

AscoltaMe

Retracing the Computational Expressivity of a Tactful Object for Sensitive Settings

D'Olivo, Patrizia; Rozendaal, Marco; Giaccardi, Elisa

DOI

[10.1145/3064663.3064801](https://doi.org/10.1145/3064663.3064801)

Publication date

2017

Document Version

Final published version

Published in

DIS'17

Citation (APA)

D'Olivo, P., Rozendaal, M., & Giaccardi, E. (2017). AscoltaMe: Retracing the Computational Expressivity of a Tactful Object for Sensitive Settings. In O. Mival (Ed.), *DIS'17: Proceedings of the 2017 Conference on Designing Interactive Systems* (pp. 943-955). Association for Computing Machinery (ACM).
<https://doi.org/10.1145/3064663.3064801>

Important note

To cite this publication, please use the final published version (if applicable).
Please check the document version above.

Copyright

Other than for strictly personal use, it is not permitted to download, forward or distribute the text or part of it, without the consent of the author(s) and/or copyright holder(s), unless the work is under an open content license such as Creative Commons.

Takedown policy

Please contact us and provide details if you believe this document breaches copyrights.
We will remove access to the work immediately and investigate your claim.

AscoltaMe: Retracing the Computational Expressivity of a Tactful Object for Sensitive Settings

Patrizia D’Olivo

Delft University of Technology
Landbergstraat 15 Delft
2628 CE, NL
p.dolivo@tudelft.nl

Marco C. Rozendaal

Delft University of Technology
Landbergstraat 15 Delft
2628 CE, NL
m.c.rozendaal@tudelft.nl

Elisa Giaccardi

Delft University of Technology
Landbergstraat 15 Delft
2628 CE, NL
e.giaccardi@tudelft.nl

Permission to make digital or hard copies of all or part of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. Copyrights for components of this work owned by others than the author(s) must be honored. Abstracting with credit is permitted. To copy otherwise, or republish, to post on servers or to redistribute to lists, requires prior specific permission and/or a fee. Request permissions from Permissions@acm.org.
DIS 2017, June 10-14, 2017, Edinburgh, United Kingdom
Copyright is held by the owner/author(s). Publication rights licensed to ACM.

ACM 978-1-4503-4922-2/17/06...\$15.00

DOI: <http://dx.doi.org/10.1145/3064663.3064801>

Abstract

This pictorial describes the process and rationale behind the design features of AscoltaMe (in Italian, “listen to me”). This is a computational object imbued with the intent to help families overcome the emotional barriers they may experience during a disruptive life event, as they attempt to maintain healthy communication. With a focus on the object’s material qualities and temporal form, the pictorial introduces and visually outlines *tactfulness* as the fundamental characteristic that enables objects designed for sensitive settings to be intentful in ways that are appropriate and sensitive.

Authors Keywords

Objects with Intent; tactfulness; computational expressivity; material qualities; temporal form; sensitive settings; families; communication; disruptive life events

ACM Classification Keywords

H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

Introduction

The power of objects lie in their quality of being, as Latour indicates, “matters of concern” around which people gather [9]. By being part of our daily lives, objects gain a certain role [3] and adapt to our everyday routines [7]. If then we use computation to imbue them with intent, they turn into entities capable of steering unhealthy habits towards healthy ones, or daringly

propose new perspectives on ourselves and the life we live [1, 12, 16]. In this pictorial, we consider the expressivity of intentful objects in sensitive settings and retrace the process and rationale behind the material qualities and temporal form of AscoltaMe, an object designed to open up communication in families dealing with childhood cancer. In doing so, the pictorial introduces and visually outlines *tactfulness* as the fundamental characteristic that enables objects designed for sensitive settings to be intentful in ways that are appropriate and sensitive to the situation [2, 21].

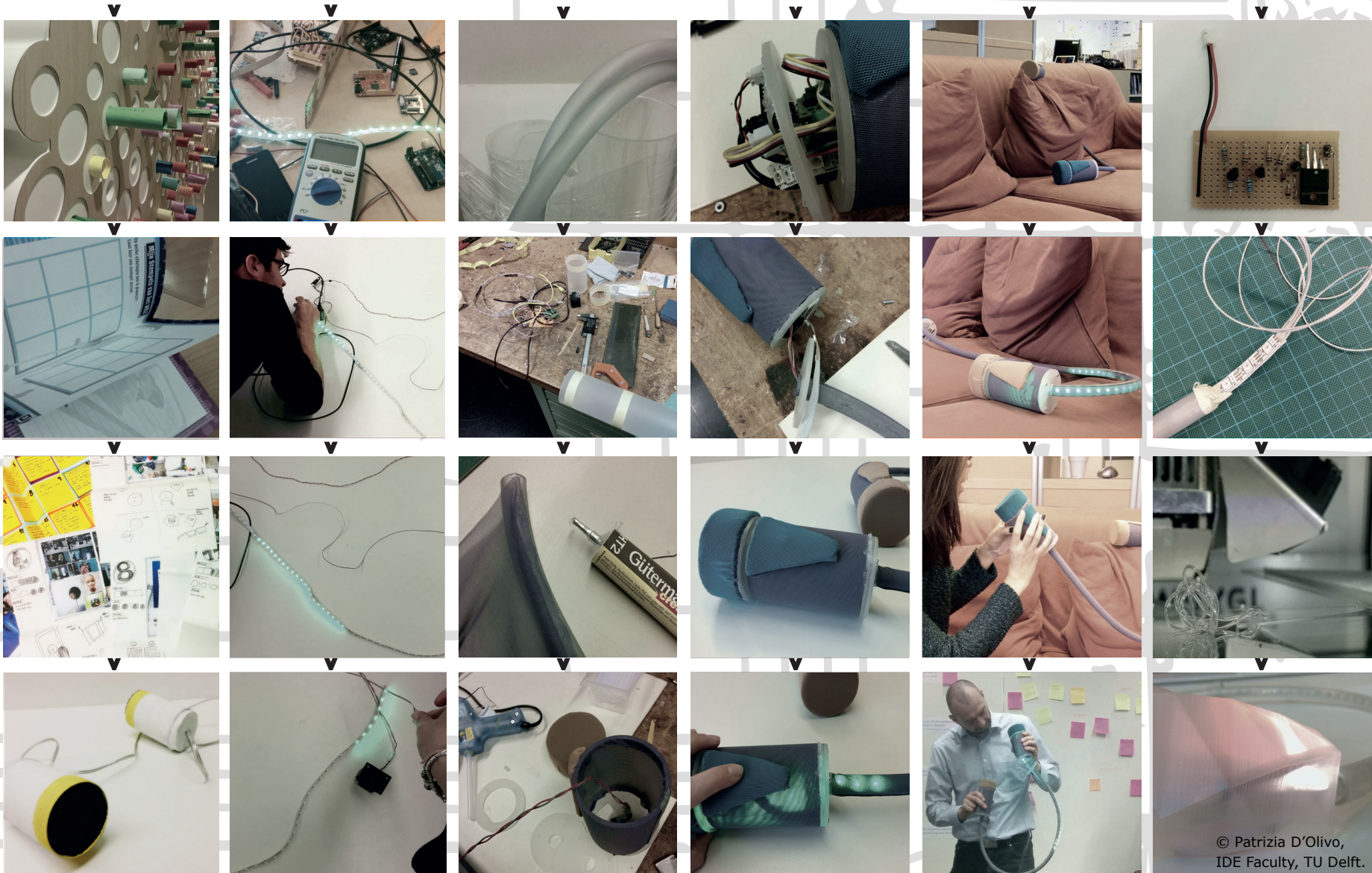
Motivation and Contribution

When designing an object, its embodiment needs always to be carefully articulated [5]. Objects are assessed and integrated in our lives on the basis of how useful and valuable they are, and this is often a matter of functionality and style. However, when objects gain autonomy, intention and inner life through computation [16], the materialization of their expressive features significantly influences the way in which the object is accepted and interacted upon—in other words, how it is engaged. We propose *tactfulness* as a fundamental characteristic of how an object designed for sensitive settings expresses consideration for the specific context and situation users are dealing with. Designing for *tactfulness* means crafting the features of the object so that it can be discreet rather than pervasive [18], diplomatic in ways that offer possibilities to discern and build trust [4], and consistent in the way it helps maintain a sense of “normality” and continuity in everyday life [13]. We argue that it is how *tactfulness* is embodied and expressed that determines how the object will likely integrate in the user context and be picked-up in daily routines [8, 11]—and thus, how it will accomplish its intent. Understanding how to design for *tactfulness* offers

new opportunities for both HCI researchers working in sensitive settings [2, 14, 17, 21] and interaction designers interested in intentful objects [1, 12, 16].

Visual Strategy

The visual narrative of this pictorial focuses on the vision, development and choices of material qualities and temporal form that led to AscoltaMe. Our quest for *tactfulness* is introduced by visuals on initial experiments and versions of the device, and then articulated along the design choices that led specifically the embodiment and computational expressivity of AscoltaMe. This pictorial does not account for interaction qualities; these have been left intentionally under-designed and will be integrated in the *tactful* design of AscoltaMe after our first field study. All the design choices made are articulated according to the materials experience [6] and temporal form [19] frameworks for computational objects. Through this visual strategy we intend to illustrate how *tactfulness* has been embodied in AscoltaMe and speculate on how the materiality and expressivity of this *tactful* object may contribute to its intent in sensitive settings which require empathy and care.



© Patrizia D'Olivo,
IDE Faculty, TU Delft.

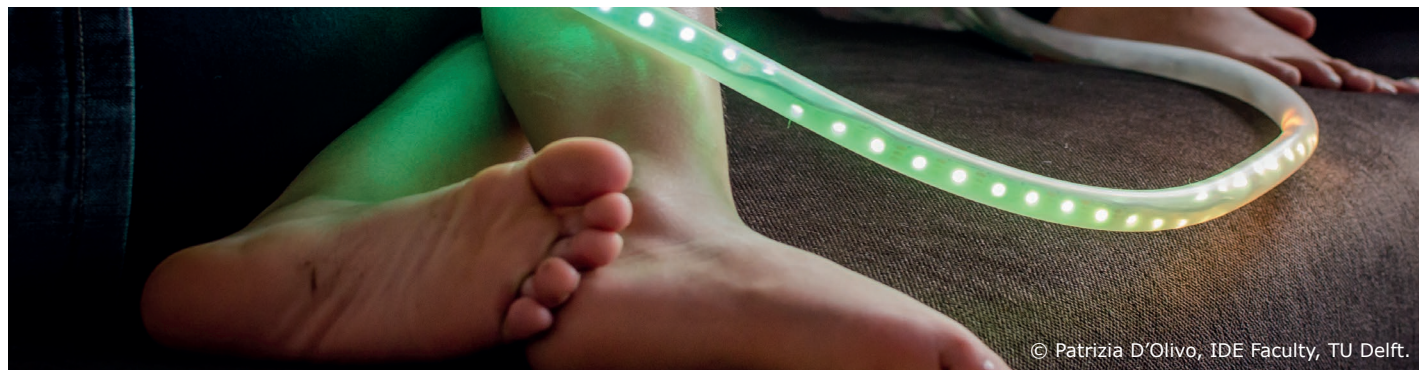
L'Ho mymt



Facilitating Communication in Families dealing with Childhood Cancer

When we talk about communication, we do not refer to the simple transmission of information from a sender to a receiver. Rather we consider communication as a collaborative sense-making activity that is vital to maintain our social relationships [10, 20]. Particularly within families, communication is critical to healthy relationships, which in turn translate into healthy routines and lifestyles [15]. However, during disruptive life events

such as illness or divorce, an overload of emotions and vulnerabilities can generate communication barriers that significantly disrupt normal family life. In these situations, objects can play an important role, as they may open up new ways of communicating that are less confronting and *tactful*. The design of *tactful* objects in this context aims to provide appropriate, sensitive, and discreet means for reconnecting people in close relationships when these get disrupted by uncontrollable events [13].



© Patrizia D'Olivo, IDE Faculty, TU Delft.

Designing Tactfulness

AscoltaMe (in Italian, “listen to me”) is an object meant to be casually held, taken along with you and left around throughout the house. It is imbued with the intent to encourage disrupted families to talk about their feelings, worries and hopes. Its translucent body presents two elements: a microphone and a loudspeaker connected through a flexible silicon tube. The microphone captures messages that family members want to share and ‘holds’ them into the tube. These messages linger in the tube until someone decides to listen to them. Voice messages are materialized as light. While speaking the light begins to fill the tube. Once a message is completed, the light remains in the tube. The light lingers and pulsates, indicating that AscoltaMe patiently waits to share its message with others. When someone presses the button to listen to the message, the light flows through the tube towards the loudspeaker, after which the message is played. If the message has not been completely released and listened to, the light and the message will return back into the tube and will remain there until the message will be released completely.

To visualize the *tactfulness* of AscoltaMe, we have structured the next pages according to five main design features. The modalities of embodiment and expressivity of each feature are explained with reference to the materials experience [6] and temporal form [19] frameworks for computational objects. Each of these features represents a decision point in the design process concerning material qualities and temporal form.



© Patrizia D'Olivo, IDE Faculty, TU Delft.



(A) AFFECTIVE LEVEL

How does Tactfulness make me feel?

A Childhood Metaphor

AscoltaMe is designed with reference to the 'phone without wire' and the 'broken telephone' game. The shape and aesthetics of AscoltaMe are inspired by this archetypical social game, in which a player whispers a sentence from one player to the next in a sequence, until the last player reveals the message to the group. By using this metaphor, the object aims to engage the users emotionally, and to tap into or recreate the sense of curiosity and wonder experienced during childhood.

The gentle sense of curiosity and childish wonder that is embodied and metaphorically expressed by the way the object looks like, are the affective features through the object tactfully intend to capture the interest of different family members and encourage them to engage.



(B) SENSORIAL LEVEL

How does Tactfulness feel like?

3D Printed Translucency

AscoltaMe is made of a solid and flexible body meant to be easy to hold and take along with you throughout the house. The body of the object is divided in two main elements: the delicate 'shells' casted through 3D printing, and the 'connector' made of a sanded silicon tube. Through these translucent material elements, the object communicates trust in a sensorial manner, without either masking or showing off its electronic core.

Translucency of the object (mimicking a transparency in communication) is here the way in which AscoltaMe expresses an open yet trustable character. This designed transparency allows to capture and tactfully materialize traces of impalpable words and thoughts. By turning them into light, their heaviness and difficulty is diminished and pondered in a different way.



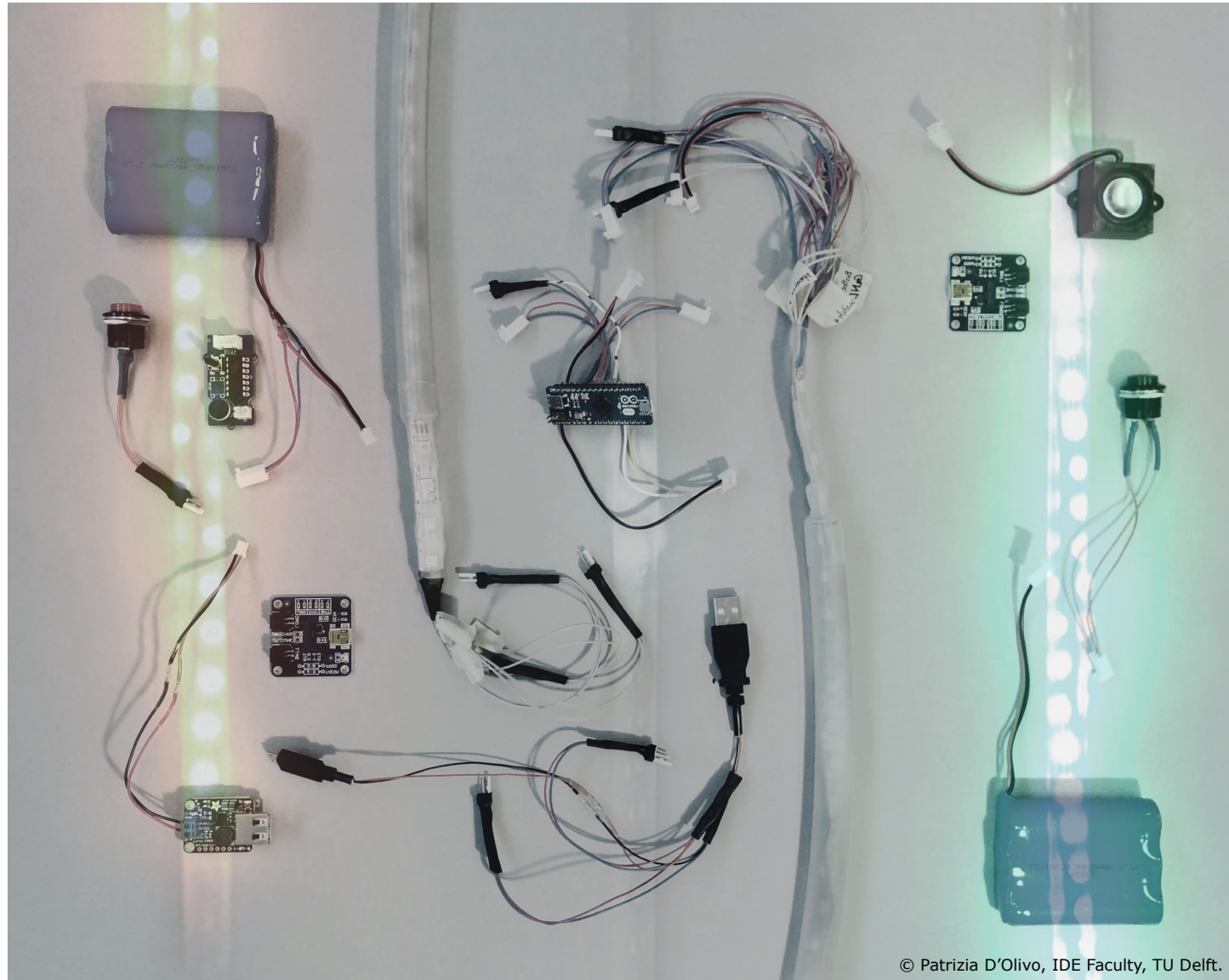
© Patrizia D'Oliveo, IDE Faculty, TU Delft.

(C) INTERPRETIVE LEVEL
 How does Tactfulness speak to us?

Sensitive Bits

Arduino boards, batteries, loudspeaker and microphone make up the circuitry that brings the object to life. As long as the red RECORD button is pressed, the message is recorded. A red light tone indicates that the recording is in process. As the light moves towards the center, AscoltaMe turns into a brighter white light, expressing the absence of sound because the message is 'stuck in the tube' but safely contained. As long as the message is 'stuck', AscoltaMe keeps on breathing patiently, expressed by a slowly pulsating light, like a heartbeat. When the green PLAY button is pressed, the white light turns into a green light to indicate that communication has been opened.

Through a subtle expression of its functionality, the AscoltaMe tactfully signals and expresses the presence of words and thoughts that are waiting to be listened to and attended, sensitive not to cause inappropriate distress in an environment already tense.



© Patrizia D'Oливо, IDE Faculty, TU Delft.

(D) PERFORMATIVE LEVEL

What does Tactfulness make me do?

A Familiar yet Mysterious Object

AscoltaMe finds its place at home. It can be placed anywhere, and is ambiguous enough to adapt to different contexts. Playful ambiguity is here embodied through the flexibility of its materials. The flexible materiality of AscoltaMe allows it to easily become part of the family environment where other toys may be laying around or where are comfy spaces ready to welcome it. The flexibility of the silicon tube in particular accommodates fidgeting and encourages exploration and play with this familiar and yet mysterious object.

Flexibility of the materials enables AscoltaMe to adapt to different, everyday contexts of use. This in turn helps maintain a sense of continuity and normality in communication, as family members explore the tactful affordances and performances of the object.



© Patrizia D'Olivo, IDE Faculty, TU Delft.

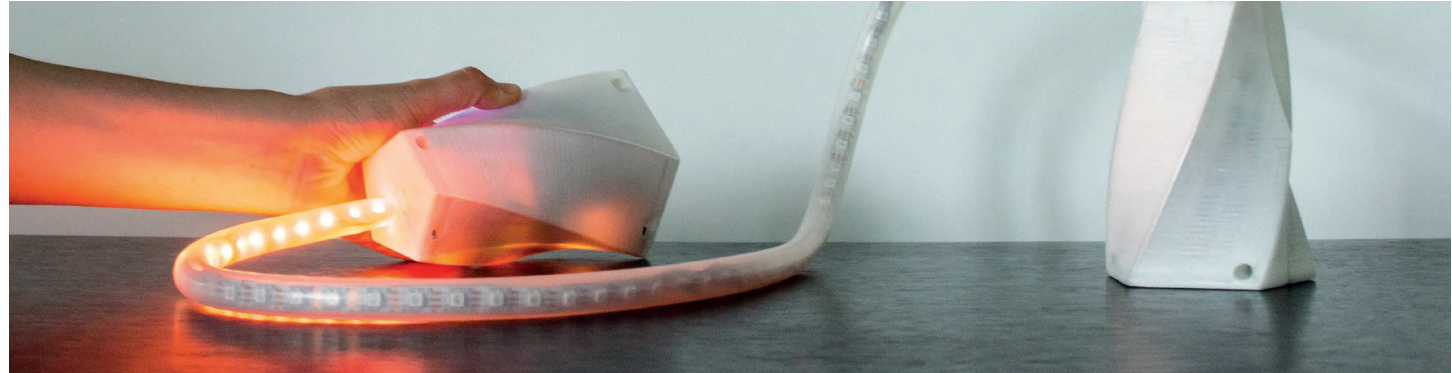
(E) TEMPORAL FORM

How does *Tactfulness* pace conversation?

Words in Motion

The movement generated by the light inside the tube visually expresses the flow of communication, of impalpable words and thoughts traveling in and out of *AscoltaMe*. As a person stops recording a voice message, this flow is interrupted; it is still visible but contained and stuck inside the object. When a voice message is listened to (but not completely) the object intentionally 'resists' to this interrupted action, and the message travels back through the tube in the form of light to its mute status.

The sinuous movement of the light mimics the rhythm of the conversation between people. The message enters and pauses, restarts and exits in correspondence to changes in the color and movement of the light. Users can then tactfully experience how light and words come to correspond to each other and to different states in their communication.



© Patrizia D'Olivo, IDE Faculty, TU Delft.

Conclusions

This pictorial illustrates the exploration of the material qualities and temporal form of a *tactful* object, AscoltaMe. This example shows how we have embodied and expressed qualities of *tactfulness* into an object designed with the intent to help families overcome the emotional barriers that may hinder communication during disruptive life events such as childhood cancer. In doing so, we have speculated on how the embodiment and computational expressivity of this *tactful* object may contribute to its intent in sensitive settings which requires empathy and care.

In future work, we will take AscoltaMe to families dealing with childhood cancer and learn how its *tactfulness* helps integrate the intention of this object in disrupted everyday lives. This step will provide insights on the *tactful* qualities of the object as well as indications for how to develop interaction features accordingly.

We believe this initial exploration of the notion of *tactfulness* may contribute to illuminate new opportunities for both HCI researchers working in sensitive settings [2, 14, 17, 21] and interaction designers interested in intentful objects [1, 12, 16].

Acknowledgements

We would like to thank the reviewers for their insightful comments. We would like also to thank Richard Bekking from id-StudioLab (Delft University of Technology) for his indispensable technical supervision and Gijs Leijdekkers for the terrific photographic support. The work presented in this paper is part of the project “Meedoen=Groeien!”. This research is a collaboration among the Dutch Rehabilitation Fund, the Princess Máxima Center of Pediatric Oncology, and Delft University of Technology. The Dutch Friends Lottery finances this project.

References

1. Nazli Cila, Iskander Smit, Elisa Giaccardi, Ben Kröse. 2017. Products as Agents: Metaphors for Designing the Products of the IoT Age. Proc. CHI 2017. New York: ACM Press.
2. Andy Crabtree, Terry Hemmings, Tom Rodden, et al. 2003. Designing with care: Adapting cultural probes to inform design in sensitive settings. Proceedings of the 2004 Australasian Conference on Computer-Human Interaction (OZCHI2004), 4–13.
3. Audrey Desjardins and Ron Wakkary. 2013. Manifestations of everyday design: guiding goals and motivations. Proceedings of the 9th ACM Conference on Creativity & Cognition, 253–262.
4. Donovan Jared, and Wendy Gunn. 2012. Moving from objects to possibilities. Design and Anthropology: 121-34.
5. Bill Gaver. 2002. Provocative awareness. Computer Supported Cooperative Work (CSCW) 11, 3–4: 475–493.
6. Elisa Giaccardi and Elvin Karana. 2015. Foundations of materials experience: An approach for HCI. Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems, 2447–2456.
7. Elisa Giaccardi 2015. Designing the connected everyday. Interactions 22, 1: 26-31.
8. Heekyoung Jung and Erik Stolterman. 2012. Digital form and materiality: propositions for a new approach to interaction design research. Proceedings of the 7th Nordic Conference on Human-Computer Interaction: Making Sense Through Design, 645–654.
9. Bruno Latour. 2008. What is the style of matters of concern. Two lectures in empirical philosophy. Department of Philosophy of the University of Amsterdam, Amsterdam: Van Gorcum.
10. Leslie S. Liu, Kori M. Inkpen, and Wanda Pratt. 2015.

- I'm Not Like My Friends: Understanding How Children with a Chronic Illness Use Technology to Maintain Normalcy. Proceedings of the 18th ACM Conference on Computer Supported Cooperative Work & Social Computing, 1527–1539.
11. Jonas Löwgren. 2016. On the significance of making in interaction design research. *interactions* 23, 3: 26–33.
 12. Betti Marenko and Philip van Allen. 2016. Animistic design: how to reimagine digital interaction between the human and the nonhuman. *Digital Creativity* 27, 1: 52–70. <http://doi.org/10.1080/14626268.2016.1145127>
 13. Michael Massimi, Jill P. Dimond, and Christopher A. Le Dantec. 2012. Finding a New Normal: The Role of Technology in Life Disruptions. Proceedings of the ACM 2012 Conference on Computer Supported Cooperative Work, ACM, 719–728. <http://doi.org/10.1145/2145204.2145314>
 14. Róisín McNaney, Madeline Balaam, Kevin Marshall, et al. 2013. Designing for and with children with special needs in multiple settings. Proceedings of the 12th International Conference on Interaction Design and Children, 603–605.
 15. Patricia Minuchin. 1988. Relationships within the family: A systems perspective on development. *Relationships within families: Mutual influences*: 7–26.
 16. Marco Rozendaal. 2016. Objects with intent: a new paradigm for interaction design. *interactions* 23, 3: 62–65.
 17. Anja Thieme, John Vines, Jayne Wallace, et al. 2014. Enabling Empathy in Health and Care: Design Methods and Challenges. CHI '14 Extended Abstracts on Human Factors in Computing Systems, ACM, 139–142. <http://doi.org/10.1145/2559206.2559237>
 18. Sherry Turkle. 2011. *Evocative objects: Things we think with*. MIT press.
 19. Anna Vallgarda, Morten Winther, Nina Mørch, and Edit E. Vizer. 2015. Temporal form in interaction design. *International Journal of Design* 9, 3.
 20. Frank Vetere, Martin R Gibbs, Jesper Kjeldskov, et al. 2005. Mediating intimacy: designing technologies to support strong-tie relationships. Proceedings of the SIGCHI conference on Human factors in computing systems, 471–480.
 21. John Vines, Róisín McNaney, Stephen Lindsay, Jayne Wallace, and John McCarthy. 2014. Special Topic: Designing for and with Vulnerable People. *interactions* 21, 1: 44–46. <http://doi.org/10.1145/2543490>