AnyType: Provoking Reflection and Exploration with Aesthetic Interaction

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ABSTRACT

AnyType is a mobile application that generates unique typefaces from photographs of shapes that people find in their environment. In keeping with the principles of aesthetic interaction, the design of AnyType supports opportunities for surprise, storytelling, and expression. This paper presents data collected from two observational studies of AnyType. In both studies, we found that people appropriated the application to create highly personalized messages. They found inspiration in unexpected locations, created memories from nuanced details in their lives, and creatively explored the design space provided by the system. Drawing from our observations, we discuss possible roles mobile devices could play in people's personal meaning-making, creative process, and discovery, in interaction with elements of their physical environment.

Author Keywords

Aesthetic Interaction; User Experience Design; Mobile Technology; Typography; Self-Expression.

ACM Classification Keywords

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

General Terms

Human Factors; Design.

INTRODUCTION

With a variety of mobile devices available today, functioning as phones, computers, networks, and cameras, (among many other tasks) we are able to send and receive messages in a variety of formats from virtually anywhere, anytime. We can capture a photo or video and immediately send it to someone as an email, MMS, or post it online with comments from a mobile phone. Yet, the types of messages we can create and send with our current mobile devices may not support the personal closeness, intimacy, or care that could be felt by people exchanging handwritten letters

or post cards from exotic locations. For example, a post card from someone is *charged* with the efforts the sender went through to choose the image and object that represented the sender's feeling about the location and feeling towards the recipient [10]. Both the content and the form/presentation of the message can reflect the situation of the person in a particular place in time, and offer the receiver of the message a concrete and personal reminder of the person who sent it. Current mobile devices bring us speed and convenience, but what if these devices also became tools that supported our creativity, personal tastes, or perspectives at various times and locations? We do not see digital media as the end of meaningful messaging and personally valuable forms of communication. Rather, we see an exciting opportunity to look at what mobile devices provide (portability, network capabilities, processing power, etc.) and leverage these qualities to support the creation of personal artifacts with expressive potential and value.

We look to the art of typography as a way to add aesthetic and expressive quality to texts. For centuries, typographers and graphic designers have studied the way in which letterforms and texts work in tandem to evoke a range of expressions. We reconsider our relationship to the current ways of mobile messaging (e.g., via email, phone, texting, etc.) by designing and studying *AnyType*, a mobile application that offers an alternative approach by composing messages with the elements (visual attributes) of the
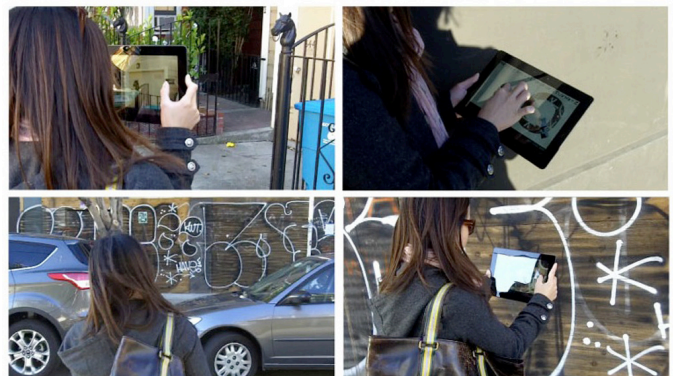

Figure 1: A user peruses their environment capturing shapes. AnyType generates typefaces from those shapes and the user then creates a composition using her personal typeface.

environment in which the user may be immersed. AnyType provides a process through which people can build and create messages using their own personal typefaces. By navigating, identifying, and capturing characteristic shapes in their environment, people create typefaces and messages that are situated in time and space, which function as objects of reflection.

Using AnyType, we explore aesthetics of composition that people may experience in everyday mobile contexts. This is not meant as an investigation of an individual's ability to create beautiful compositions (i.e., symmetry, balance, etc.) on the go. Rather, we explore what happens if we give people an opportunity to create typefaces and capture more than text or photos. What becomes meaningful, beautiful, or interesting to people? What becomes worth saving or sharing across the spectrum of contexts in which they might find themselves?

We present results from our study with 26 people: 16 using AnyType for a short period (1-2 hours) and 10 using AnyType on their own for 1 week. We describe how people captured and transformed elements in their environment into personally meaningful messages that embodied their thoughts, feelings, and experiences. By drawing from principles of aesthetic interactions [2,6,17], we discuss the potential role mobile devices could play in personal meaning-making, creative process, and discovery, as they interact with elements of the physical environment.

BACKGROUND

Aesthetics of Interaction
Aesthetics of interaction is a growing topic within HCI research. The term aesthetics of interaction has been used among design researchers to connote eliciting enjoyment, beauty, or pleasure in interaction; in other words, systems that are "beautiful in use" [12]. The goal of aesthetic interaction is to go beyond usability and usefulness, promoting curiosity, engagement, and imagination in the exploration of an interactive system [17]. Research into the aesthetics of interaction concerns experiences that may be "challenging, seductive, playful, surprising, memorable, or rewarding," all of which can "result in enjoyment of experience" [12].

Boehner et al. [2] argue, "If the aesthetic experience is by nature irreducible, then we should design, code, and evaluate systems in ways that do not primarily reduce complexity and reify abstract categories of practice." Therefore, aesthetic experience is also bound by the *ineffable*—indescribable and irreducible aspects of being [6].

Further, McCarthy et al. argue for considering *enchantment* in design, i.e. supporting depth of engagement and allowing for surprise that can lead to—as opposed to script or control—rich experiences [16]. McCarthy et al. note, ''enchantment does not necessarily imply that the object of enchantment must be novel or extraordinary, rather that the

person sees how rich and extraordinary the everyday and familiar can be.'' [16] Enchantment is a way of thinking about and designing for depth in an interactive experience.

McCarthy et al. describe how experience may become enchanting or enlightening through interaction with so-called "attentive objects," objects that "can convey interesting information to people that they would never have bothered to look up in the first place, thereby turning every moment into a learning opportunity" [16]. AnyType is our attempt at designing such an attentive object for composing messages in mobile contexts.

Related Technologies
The limits and possibilities of communication technologies continue to be a prolific area for HCI and computer mediated communication design research. Many researchers develop and study experimental interfaces that explore how the *ineffable* may be communicated over distance through new digital media [6,19]. For example, SenseMS is an enhanced SMS application designed to support affective communication among teens [1]. With SenseMS teens designed special "stamps" that could be attached to the SMS messages, in which the location and mood of the sender were embodied.

Postcrossing investigates the relationship between physical and digital communications through an online system that facilitates the sending of physical post-cards between strangers [14]. It suggests ways in which digital communication tools could provoke and facilitate experiences of personalization, anticipation, and surprise resembling those of pre-digital formats. AnyType builds on the ideas presented in Postcrossing as we investigate and present results for how meaning and value are constructed through experience with digital communications.

In the past, several projects explored the expressive potential of typography. Many of these projects look to kinetic typography as a way for digital texts to convey more emotional and expressive qualities [4,13,16,19]. Our approach is different. In AnyType, expressive potential is located in the experience of creating messages, not added to an existing message. We also believe that images can express emotion and feelings in a similar way to movement when embedded within letterforms.

ANYTYPE
"*Letterforms that honor and elucidate what humans see and say deserve to be honored in their turn. Well-chosen words deserve well-chosen letters.*"   – Bringhust (2004)

Until the digital age, typography was a specialized occupation, but with the proliferation of digital tools "typography is now something everybody does" [13]. Yet the art of typography is not just about using pretty typefaces. As a type designer Matthew Carter said, "Type is a beautiful group of letters, not a group of beautiful letters." Considering the art of typography and our increased access

to digital compositional tools in mobile contexts, we see an opportunity to support surprise, engagement, and discovery through the ability to create typographic compositions that literally incorporate elements from different spaces and times.

Current Design

Capture

When a user launches the AnyType application, she sees the camera view on the screen of her device. Unlike a normal camera, AnyType places an overlay of a non-traditionally shaped frame (i.e., a narrow rectangle, arch, or small square) onto the camera view, like a keyhole on the screen (Figure 2A). The five shapes used are based on conventional typographic forms and specifically mimic those found in the typeface *Helvetica*. Each letter of the English alphabet can be composed through an arrangement of these five shapes (Figure 3).

A message on screen prompts the user to, "find something that fits into this shape." The user then looks through the device in order to fit an object into the shaped frame shown on her screen. When she finds something that fits into the frame, she hits a capture button to save it and move to the next shape. This process repeats four more times with a new shaped frame superimposed on the camera view at each step.

Typeface Generation and Composition

After capturing objects within the five shapes, AnyType automatically creates each letter of the alphabet from the five shapes the user identified and presents this alphabet to the user in a row on the top of the screen (Figure 2D and 2E). This moment may come as a surprise, as it is the first time the user sees all of her shapes automatically

transformed into different letterforms. The user can then drag letters from her personal alphabet onto a canvas, creating a composition. Her composition may take the form of a message or graphical artwork composed of the different letters. The user is given the ability to position, scale, and erase letters from her canvas. At the press of a button, the user can email her creation to others.

Video Mode

In video mode, the user captures up to 5 seconds of video in addition to a photo for each shape. At the composition phase, the user can add letters to the canvas and press a letter to animate the video within it. Animations resemble stop-motion animations and replay in sequence within the letter. If the user captured a moving car within each of the shapes, that car could be animated in such a way that the car is driving along the letterform going from one shape to the next. For instance, in the letter "V," AnyType would animate the left side of the "V" (the car would be seen "driving" through the left side of the V) and then animate the right side of the "V" (the car drives through the right side).

History View

When the user or recipient presses and holds one of her finished letters on the canvas, she is taken to the "history view" that shows how the different shapes were arranged to compose that letter. Clicking on one of the letter's shapes reveals the original photo or video from the point of capture. This view is designed so that the user or recipient of the composition can access a history of how each letter was made. For instance, the user may capture a gear from a bicycle in one of the arched shapes. Without added context of the entire image of the bicycle, someone other than the creator viewing the typeface might not be able to discern

Figure 2: A) The user looks onto her environment through a shaped frame and captures (photographs) an object in this shaped frame. B&C) After capturing the shape, the user can edit by drawing a custom outline for the shape. D&E) After capturing all five shapes, the user is presented with her personal alphabet in the composition mode. The letters can be dragged, scaled and erased with fingers. F) In the history view, the user can see the original photographs that were used to compose each letterform.

what it is. The history view allows the creator to reveal this context to others. This act of hiding and revealing where images or videos came from adds an additional level of storytelling and possible surprise between the creator and the receiver. (Figure 2F)

Editing the Letter Shapes
During the capture phase, each of the five shapes can be edited. Within the shape, the user can draw with her finger to outline the contours of her captured object. For instance, she might capture a tower with a pointed roof in the long rectangle shape. She can use her finger to outline the tower and its pointy roof in order to remove the background and emphasize the pointy roof. The resulting shape looks as though it was cut out with scissors. This editing can greatly alter the look and feel of the resulting typeface. (Figure 2B, 2C)

ANYTYPE STUDY

How might the process of creating typefaces from one's environment using AnyType be translated into compositions? How might the AnyType application influence individuals' relationship to their surroundings? How might AnyType compositions be interpreted as a form of communication? In order to observe how people interpret AnyType and what type of compositions they make in different contexts, we conducted both a short-term study (1-2 hours) and a long-term study (one week) with AnyType. Each study provided distinct insights into different aspects of the system. In the short-term studies, we focused on observing how people interact with the system in order to gain insights about their initial reactions to the AnyType application. Through the long-term studies, we began to understand the ways in which AnyType was used in the daily lives of our users.

The same version of the AnyType application was used in both studies and all study participants were provided with a tablet to use. To ensure that our study included both artists and non-artists, we asked all participants to describe any formal training or extensive experience they had in a visual arts field.

In short-term studies, we collected data in the form of semi-structured interviews and participant observation in order to study how people engaged with the AnyType application. In the long-term study, we incorporated projective interview techniques using photo elicitation methods [9] by asking each participant to describe each of their compositions. This allowed us to gain insight into particular motivations for each creation and provoked discussions about participants' lives and state of mind at moments in which we could not be present. The data collected from both studies provided us with nuanced descriptions of the behaviors and thought processes engendered by engagement with our system. We analyzed our field notes, interview transcripts, and the compositions created by the participants using the principles of Constructivist Grounded Theory as outlined by Charmaz [8].
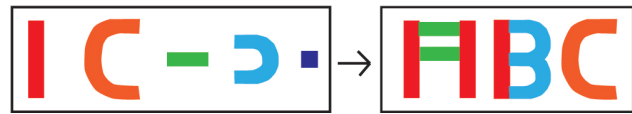

Figure 3: The five shapes used in the capture phase of AnyType are arranged to create each letter of the English alphabet.

STUDY 1: INITIAL REACTIONS

Methods:

Participants
A total of 16 people with varying degrees of art experience participated in the short-term study. 5 participants described themselves as artists (have formal training, degrees or significant job experience in visual art or design field), 2 as hobby artists (practice art for fun but no formal training), and 9 as non-artists (do not partake in any visual art activities). Their ages ranged from 23 to 52 with a median age of 28. All participants had used a touchscreen device and 11 had used a device running the Android platform.

Procedures
The short studies lasted approximately 90 minutes. The researcher met each participant at a mutually convenient location (e.g., public parks, college campus, city streets). During the study, the researcher video recorded each participant as they traveled around capturing shapes for their typefaces and made compositions from those typefaces.

The researcher asked participants to create 5 compositions using AnyType. Each time, they were asked to try a new feature (e.g., basic mode, video mode, using the history view). The researcher encouraged participants to "think aloud" while using the application and occasionally asked them to describe their reasoning ("I noticed you chose to use video for this typeface, why?") or how they felt about what they were creating ("What do you think of this typeface?"). Following the trials, the researcher interviewed each participant about the experience.

Results

Reframing
As participants looked onto the world through shape-frames, they began to evaluate how objects in their immediate environment might function as parts of their typefaces. Looking at the brickwork laid into the cement, Justin commented as he gestured toward the ground, "This brick is boring and rectangular but it has new value in the context of this app."

This reframing changed the way individuals navigated their environment. Many participants walked slowly as they scanned their surroundings for interesting objects or textures. In some cases, users began to notice new things in familiar locations. Jane remarked, "I work in this building everyday and I never realized that those railings were blue or that this building has those reliefs outside."

As they traversed their surroundings, participants let chance inform their decisions about what elements to capture. In some cases, this led them to be surprised when juxtapositions of elements that they had not previously considered formed interesting visual outcomes. Others used chance to establish a theme for their typeface. For instance, the movement of a fountain inspired a whole typeface on a water theme and challenged the user to consider different ways to represent water within the shapes.

Challenge

Some of the five shapes were harder to capture than others. Participants found the task of fitting objects into arched shapes particularly difficult. Melissa commented, "Every time the 'U's came up I was like, 'Oh, what am I going to do?' That was difficult." Many of the same participants who expressed having difficulty in finding objects to fit into shapes nevertheless remarked that they enjoyed using the AnyType application. Difficulty was not a deterrent to their experience in this context, but rather, navigating the more difficult tasks became part of what made the application interesting. Brian said, "This whole thing of framing, that's one of the things that's really interesting about it…. Like the 'C' shape, you don't always pay attention to that. It really forces you to look through the world with a different lens and that is really interesting. It's basically being able to look at the world like little kids do."

Composing Messages and Artworks with AnyType

After capturing their five shapes, participants were often surprised to see the alphabet AnyType generated. Justin mentioned enjoying "not knowing what was going to turn out and being pleasantly surprised when something actually turned out looking decent or funny." Alex said, "I was definitely not able to conceptualize how the images I had taken would come together in the end to create the final image—so that was a surprise every time. That was kind of fun—like hey! That's *my* typeface!" Participants were not deterred by the possibility that some of their typefaces might not come out as they had hoped. Instead, many saw the application as a chance to experiment and let their experience with one typeface, good or bad, guide the decisions they made in capturing the next typeface.

With AnyType, the content of a message was not always determined *a priori* but came from interactions with the system. After being presented with their personal typeface, most individuals began the composition phase by almost randomly choosing letters and investigating how each shape was constructed. Depending on what they captured, they liked the way some letters looked more than others. Often, their preferences of particular letters became a contributing factor to the composition they created. Emma described how she was "enchanted by the Z" and created a graphical composition by clustering Z's together.

Participants imagined a number of ways they would use AnyType for communication. Using AnyType while traveling seemed like an exciting possibility for many

Figure 4: Study participants capturing "c" shapes from clocks, frozen yogurt, pipes, and video of movement while running down the street.

participants. Brian commented on how he imagined using this in Paris, "…you could send somebody this sort of postcard of a place, where all these typeface captures are all the textures behind these iconic sites and places."

We did not design the process of using AnyType to be a quick way to make something aesthetically pleasing. Rather, we looked to foster an aesthetic experience through which people could re-interpret their surroundings to make new kinds of compositions reflecting their feelings and state of mind. The short-term observations began to give us insight into how participants transformed their experiences with AnyType into compositions. However, 90 minutes was too short to observe how the creative process with AnyType could be motivated by real occasions and opportunities that might arise in a person's life. This led us to conduct the second study where people were invited to use AnyType for one week.

STUDY 2: ANYTYPE OVER TIME

Methods

Participants

10 people participated in the long-term study. Their age ranged from 18 to 57 with a median age of 28. Seven participants were female and 3 male. Three described themselves as artists, 3 hobbyists, and 4 non-artists. All participants had previous experience using touch screen devices and 4 had experience using the Android platform.

Procedure

Participants received the same introduction to the system as in the short-term study. They received an Android tablet with AnyType installed and were told they could take the tablet wherever they went. They were asked to create at least two typefaces a day, one video mode and one photo mode. After the week passed, the participants were interviewed for about an hour to share their stories about their experience with AnyType and describe each typeface and composition.

Results

Seven of the 10 participants created more than the requested 14 typefaces (15-19 typefaces). Most of the

typefaces were accompanied by 1-2 compositions. Nine out of 10 participants said that they would continue to use this application in their everyday lives if they had it on their phone or tablet. The following sections describe the experiences of the participants and the compositions they created with AnyType over one week.

Creating Memories

In contrast to the short-term study, the participants in the long-term study could take AnyType to a variety of locations. Therefore, many of the typefaces and the messages written in those typefaces became reminders of users' day-to-day activities and travels. For example, Donna created typefaces on a weekend trip to a wine country by capturing images from the road, the sky, and the grapevines that characterize the region. Karen brought AnyType to a football game and took pictures of the ticket stub, the team lined up on the field, and the goal post. With these elements, she made a composition spelling out the team name on the canvas.

Jeff made a video typeface that captured the ending sequence he finally reached in *Minecraft* and used the canvas to write a word describing the sequence. He also captured images of text from a grant proposal he had been working on and used the texts as textures for his typeface. Jeff said, "I guess I was trying to see this as how to capture some aspect of the experience or do something interesting with the texture and try to like evoke some emotion or feeling with the elements that I was looking at." The researcher then asked if he felt like he was able to do that and he responded, "Yeah surprisingly, if someone told me that up front, I would have been pretty skeptical."

Jeff felt the most confident in his ability to express emotional qualities of a place in the creation of a typeface he called *Flower Power*. In this typeface he captured textures from the plants in his garden, such as close ups of veins on leaves and the stalks of sunflowers. Jeff said, "I think Flower Power is when I kind of realized, I could imagine starting off a message about this with my garden like 'hey—here's my garden,' but also it's like this little weird mixture of the serenity you have when you're dealing with a garden in something that you're writing." Jeff, though initially skeptical, found himself creating memories with AnyType that represented both physical and emotional components of his life in a unique way.

Monica, a high school student, used AnyType to record two typefaces based on her family's restaurant. The first typeface contains images of food preparation, from the sauces in containers to the final dish on the table. In her second typeface, she captured a video from the aprons of all the women working in the restaurant. Each apron was made of a different checkered or plaid-patterned fabric. Monica captured short video clips of these fabrics moving around

as the women worked in the kitchen. She also captured video from her own apron. In Monica's typefaces, we see how her experience with AnyType moved from capturing objects that generally characterize a restaurant (food, tablets, napkins) to a set of images that communicate the essence of her lived-experience working there. The videos of the aprons moving within the word "Delilah" (her sister's name) resemble an Impressionist painting in the way that they capture the emotion and essence of a fleeting moment.

In interaction with their immediate surroundings, people found new sources of inspiration in the patterns, colors, textures, and movements of their spaces. With AnyType, they became engaged in the process of exploring the creative possibilities of these elements, and saw how the elements could be arranged into expressive media. As participants continued to iterate and explore with AnyType, they found new ways to capture and convey their emotions. Since each participant looks at his or her environment in unique ways and finds inspiration in different types of objects, the typefaces were highly individualized. Unlike the traditional photos or texts, memories created with AnyType can simultaneously represent images of what individuals are looking at *and* create words that describe how they feel or what they are thinking while they capture those images.

Creative Exploration

Both artists and non-artists used AnyType as a tool for creative exploration. They asked themselves "what if" questions relating to the ways in which textures and texts could form unique messages or artistic compositions.

Some participants saw working with AnyType as a way to reflect on other works of art that inspired them, and explored reinterpreting the meanings of these works in the context of the application. For example, Jeff wanted to, "Write a short poem I like… Dorothy Parker's 'Resume.' The first line is 'razors pain you.' I had some razor blades so I figured I'd make it out of that." He had an idea to do every line of the text (which he recited from memory) in a different typeface that related to the text on that line. When asked why he would want to do this, he said, "It's a poem that I like and it's probably the first time I ever thought I could take some aspect of that poem and maybe add or change something about it in the typeface itself because I'm not much of a poet… I'm just making an interesting addition to it."

For Jeff, AnyType gave him a way to add his mark to a work of art he liked and to think about what it meant to him. He explored ideas of how text and images could complement each other and that allowed him to take something he loved in one context and experience it in a new context.

AnyType, in the context of creative exploration, is a system in which users are inspired to reflect on past experiences with art and create new experiences. Jeff noted a "calming effect" that came from using the application. Sandra talked about how she could "play with [AnyType] and recharge my brain." These meditative aspects of working through a process are often absent from media that place priority in efficiency and speed. These moments of creative exploration can become valuable opportunities to generate new thoughts, ideas, and ways of seeing the world.

Self Reflection

Participants described the experience of capturing and creating typefaces as one that allowed them to reflect upon their thoughts, values and lives in a similar fashion to how one might keep a sketchbook, diary, or journal. For example, Melissa created a composition using the word, "pheelings" and said, "It is about the way, I guess, life sort of changed now that I'm in college. More than the objects being important, [with AnyType] I looked for patterns. The text for it is feelings and I spelled with a 'ph' because I like that word a lot. I used the shapes to say—to give different feelings to it." Melissa used the editing function to draw her own shapes. She drew each shape in order to evocatively connect the shape and the image within the shape to a kind of feeling. She also found that she could use color as a way to represent feelings and emotions saying, "There was this bag I had that had this bright blue and orange pattern and that seemed like excitement and like new things and positive things but then I had a shirt that was black and red and it's kind of conflicted about things and not able to consider things as much as if it were going at a more glacial pace."

Sandra created a composition with the words, "Where has my life gone." When describing the composition she said, "I just feel like I'm at this odd place in my life right now, I was on a Sunday walk, feeling melodramatic and I made this. Something in my mind just seems a bit more interesting when it's a typeface like this."

Like keeping a journal, AnyType allowed Sandra to get her feelings out of her mind and onto a canvas where she could reflect on them in a different context.

Melissa, Sandra, and others found the experience of using AnyType to be one that made them feel introspective. They saw AnyType as a new lens through which to filter, sort out, and think about their feelings. AnyType became a reflective tool for them to generate a new perspective on their feelings and emotions through creative exploration.

Finding Inspiration in Unexpected Locations

As the participants brought AnyType with them on their daily journeys, they found themselves exploring the

Figure 5: 1) A typeface and composition Karen made on her commute home. 2) Delight with the first composition led her to create the second typeface from the bikes of other commuters. 3) Inspired by her bike typeface from her commute, Karen created another composition of her own bike when she reached home.

creative possibilities of locations they may not have expected to become source of inspiration. Donna became inspired while running errands at Costco, a supermarket, capturing images of the people and products to compose the message "Feed America." Sam became inspired to create a video typeface from his computer screen as the script he was running generated quickly moving lines of text.

Karen found herself being inspired during her evening commute on the subway (BART) and continued to ideate on themes and ideas she had on her commute after she arrived home (Figure 5). Karen described her initial inspiration for the typeface on the train as, "Oh, I'm going to get motion in some videos on BART—that'll be cool—it will have that weird, like, BART noise in the background and it has like a lot of good angular things that I thought would fit well in the boxes and then BART was totally insane and totally packed and I actually really liked it—because I got to be so weird—it was really fun."

According to Karen, one idea led to another and she went on to make more typefaces on the train. She described, "I was on BART and having fun with [AnyType] so I took the 'Bikes of BART' picture… bikes were cool because they have like a lot of the different shapes with the wheels which is why I think I started gravitating towards them."

The next day, Karen captured images from her own bike and used the letterforms as graphical primitives to create a picture of a bike (Figure 5.3). Her experience characterizes a progression of ideas that many participants in the week long studies experienced. Creativity no longer became tied to a particular place with a set of objects but extended into people's lived environment, providing them with more opportunities for creative inspiration.

Figure 6: Monica made this composition for her mother using all of her mother's favorite things.

Creating Interactive Messages

People imagined a number of ways that AnyType could be used for communication. Many of the participants wanted to share their AnyType compositions on Facebook or their personal webpages. Sandra talked about how she rarely updates her Facebook page with news of her daily life but she saw the compositions she made with AnyType as something to share. She observed, "They're different because *I* made them." Jeff wanted a chance to repost the Dorothy Parker poem he loves, but felt it would be strange to just post it out of nowhere. He felt like creating a new typeface for the poem, and AnyType gave him an opportunity to add his own personal mark and share it in a new way. AnyType gave these users an opportunity to make new kinds of digital objects, ones that they "owned" and could be proud of. They felt a sense of authorship of the works and were eager to share them as a reflection of themselves.

Gift-giving

Participants created compositions for friends and loved ones in the course of the week. Moms were the recipients of two of the participants' compositions. Monica used all of her mother's favorite things to create the typeface (Figure 6). She liked this typeface the best because she was able to capture elements her mom would like, and felt that it came together really nicely. She captured images of a Mexican doll, a flower in a painting, the praying hands of the virgin of Guadalupe, and other figurines, and used them to create the words "My Mom is the Best." In capturing each image, Monica was reflecting on what she felt were important things for her mom. The experience of capturing these elements was a gesture of appreciation. They represented more than a simple greeting because they also gave Monica a way to reflect on her cultural identity and her relationship with her mother.

Karen had a friend with a birthday during her one-week with AnyType. She was out one night and got an idea to create a video typeface for her friend Rachel. She recorded a different person in the group of friends saying "Happy Birthday Rachel," in each of the 5 shapes. The typeface was recorded in a crowded, loud, and dimly lit bar. Each video begins with Karen's voice shouting "Go!" signaling for the person to begin his or her happy birthday message. Karen used AnyType to orchestrate a series of actions and capture them in a card for her friend. Her effort in putting the card together is evident in her voice shouting "Go!" at the start of each video. She presented the card to her friend who laughed when she realized all the letters were composed of "happy birthday" messages from their friends, and also laughed about how Karen went about creating it. Karen said, "She loved it." Karen's outgoing personality was just as evident in her typeface and message as the birthday greetings of each friend were. The way the card was made uniquely captured Karen's character, and Karen saw AnyType as a way to make something unique for Rachel.

Personalized type could make compositions created with AnyType feel more special than greeting cards or emails. One of the short-term study participants, Nadia, said that it is "more creative than sending a greeting card. Nobody really sends you personalized texts, right? So, it's like, hey, somebody just sent you a text especially for you. It's like all these photos of things that sort of represent yourself, your personality, or memories you have together."

Taylor et al. [20] discuss the ways in which teens viewed text messaging as a form of gift exchange. Similarly, our study revealed how teens and adults alike saw the ability to construct messages with AnyType as a way to send a "gift" to another by expressing appreciation or curating an experience for a friend or loved one.

DISCUSSION

"We only see what we look at. To look is an act of choice."
– Berger (1974)

At its core, *AnyType* helps people see new things in their environment. Learning how to see is considered by many as the foundation for all art activities. Two of our participants mentioned the relationship between using AnyType and "seeing" things like an artist. Cindy, a high school art teacher, described how she explains the importance of seeing to her students by saying, "it's not about what you draw, it's about what you see." Jake, an architect, described his relationship to looking at the environment with a new lens by saying "from day one in architecture school that's what they teach you. It's like bracketed vision, forget about what something is and look at it for what it looks like what its shapes are."

AnyType demonstrates how mobile tools can function as artistic media, prompting the user to actively investigate their environment and ask questions in much the same way an artist approaches a canvas or clay. It prompts questions such as, "What kind of shapes can convey a sense of

excitement?" or, "What curves and textures are characteristic in a particular object or location?" It accomplishes this not by mimicking actions like drawing or painting, or generating aesthetically pleasing representations, but by focusing on the act of seeing. As an aesthetic interaction, it is "not about conveying meaning and direction through uniform models; it is about triggering imagination, it is thought-provoking and encourages people to think differently about the encountered interactive systems, what they do and how they might be used differently to serve differentiated goals." [17]

As an art medium, AnyType easily adapts to fit the needs of the individual user. It is a means of communication at one time and a platform for self-reflection at another. Our observations with the system revealed that AnyType served many functions for a single individual. For many of our participants, their compositions with AnyType were emotionally charged products reflecting their sense of style, interests, identity, cultural heritage, etc., as encapsulated in a particular moment. AnyType actively encouraged people to consider the medium of their message, and, in turn, people saw more beauty in their own personal compositions, which was different from how might they usually go about communicating with others using digital media.

Participants saw AnyType as a way to create highly personalized messages. These messages are personalized in two senses of the word. First, the user is able to customize the message *for* another person, which is common in many personalized greeting systems. Second, and unique to AnyType, the greeting also represents the person who is creating the composition. The ways in which the creator navigated her environment are represented in the compositions. As we presented in the results above, these processes of selection varied from individual to individual. Not only did they look aesthetically different, but they also reflected different styles, aesthetic values, and sensibilities of the creator.

The results and analysis we present in this paper expand on the literature relating to "defamiliarization" as a design tool [3,11] by showing how defamiliarization can be more than a strategy for expanding design possibilities but also one that allows people to creatively express themselves in the context of communication. In our study, defamiliarization was achieved by imposing frames atop the camera viewfinder that challenged individuals to consider the symbolic meaning of what they were capturing within the frames and how those symbols could function together in a typeface to create meaning. Designers of future systems for creative expression could do well to consider how defamiliarizing constraints might help users expand their creative possibilities.

LIMITATIONS
Limitations to our studies include issues of both time and hardware. Users did not stop finding new uses for the AnyType system over the week. One week may not have been long enough to observe the full extent of its use. Similarly, the events occurring over that week may not have been sufficiently representative. For instance, none of the users took the application on a long vacation or encountered intense joy or sorrow. Because of the time limitations, our findings above may only list a subset of the many ways people will actually use the system or may include novelty effects.

We provided users with an Android tablet for the study. Some users were unfamiliar with the Android platform, which may have affected how they used AnyType. Participants reported occasionally leaving the tablet at home. We may not have captured the full range of what people would create on a personal mobile device since participants did not bring our device everywhere they would take their personal phones or tablets.

FUTURE WORK
We plan to implement the functions our study participants requested into a new version of the application to increase the level of personalization and customization possible with the system. These functions include: a letter-form editor where the user can adjust the way shapes are composed into letter-forms on a per-typeface basis; the ability to choose a new base (e.g., serif typefaces, cursive typefaces) and corresponding shapes to use for capturing and composing; adding punctuation to the typefaces; and updates to the canvas functionality like the ability to multi-select and control the layering order of overlapping letters.

Our study participants also expressed interest in using AnyType as a collaborative tool that friends could use together. One participant related it to a physical book of collages she would like to mail back and forth. The sender and receiver of the book could collaboratively build collages together in order to engage in a creative activity and explore new design possibilities. We plan to investigate the way people send typefaces digitally to their friends with AnyType to see what type of compositions they might create from another user's typefaces and vice versa.

With an updated prototype, we plan to further explore how AnyType can be used in the context of messaging, particularly in terms of how it may impact the sender-receiver relationships. We expect to release the new version of AnyType with support for a broad range of devices in the near future. In this way, we can invite more users to the study and support a diverse set of users in terms of ages, backgrounds, and locations. With the application on a number of mobile devices, we may be able to obtain a more accurate picture of the contexts in which people create and send AnyType messages. Through these studies, we hope to further explore how designing for aesthetic experience can elicit new opportunities for improving the value and feeling of connection in mobile communication.

CONCLUSION

Our studies of the AnyType system allowed us to observe how individuals translate their experiences of creating typefaces from elements in the environment into highly personalized messages. In short and long term studies, we observed participants traversing their environments in new ways and noticing new things as they searched for visual elements with which to create typefaces and messages. Long-term studies revealed how AnyType can be used for personal communication, creative exploration, and self-reflection.

We see AnyType as a first step in exploring how the creation of digital artifacts can support qualities of authenticity and uniqueness that increase their perceived value by their creators. We observed the deep connections of the messages to the process that created them. For this reason, we see potential in systems that do not recreate processes from other media on digital tablets (e.g., sending hand written letters by writing with a stylus on a canvas). Instead, we argue for attention to the aesthetic experience of creation and to the details of process and form-making.

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REFERENCES

1. Amin, A.K., Kersten, B.T.A., Kulyk, O.A., Pelgrim, P.H., Wang, C.M., and Markopoulos, P. SenseMS: a user-centered approach to enrich the messaging experience for teens by non-verbal means. *Proceedings of the 7th international conference on Human computer interaction with mobile devices & services*, ACM (2005), 161–166.
2. Baljko, M. and Tenhaaf, N. The aesthetics of emergence: Co-constructed interactions. *ACM Trans. Comput.-Hum. Interact. 15*, 3 (2008), 11:1–11:27.
3. Bell, G., Blythe, M., and Sengers, P. Making by making strange: Defamiliarization and the design of domestic technologies. *ACM Trans. Comput.-Hum. Interact. 12*, 2 (2005), 149–173.
4. Berger, J. *Ways of Seeing*. Penguin Group(CA), 2009.
5. Bodine, K. and Pignol, M. Kinetic typography-based instant messaging. *CHI '03 extended abstracts on Human factors in computing systems*, ACM (2003), 914–915.
6. Boehner, K., Sengers, P., and Warner, S. Interfaces with the ineffable: Meeting aesthetic experience on its own terms. *ACM Trans. Comput.-Hum. Interact. 15*, 3 (2008), 12:1–12:29.
7. Bringhurst, R. *The Elements of Typographic Style*. Hartley and Marks Publishers, 2004.
8. Charmaz, K. *Constructing Grounded Theory: A Practical Guide Through Qualitative Analysis*. Pine Forge Press, 2006.
9. Collier, J. Photography in Anthropology: A Report on Two Experiments. *American Anthropologist 59*, 5 (1957), 843–859.
10. Csikszentmihalyi, M. and Halton, E. *The Meaning of Things: Domestic Symbols and the Self*. Cambridge University Press, 1981.
11. Djajadiningrat, J.P., Gaver, W.W., and Fres, J.W. Interaction relabelling and extreme characters: methods for exploring aesthetic interactions. *Proceedings of the 3rd conference on Designing interactive systems: processes, practices, methods, and techniques*, ACM (2000), 66–71.
12. Djajadiningrat, T., Wensveen, S., Frens, J., and Overbeeke, K. Tangible products: redressing the balance between appearance and action. *Personal Ubiquitous Comput. 8*, 5 (2004), 294–309.
13. Jury, D. *About Face: Reviving the Rules of Typography*. Rotovision, 2004.
14. Kelly, R. and Gooch, D. Understanding participation and opportunities for design from an online postcard sending community. *Proceedings of the Designing Interactive Systems Conference*, ACM (2012), 568–571.
15. Lee, J.C., Forlizzi, J., and Hudson, S.E. The kinetic typography engine: an extensible system for animating expressive text. *Proceedings of the 15th annual ACM symposium on User interface software and technology*, ACM (2002), 81–90.
16. McCarthy, J., Wright, P., Wallace, J., and Dearden, A. The experience of enchantment in human–computer interaction. *Personal Ubiquitous Comput. 10*, 6 (2006), 369–378.
17. Petersen, M.G., Iversen, O.S., Krogh, P.G., and Ludvigsen, M. Aesthetic interaction: a pragmatist's aesthetics of interactive systems. *Proceedings of the 5th conference on Designing interactive systems: processes, practices, methods, and techniques*, ACM (2004), 269–276.
18. Rosenberger, T. and MacNeil, R.L. Prosodic font: translating speech into graphics. *CHI '99 extended abstracts on Human factors in computing systems*, ACM (1999), 252–253.
19. Sengers, P., Boehner, K., Mateas, M., and Gay, G. The disenchantment of affect. *Personal Ubiquitous Comput. 12*, 5 (2008), 347–358.
20. Taylor, A.S. and Harper, R. Age-old practices in the 'new world': a study of gift-giving between teenage mobile phone users. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, ACM (2002), 439–446.
21. Yeo, Z. and Hudson, S.E. KTE2: an engine for kinetic typography. *Proceedings of the 27th international conference extended abstracts on Human factors in computing systems*, ACM (2009), 3413–3418.