended and anticipated ways of use.

Bernhard Maurer is a Postdoc at the Center for Human-Computer Interaction at the University of Salzburg. His research explores experimental and alternative forms of interaction by utilizing physical and social context qualities as a design material. His design activities are driven by questioning established notions of gameplay towards creating interactive systems that go beyond purely digital and physical play.

Martin Murer is an interaction designer and researcher at the Center for Human-Computer Interaction at the University of Salzburg. He focuses on craft and technology, and is particularly enthusiastic about taking things apart. Martin works towards a PhD that seeks to explore deconstructive practices (e.g., un-crafting) in the realm of interaction design.

Marije Nouwen is a PhD student at the Meaningful Interactions Lab (Mintlab), part of the Institute of Media Studies of KU Leuven (Belgium). Her work focuses on remote playful interactions between grandparents and grandchildren. Following an ethnographic approach, she is especially interested in the role of hybrid technologies in establishing/maintaining intergenerational relationships.

Dorothé Smit is a PhD student at the Center for Human-Computer Interaction at the University of Salzburg. Her research focuses on embodied sensemaking, especially in situations that are out of the ordinary, such as in virtual reality. She is driven to bring different perspectives – both literally and figuratively – together

into effective cooperation between people, as well as the environment they are in and the things they use in their day-to-day life.

Manfred Tscheligi is Professor at the Center for Human-Computer Interaction the University of Salzburg, and head of the Center for Technology Experience at the Austrian Institute of Technology. Being a member of various national and international expert, advisory, and conference committees (e.g., CHI conference series, Mobile HCI conference series, Human-Robot Interaction conference series), his work is mainly based on the interdisciplinary combination of different areas of experience research in synergy with special and complex application contexts to enrich the interaction between humans and systems.

Bieke Zaman is assistant professor at the Meaningful Interactions Lab (Mintlab), part of the Institute of Media Studies of the KU Leuven, Belgium. Her research focuses on digital media (incl. games), children and interaction design from the perspective of communication sciences and Human-Computer Interaction research.

Participation

The intended audience of the workshop (12 participants max.) is constituted of researchers, who have dealt with dislocation of different kinds; either, they have (anecdotal or empirical) experience with practices of or design for dislocation; or design ideas, designed systems or speculations about materials that would facilitate (re-)connection. In order to express interest in participation, interested researchers are asked to provide a position paper (ECSCW 2019 EP template) that covers:

1. an essayistic, empirical, theoretical, material, or designerly discussion of dislocation (3 page max.)
2. the proposal of a material or artefact for exploration that the participants commit to bring to the workshop. (1/2 page max.)
3. Personal bio (1/2 page max.)

The participants will be recruited via HCI- and CSCW-related mailing lists (e.g., EUSSET list, CHI announcements), social media, and personal networks of the co-organizers. A workshop website will be set up to provide detailed information prior to the workshop. Participants will be selected by the organizers based on their (a) fit to the workshop and (b) diversity of themes they cover.

Acknowledgments

References

Aal, K., Weibert, A., Schubert, K., Sprenger, M.-A., and Von Rekowski, T. 2018. come_NET: Connecting Computer Clubs with a Community Platform. In *Socio-Informatics - A Practice-based Perspective on the Design and Use of IT Artefacts*. Wulf, V., Pipek, V., Randall, D., Rohde, M., Schmidt, K., Stevens, G. (Hrsg.), Oxford University Press, *S. 391-420*.

Benyon, D., and Mival, O. 2015. Blended Spaces for Collaboration. Computer Supported Cooperative Work (CSCW) 24, 2 (01 Jun 2015), 223–249. DOI: http://dx.doi.org/10.1007/s10606-015-9223-8

Bleumers, L., Mouws, K., Huyghe, J., Van Mechelen, M., Mariën, I., and Zaman, B. (2015): Sensitivity to Parental Play Beliefs and Mediation in Young Children's Hybrid Play Activities. In Proceedings of IDC, 170–177.

Fuchsberger, V., Murer, M., and Tscheligi, M. (2013): Materials, materiality, and media. In Proc. CHI '13). ACM, New York, NY, USA, 2853-2862. https://doi.org/10.1145/2470654.2481395

Hollan, J. and Stornetta, S. (1992): Beyond being there. In Proc. CHI '92. ACM, 119-125. http://dx.doi.org/10.1145/142750.142769

Holloway, D. and Green, L. (2016): The Internet of toys. Communication Research and Practice 2, 4: 506–519. https://doi.org/10.1080/22041451.2016.1266124

Kim, S. , Billinghurst, M., and Lee, G. 2018. The Effect of Collaboration Styles and View Independence on Video-Mediated Remote Collaboration. In Journal of Computer Supported Cooperative Work (CSCW) 27, 3 (01 Dec 2018), 569–607. DOI: http://dx.doi.org/10.1007/s10606-018-9324-2

Kaye, J. I just clicked to say I love you, Extended Abstracts of Proc. CHI, ACM Press (2006)

Kowalski, R., Loehmann, S., and Hausen, D. (2013). cubble: a multi-device hybrid approach supporting communication in long-distance relationships. In Proceedings of the 7th International Conference on Tangible, Embedded and Embodied Interaction (TEI '13). ACM, New York, NY, USA, 201-204. DOI: https://doi.org/10.1145/2460625.2460656

Lee, K.-R., Goh, G., and Park, Y-W. (2017): Quietto: An Interactive Timepiece Molded in Concrete and Milled Wood. In Proc. CHI '17. ACM, New York, NY, USA, 2988-2992. https://doi.org/10.1145/3025453.3025670

Manches, A., Duncan, P., Plowman, L., and Sabeti, S. (2015): Three questions about the Internet of Things and children. TechTrends 59, 1: 76–83.

Markopoulos, P., and Mackay, W. (Eds.). (2009): *Awareness systems: Advances in theory, methodology and design*. Springer Science & Business Media. http://dx.doi.org/10.1007/978-1-84882-477-5

Mueller, F. F., Vetere, F., Gibbs, M. R., Kjeldskov, J., Pedell, S., & Howard, S. (2005, April). Hug over a distance. In CHI'05 extended abstracts on Human factors in computing systems (pp. 1673-1676). ACM.

Pan, R., Neustaedter, C., Antle, A.N., and Matkin, B. (2017). Puzzle Space: A Distributed Tangible Puzzle for Long Distance Couples. In Companion of the 2017 ACM Conference on Computer Supported Cooperative Work and Social Computing (CSCW '17 Companion). ACM, New York, NY, USA, 271-274. DOI: https://doi.org/10.1145/3022198.3026320

Raffle, H., Ballagas, R., Revelle, G., Horii, H., Follmer, S., Go, J., Reardon, E., Mori, K., Kaye, J., and Spasojevic, M. (2010): Family story play: reading with young children (and elmo) over a distance. In Proc. CHI '10. ACM, New York, NY, USA, 1583-1592. https://doi.org/10.1145/1753326.1753563

Richter, J., Thomas, B.H., Sugimoto, M., and Inami, M. (2007): Remote Active Tangible Interactions. In Proceedings of TEI '07, 39–42.

Siio, I., Rowan, J., and Mynatt, E. (2002): Peek-a-drawer: communication by furniture. In Proc. CHI EA '02). ACM, New York, NY, USA, 582-583. http://dx.doi.org/10.1145/506443.506494

Singhal, S., Neustaedter,C., Ooi, Y.L., Antle, A. N., and Matkin, B. (2017). Flex-N-Feel: The Design and Evaluation of Emotive Gloves for Couples to Support Touch Over Distance. In Proceedings of the 2017 ACM Conference on Computer Supported Cooperative Work and Social Computing (CSCW '17). ACM, New York, NY, USA, 98-110. DOI: https://doi.org/10.1145/2998181.2998247

Tsaknaki, V., Fernaeus, Y., and Schaub, M. (2014): Leather as a material for crafting interactive and physical artifacts. In DIS '14, 5-14. https://doi.org/10.1145/2598510.2598574

Tsetserukou, D. (2010). HaptiHug: A novel haptic display for communication of hug over a distance. In International Conference on Human Haptic Sensing and Touch Enabled Computer Applications (pp. 340-347). Springer, Berlin, Heidelberg.

Vetere, F., Davis, H., Gibbs, M., and Howard, S. (2009): The Magic Box and Collage: Responding to the challenge of distributed intergenerational play. International Journal of Human-Computer Studies 67: 165–178.

Vitak, J. 2014. Facebook Makes the Heart Grow Fonder: Relationship Maintenance Strategies Among Geographically Dispersed and Communication-restricted Connections. In Proceedings of the 17th ACM Conference on Computer Supported Cooperative Work & Social Computing (CSCW '14). ACM, New York, NY, USA, 842–853. DOI: http://dx.doi.org/10.1145/2531602.2531726

Wesugi, S. and Miwa, Y. (2006): "Lazy Susan" Communication System for Remote, Spatial and Physical Collaborative Works. In Proc. TABLETOP '06.

Yao, L., Dasgupta. S., Cheng, N., Spingarn-Koff, J., Rudakevych, O., and Ishii, H. (2011): Rope Revolution: Tangible and Gestural Rope Interface for Collaborative Play. In Proc. ACE '11. ACM, New York, NY, USA. http://dx.doi.org/10.1145/2071423.2071437

Bieke Zaman, Maarten Van Mechelen, and Lizzy Bleumers. 2018. When toys come to life: considering the internet of toys from an animistic design perspective. In Proceedings of the 17th ACM Conference on Interaction Design and Children (IDC '18). ACM, New York, NY, USA, 170-180. DOI: https://doi.org/10.1145/3202185.3202745