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# Celebrating Laughter: Capturing and Sharing Tangible Representations of Laughter

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**Abstract**

We present a novel design idea to capture and preserve the laughter of ourselves, friends, and loved ones with tangible representations. With preliminary design explorations, we discuss interaction design opportunities for celebrating our positive affect through concrete reminders of our laughter.

**Author Keywords**

Laughter; tangible; gift; edible data.

**ACM Classification Keywords**

H.5.m. Information interfaces and presentation

**Introduction**

We present a speculative future where we might celebrate our happiness by capturing and representing *laughter* of our loved ones and ourselves in tangible forms. What might it mean to physically represent laughter? How might we interact with or relate to them? Might we treat our grandmother's laughter or our baby's giggle as if they were family heirlooms? Which laughs might we decide to keep or let go? Might we gift our laughter to our loved ones? Over time, might it become a compelling way for us to think about when, how often, in what contexts we laugh, or for us

to learn about what occasions are associated with more laughter? We present preliminary design explorations of physically representing laughter, and discuss interaction design opportunities for celebrating them.

### Motivation

Laughter plays an essential role in human social interaction [6,8]. Human laughter can elicit positive affect [2], has a positive effect on our health [3], and is also seen as contagious [4,7]. Laughter is a fundamental part of life, emerging in many contexts, yet extremely ephemeral. We may recognize the sound of someone laughing, but once the moment is over, the laughter is gone. This led the research team to consider ways to capture laughter in a concrete way. What might it mean to tangibly represent something so ephemeral as laughter? How might we interact with the laughter representation later? The goal of this design exploration is to create opportunities for us to experience what it feels like to interact with laughter as if it were tangible and something we could hold on to.

### Design Process

In order to explore novel design ideas, the research team brainstormed, sketched, and mocked up a variety of representations. Some designs focused on representing aspects of the laughter in physical form, while others were designed to “hold” the laughter as an audio recording that could be “released” for listening. For our design exploration, we imagined a future where laughter might be captured automatically through computer mediated communication channels (e.g., phone or video calls between grandparents and grandchildren, etc.). Exploring representations of laughter, we considered different aspects such as what constitutes a single laugh, a laugh’s duration, the

number of laughs, laughter’s intensity, higher level sound qualities such as deep belly chuckle or higher pitched giggle, and how very personal and unique the sound of each person’s laughing can be, especially to those who love them. For simplicity in these initial explorations, we focused on the number of laughs and accessing the unmodified audio of the captured laugh. We present the following design explorations:

#### *Containers: Laughter in a bottle*

We have explored a wide variety of physical objects that can hold and release precious laughter that deserve to be kept. To elicit emotional engagement and create poetic and imaginative encounters, we avoided objects with existing associations with digital sound of laughing such as a prankster “Laugh Bag” or a greeting card that plays a giggle or tune. Instead, we looked into cherished objects such as jewelry boxes, lockets, and perfume bottles that can hold treasurable items. We also imagined the object should be small enough to fit in a pocket or handbag so that a person might take it with her throughout her day.

We created two early stage container concepts. The first one is a small and delicate perfume bottle, which holds and releases laughter. Like a “Genie in a bottle,” when the lid is removed, different instances of laughter, one at a time, are released via audio playback [Fig. 1]. An interactive prototype was created using an *Adafruit Feather M0 Basic Proto - ATSAMD21 Cortex M0* paired with an *Adafruit Music Maker FeatherWing*.

The second is a slightly bigger jar, which can hold multiple instances of laughter represented as lights. For example, the jar might illuminate a few lights on the day the person had only a few laughs, but turn on



Figure 1: A delicate bottle preserving laughter. Opening the lid releases the laughter inside.



Figure 2: A jar preserving multiple instances of laughter.

dozens of lights on a day the person had a blast. This is currently mocked up with an LED string light [Fig. 2].

#### *Giftable Edibles*

If we were able to capture laughter over time, we could visualize our laughter data as relative quantities over time. Such data might reveal, for example, a tendency to laugh more during the weekend, or that some family members laugh more than others. Instead of accessing such data visually using more typical information visualizations, we explored tangible representations of laughter data as a potentially more personal and poetic way for us to relate to the history of our laughter. Moreover, we have explored how such physical instantiations of laughter data could be treated as objects we might consider appropriate for *gifting*. HCI has considered anthropological ideas of gifting rituals [9]. Here, we explore materiality and physicality of laughter that could be considered *giftable*.

One playful and poetic way to gift laughter data might be to represent it as candies or chocolates [5,10,11]. Imagining a speculative future where we may have a candy or chocolate 3D printer on our kitchen counter next to our coffee machine and toaster, we created representations where laughter data of multiple family members over multiple weeks might be represented using edible materials such as candy or chocolate. Figure 3 shows a box of chocolates from laughter data of a family of four over two weeks (14 days). Each piece shows laughter over the course of the day for each of the four family members (e.g., first row is Mom, second row is Dad, third row is the daughter, fourth row is the son). As a proof of concept, this was prototyped with 3D printed plastic, anticipating that 3D printing chocolate is possible (e.g., [1,12]). Figure 4



Figure 3: A box of chocolate from laughter data of a family of four over 14 days. Each piece shows relative quantities of laughter for each of the four family members.

shows another design where the laughter data of a family of 4 over 12 days is represented as bar graphs. Each piece shows the total number of laughs for each family member on different bars. It was created using a real chocolate bar and CNC mill. In both designs, the goal is not to rapidly fabricate a vast amount of edible data. Rather, the idea is to reveal possible historical patterns of laughter subtly over time in an unlikely place such as a box of bonbons with different shapes. Some days may appear rough (unbalanced quantity of laughter) and some days may appear smooth (everyone laughed equally). The resulting edibles could be admired by the members visually or be casually eaten as gifts of sweets. We found the idea of edible concrete representations of laughter to be poetic and lighthearted. The family might decide to reflect on it, or simply to eat it as everyday sweets.

#### *Sculptures: Stalagmite*

Another design exploration maps the quantity of laughter with the height of an organically growing structure such as a stalagmite. Every instance of laughter is mapped to a drop/drip of melted candle/chocolate. Over time, the candle/chocolate stalagmite might grow in different heights and shapes for each family member [Figure 5].

#### **Preliminary Study**

As a preliminary study, we invited 4 people (one in late 20's, two in mid 30's, one in early 50's; two female; three with 1-2 children) to hold our prototypes in their hands and imagine different scenarios in which such objects could stand for their own history of laughter.

All participants found the idea of keeping laughter novel and were able to imagine using such objects personally.



Figure 4: A box of chocolate with laughter data of a family of 4 over 12 days represented as bar graphs. For families of different sizes, one bar per person would result in different shapes.



Common possible sources of laughter were their own children, parents, grandparents, siblings, and close friends. One participant said her father passed away two years ago and she wished her 4-year-old were able to hear her grandfather's laughter. She felt that having a precious bottle that holds grandfather's laughter would enable such interaction. One participant without children reacted to the jar with multiple instances of laughter as a more social object. He said, "I would show this jar to my friends who come to my place, and ask them to put laugh in the jar for me or with me. Then I'd say this is my *laughter diary* of the past 10 years."

All participants felt that sculpted chocolate might provide just enough resolution to reveal the "pattern," "rhythm," or "fabric" of their life. They imagined gifting the box of chocolate to their parents, grandparents, or spouse on occasions such as reunions, anniversaries, or holidays. They imagined the chocolate as a way for the recipients to "participate" in some moments of their lives. For example, one participant described that "grandma might notice, 'Wow, what did you guys do at the beginning of this month?! Everybody laughed a lot!'" The same participant said that she could also imagine teasing her husband, "Your chocolate is so small (compared to mine)!" On the other hand, one of the four participants was rather apprehensive about such patterns emerging on the chocolate. She said she would start to "analyze the pattern" (e.g., why aren't we laughing more?) and that may interfere with her ability to enjoy the chocolate. She felt that having control over which occasions the history of laughter is being made (e.g., "that day when we had fun at the park") would ease such worry.



Figure 5: Mock-up stalagmites for a family of 4. Quality of laugh (e.g., loud, long, giggly, etc.) might produce drops of different sizes. Over time, stalagmites might grow differently for each family member.

All participants expressed interest in eating the chocolate while simultaneously pointing out the chocolate's ephemeral nature. One participant with children said, "There has to be some rules about when you can eat, like 'only on Sunday' or after looking at it for a while." Another participant said, "If it means that once I ate it, the data is gone, then I would hesitate to eat it." He then suggested a design idea, "If there is a trace of it, like the same data visualization was printed on the package that I can keep, then it's OK to eat." The participants commented on the "stalagmites" design where they felt similarly. If the "stalagmites" were made with edible material over a significant amount of time like two years, then they would not eat it and instead treat it like art to be kept and admired.

### Future Work & Conclusion

We presented our exploratory designs that attempt to give concrete embodiments to our ephemeral laughter. Our preliminary evaluation suggests that there is an important design opportunity for people to preserve, interact with, and think about history of their laughter with their loved ones. Future designs could consider other aspects of laughter such as sound qualities. Whose laughter is from which occasion, and how the laughter is represented for whom matters. Therefore, we as designers need to be mindful about giving people control over when their laughter may be preserved and how it may be revealed, providing good privacy controls. On the technical side, we are currently collaborating with machine learning specialists on an automatic laughter recognition system to enable real laughter data collection over time. In summary, while we have only scratched the surface of this space, our work contributes original design ideas to treat laughter as physical object of interaction and sharing, which

may open up the opportunity to strengthen human connectedness.

### References

1. Gosse Adema. 2015. 3D Chocolate Printer (made from LEGO). *Instructables*. Retrieved March 19, 2017 from <http://www.instructables.com/id/3D-Chocolate-Printer-made-from-LEGO-1/>
2. Jo-Anne Bachorowski and Michael J. Owren. 2001. Not All Laughs are Alike: Voiced but Not Unvoiced Laughter Readily Elicits Positive Affect. *Psychological Science* 12, 3: 252–257. <http://doi.org/10.1111/1467-9280.00346>
3. Gregory A. Bryant and C. Athena Aktipis. 2014. The animal nature of spontaneous human laughter. *Evolution and Human Behavior* 35, 4: 327–335. <http://doi.org/10.1016/j.evolhumbehav.2014.03.003>
4. Shogo Fukushima, Yuki Hashimoto, Takashi Nozawa, and Hiroyuki Kajimoto. 2010. Laugh enhancer using laugh track synchronized with the user's laugh motion. ACM Press, 3613. <http://doi.org/10.1145/1753846.1754027>
5. Rohit Ashok Khot, Ryan Pennings, and Florian "Floyd" Mueller. 2015. EdiPulse: Turning Physical Activity Into Chocolates. ACM Press, 331–334. <http://doi.org/10.1145/2702613.2725436>
6. Diana L. Mahony, W. Jeffrey Burroughs, and Louis g. Lippman. 2002. Perceived Attributes of Health-Promoting Laughter: A Cross-Generational Comparison. *The Journal of Psychology* 136, 2: 171–181. <http://doi.org/10.1080/00223980209604148>
7. JA Meerloo. 1966. The biology of laughter. *Psychoanalytic review* 53, 2: 189–208.
8. Stefan Scherer, Michael Glodek, Friedhelm Schwenker, Nick Campbell, and Günther Palm. 2012. Spotting laughter in natural multiparty conversations: A comparison of automatic online and offline approaches using audiovisual data. *ACM Transactions on Interactive Intelligent Systems* 2, 1: 1–31. <http://doi.org/10.1145/2133366.2133370>
9. Alex S. Taylor and Richard Harper. 2003. The Gift of the Gab?: A Design Oriented Sociology of Young People's Use of Mobiles. *Computer Supported Cooperative Work (CSCW)* 12, 3: 267–296. <http://doi.org/10.1023/A:1025091532662>
10. Yun Wang, Xiaojuan Ma, Qiong Luo, and Huamin Qu. 2016. Data Edibilization: Representing Data with Food. ACM Press, 409–422. <http://doi.org/10.1145/2851581.2892570>
11. Jun Wei, Xiaojuan Ma, and Shengdong Zhao. 2014. Food messaging: using edible medium for social messaging. ACM Press, 2873–2882. <http://doi.org/10.1145/2556288.2557026>
12. Choc Edge: Welcome to the world of 3D chocolate printing! Retrieved March 19, 2017 from <http://chocedge.com/>