THE STORIES BEHIND THE SOUNDS: PERSPECTIVES ON SAMPLING AND REMIXING PERSONALLY MEANINGFUL SOUNDS WITH AI

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ABSTRACT

Recent advances in methods for controlling and customizing AI-generated music and sound point toward a future in which personalized music may become increasingly prevalent, yet the ways in which listeners perceive deeply personalized sound and music remain unexplored. How might listeners experience AI-generated music that uses familiar and personally meaningful samples from their favorite records or recordings from moments in their own lives? We use first-person design research to explore the processes of collecting and sharing sound samples to serve as source material for sampling and remixing with the help of artificial intelligence. We create personalized tracks built around those samples for each participant, asking participants to listen to their tracks first individually, and then in a group setting in a workshop. We study experiences throughout with journaling and discussion, focusing on emotional experiences as well as perspectives on the role of AI in the process. Our findings include surprising emotional sensitivity and wide-ranging feelings, the importance of backstories behind sounds, and potential for remixing and sampling as ways to reinterpret those stories. We discuss implications for how, when, and why AI might or might not be used to create personalized music. Our work highlights opportunities and challenges for AI in creative and emotion-laden activities to envision a more human-centered future for musical human-AI interaction.

1. INTRODUCTION

Studying creative, subjective, and emotional human interactions with AI in situated musical environments is hard. Controlled studies "in the lab" separate listeners or creators from their usual processes in ways that color their experiences, making it difficult to isolate the effects of new AI technology [1,2]. Participants who come to test prototypes or learn how to use AI-based creative tools for the first time might find their learning curves steep; it can take a long time to start to understand how AI works or how to use it. In addition, participants might not feel very invested in the outcomes of unfamiliar interactions with AI. With these challenges in mind, the explorations in this article are based on the following question: **How do people experience musical interactions with AI when they have a reason to be emotionally invested in the music created through the process?**

We turn to the musical practices of sampling and remixing as a point of connection to begin studying this question. For musicians, one way to hold onto personally meaningful sounds is to reuse them as creative material through sampling and remixing. Artists and producers use samples to convey all kinds of emotions, from the pain and anger of Pharrell Williams sampling police brutality protests [3] to the lighthearted nostalgia of singer Billie Eilish and producer Finneas sampling the sound of crosswalk signals from a trip together to Australia [4].

Reinterpreting recognizable and meaningful source material can offer an immediate point of connection that serves to ground a new composition in a particular time, place, or emotion [5]. Because of the way they bring recognizable elements into otherwise unfamiliar contexts, we hypothesize that sampling and remixing present a promising entry point for exploring unfamiliar musical interactions with AI. By establishing an underlying connection between AI-generated music and specific sounds or memories that are already meaningful to the listener, sampling offers a way to raise the emotional stakes for research participants who might not otherwise approach AI-generated music as focused and active listeners. At the same time, the process of collecting and sharing personal sound collections *to be sampled* using AI is itself an opportunity to surface design implications for creative human-AI interaction.

What personally meaningful sounds do we cherish in life? Loved ones' giggles, or unique creaks of the door in a childhood home. Energetic yelling at the neighborhood market, the timbre of a beloved instrument, the first few notes of a favorite record. Ambient environmental sounds, the voices of loved ones, and other sounds from our varied everyday lives may intrigue, energize, or calm us. Sound can make us appreciate what we have or reflect on what we have lost. Such "personal sounds" are ubiquitous and rich with emotional meaning, yet they are fleeting and ephemeral. How might we keep and savor these

sounds?

Focusing on emotional experiences with sound, this study asks: How might it feel to collect, share, remix, and appreciate emotionally meaningful sounds from our lives? What might a remix of personal audio recordings sound like, and how might such remixes be experienced by the people whose sounds were modified? What parts of the process could be delegated to AI, and what parts could not?

2. RELATED WORK

2.1 Personalized AI Music and Sound Generation

This study is motivated by recent advances is music generation with AI. Some approaches treat AI-generated content primarily from a consumer's or a listener's perspective; e.g., full-length songs composed with AI music generation apps like Lyria, Suno, or Udio, automatically generated sound effects for films [6], or music for video games [7]. Other work engages with AI from the creator's perspective as another tool in a digital toolbox [8–10]. Both of these strands of research are moving in recent years toward increasingly personalized, customized content.

2.2 Human-AI Collaboration

User acceptance of AI input often depends on a number of factors, including the nature of AI's task [11, 12], various notions of interpretability [13], and user mental models of how AI works [14, 15]. Adoption of AI is often resisted by both domain experts and general users in high-stakes scenarios such as medical diagnosis [16–18] or financial risk assessment [19]. Although AI music generation is usually not considered a high-stakes scenario, this study aims to make the stakes higher than they have been in the past through the intentional use of personally meaningful and potentially sensitive sound samples, inviting engagement with tensions that might otherwise have not yet risen to the surface.

2.3 Emotions and Subjectivity in HCI

This study explores human interactions with AI through the subjective and emotional experiences of participants. Within disciplines like HCI and AI, emotional experience is often denigrated as an inferior way of knowing, perpetuating an emphasis on rationality and objectivity. This emphasis is problematic because what counts as rational and objective often reifies colonial, gendered hierarchies that (intentionally or not) delineate Western white men as civilized, rational, and objective, and everyone else as too uncivilized, irrational, and emotional to generate knowledge. Within HCI, Haraway's foundational work on situated knowledge [20], Bardzell's agenda for Feminist HCI [21], and D'Ignazio and Klein's book on data feminism [22] have all argued for the importance of situated, emotional, embodied ways of knowing.

3. PROCESS

3.1 Steps

Five co-authors chose to study ourselves through first-person research with a four-step process:

1. **Collecting:** The five of us each selected 3-5 sound recordings of "life-defining" moments, which entailed either finding and choosing an audio recording, or at times reflecting on the absence of a desired recording (because many of us do not keep audio collections).

2. **Sharing:** We listened to the sounds as a group before explaining their personal, emotional significance to each other.

3. **Remixing:** One co-author with music production experience played the role of AI in the experiment, arranging the sounds into new musical or soundscape "remixes" for each participant. Each remix for "Author A" used sounds only from "Author A."

4. **Reinterpreting:** We each listened to our respective remixes individually, then listened to them as a group, and finally shared our responses to the remixes with the group. As described in Findings and Discussion, these remixes presented sonic, artistic, and emotional reinterpretations of the original sound recordings and their personal significance, with sometimes pleasing, sometimes upsetting, and often surprising results. At dedicated checkpoints throughout our process, we individually logged our emotional experiences, and during meetings we helped one another articulate and further reflect on the emotional meaning of the sounds, the remixes, and what it would mean for the remixing to be done by AI. These journal entries and resulting meeting transcriptions were qualitatively analyzed for emergent themes [23].

3.2 First Person Methods

Engaging first-person methods enabled direct, firsthand experience exploring emotionally sensitive territory. For example, Kumi described the sound of her firstborn's first breaths and wished she could have had an audio recording of this; June shared a recording of her dog shortly before he passed; Natalie's sounds touched complicated memories of a person in her life. While it would have been possible to study external participants instead, we chose not to do this in part because we wanted richer firsthand knowledge of what turned out to be surprisingly sensitive experiences. Moreover, rather than asking participants to undertake vulnerable emotional work in an unfamiliar setting (affective demands on research participants have been rightfully critiqued in HCI [24, 25]), our familiarity with each other, together with shared authorship in this study, made this engagement feel safer and more equitable.

Additionally, rather than working within the limitations of current AI systems or building an entirely automated

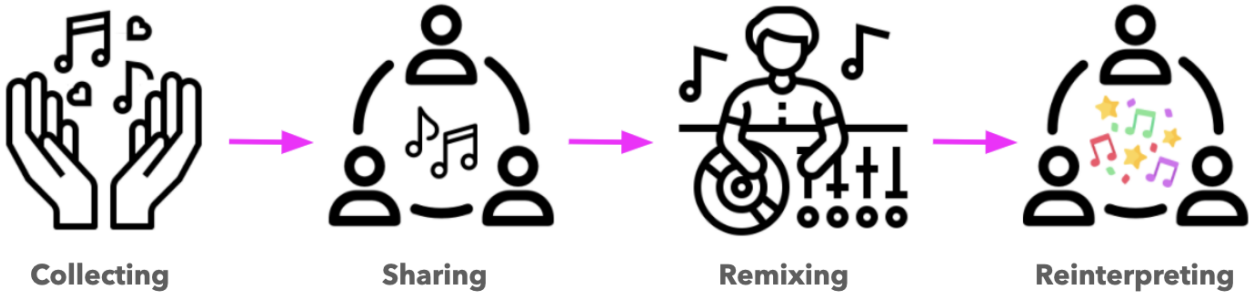

Figure 1. Study process: 1. Collecting personal sounds, 2. Sharing sounds and the stories behind them, 3. Remixing sounds (with a human musician standing in place of a speculative AI remixer), 4. Listening to the remixes with the group.

system for generating customized music based on samples, we instead explore a speculative future in which AI is already able to automatically compose customized music for participants. We take inspiration from Wizard of Oz prototypes, in which a human plays the role of a machine while interacting with an unsuspecting human participant [26]. Because of the vulnerability involved in sharing emotionally sensitive stories and audio source material, however, this study does not employ any deception; instead, to encourage honesty and openness, we employ first-person research methods, with the five co-authors serving as the five participants in the study.

In accordance with the reflexivity of first person methods, we describe our professional and cultural backgrounds alongside the personal sounds we shared. Pseudonyms are used for anonymous submission.

Joe is a PhD student researching AI and HCI applied to music. His background includes training in music production as well as experience playing music as an independent artist and contributing composition and sound design to films and ads. Joe shared a recording of himself playing guitar in high school and another recording of a performance from his West African drumming class, which was a formative experience in shaping his thinking about music and sound.

Kumi is a university professor in the field of HCI. She grew up in Japan but spent more than half of her life in the US. She is married and has two young children. Kumi shared a sound of her children with their grandmother giggling and singing when they were together prior to COVID-19 pandemic.

Natalie grew up attending 12 different schools in 5 U.S. states; her sound selections often reflected nostalgia for distant places and times. While navigating frequent changes, a consistent thread has been taking clarinet lessons for many years and practicing often. She also uses field recordings for making music as a hobby. She shared sounds of playing clarinet, a loved one playing piano, crickets in the South, and the train in a city where she formerly lived.

June is a graduate student studying emerging technology design in the U.S. Her background is a combination of architectural design, engineering, and product design. She shared the sounds of barks and whines of her terminally ill dog greeting her with unbridled joy when she came home one day, clicks and clacks of her favorite pastime, competitive video gaming, and the creak of a door opening to indicate that her partner was done with his work for the day.

Howard is an aspiring researcher in HCI and AI. He grew up in China and moved to the U.S. five years ago pursuing a career as an academic researcher. Being busy with the curriculum, he flies back to his home country only once or twice a year visiting his family and friends. He shared sounds of his cousin performing an imperfect piece of piano in front of the entire family during the Chinese Traditional Spring festival, clips from his high school graduation ceremony, and a jazz band performing in a cafe where he spent a lot of time with his friends before the pandemic.

3.3 Remixing Process

Drawing from his professional musical experiences, Joe approached remixing as he would when collaborating with another artist. (1) First, he interviewed the "sound owner", who had provided their personal sounds, to learn the story behind the sound and get a general sense of their aesthetic tastes. (2) Next, he chose an artistic direction, including choices of length, timbre, mood, and whether to deliver a short sound-snippet or a song. This sometimes included finding one or two "reference tracks" for inspiration. (3) In an iterative process, he then listened closely to the personal sound recordings, selecting shorter audio clips that stood out because they either captured an intended feeling or had uniquely interesting sonic qualities. (4) Finally, he experimented with transforming and combining those fragments. These transformations ranged from simply adding a single effect such as reverb, echo, or a filter, to creating more complex arrangements by organizing, repeating, and mixing sounds into a larger piece.

4. FINDINGS

4.1 Searching for personal sounds as a reflective process

From the perspective of the "recipient" of a personal remix, selecting personally meaningful sounds to be remixed was a journey in and of itself. Instead of going out to record new sounds, most of us first reflected on what "personally meaningful sounds" might be for us; this led us to look for sounds from our past. In the process, the act of focusing on sounds (as opposed to images or videos) challenged us to search our memories in a different way than we are used to. Most of us ended up thinking of sounds associated with particular times and places in our lives, like a childhood music recital, the birth of a child, or the sound of crickets chirping outside during summer in a childhood home. When we did have recordings tied to major life events, we felt grateful. For example, June had intentionally recorded the a video of her dog's happy footsteps shortly before he passed away as a keepsake; she extracted the audio from this video.

Some sounds were difficult or impossible to obtain. For Kumi, the sound of her newborn's first breath came to mind, a sound vivid in memory yet one for which she has no recording. When asked to reflect on how she felt about not having the recording, Kumi responded, *"I have mixed feelings. Ultimately, I am OK with not having the recording of my baby's first breath. I still clearly remember just how viscerally precious that sound was to me. Even if I had an audio recording of it, I am not sure if the audio file would have captured the heartfelt aspects because it was such a high-pitched yet super quiet kind of sound. But at the same time, not having the recording of the breath makes me think about how I might go about choosing to record certain precious sounds in my life in the future, or really try to pay attention to the quality of the sounds I experience because* ***I may not get to hear it again****."*

The seemingly simple exercise of collecting "meaningful sounds" in our lives made us reflect on how we remember events. For some, the prompt to gather recordings invited renewed attention to the sounds of everyday life and appreciative listening to sounds that are typically ignored. June shared the sound of the door from her partner's office as he opened it. *"I like the sound because I know that's when I could leave my computer, go out, and chat with him."* After finishing this exercise, Howard was inspired to start a practice of deliberately collecting potentially meaningful sounds from his daily life, which to him now feels similar to his practice of taking photos: *"When I'm chatting with my family, especially those who I video chat with less frequently, I will now sometimes open my voice memo app and record part of the conversation."*

4.2 Stories give significance to sounds

As a group, we first shared our personal sounds without explaining them in order to probe the group's initial reactions to the audio recordings themselves. Most of us found ourselves trying to guess the context for each sound: was it water, footsteps, was it outdoors? The sounds alone did not prompt much emotional engagement for listeners at first. After learning the context and personal significance behind a sound, however, our listening experiences often changed dramatically, with the sounds seeming to *"come to life"*.

June shared a recording of her dog's excited reaction when she came through the front door of her home. Before learning the sound's backstory, for the rest of the group, the sound initially felt joyful and lighthearted. After learning the sound's backstory of her dog's illness and passing, the sound took on a deeply poignant, sad, or even haunting quality. The stories helped us not only understand why the owner chose the sound, but also changed the way we hear it.

For Joe, this group listening exercise felt like a unique way to get to know each other better: *"Hearing others' sounds was a connecting experience. I tried to make sense of what I was listening to. I imagined what the sounds were about, and I pictured the space where the recordings were happening. I came up with my own version of what the story might be. After hearing the stories behind the sounds, I felt like I was getting to know the person and see the world from their perspective. I was engaged in listening to the stories more than I might have been otherwise - I wanted to know what it was, why they chose that sound."*

For most of us, in our roles both as "sound owners" and as listeners, the backstories felt at least as important, if not more important than the sounds themselves. We were not aware of this though until the sounds and stories were revealed to us in this order. This suggests that emotional connections between sounds and stories (real or imagined) can play a more influential role than we expect.

4.3 Remixes Open Personal Stories for Reinterpretation

June had initially found it hard to listen to the original recording that she shared because it reminded her of her loss. The remix, on the other hand, felt more *"listenable"* to her, because it offered a new way to revisit memories of her dog. In contrast, Natalie had a negative first reaction to her remix, which included a sample of someone in her life playing a familiar song. *"When I first heard Joe's remix, I felt annoyed and disappointed but not upset. It felt like the remix made sense musically, but missed the point emotionally. The remix seemed to emphasize the song itself... the musical style was trampling my own. It also made me realize that I hadn't explained* the [connection] between me and the person playing the song, so how could he have known?"

Natalie's perspective on the remix she received was also shaped by the group dynamics, the other listeners, and the other remixes she heard afterwards: *"I only felt upset after June shared her remix with the group. Although the sounds of her puppy's last days had been poignant and sad, the remix found a sensitive, respectful way to cherish the good of that moment, and felt to me like a commemorative celebration of her puppy's life. Then as the group listened to my remix, I held back tears. Having such a strong reac-*

tion seems a bit silly in hindsight, but in the moment, I was struck by June's positive experience with her sound and wished my remix could have been a positive experience for me." Natalie's experience speaks to the strong effect that social context has on the way we experience music.

4.4 Importance of Trust

Sound owners often felt vulnerable when sharing sounds with the group. June felt apprehensive about how the remix might reinterpret her story. She wrote, *"Would he completely miss the meaning of the clip to me?"* She remembers trying to cram as many details as possible about her dog into the call with Joe. She worried that if he didn't see the whole picture, it might cheapen the memory. June began to feel more at ease when Joe made it clear that, in his role as the remixer, he was listening to her. She felt that he was invested in *"doing the clip justice."* For June, it was frightening to *"relinquish ownership of the sound."* She describes, *"I went into the call knowing that the expert was skilled in this area, and once I realized he was an empathetic guy, I felt much more trust than I would have with someone driven by only their artistic ego."*

After listening to her personal remix, June wrote: *"I suddenly broke out into a big smile because the music felt like the artist had tried to embody the feeling of the friendship between Romie and me, as if he really cared – he tried to interpret what I had shared with him. And the fact that someone listened so attentively and cared at all – this forced me to examine the clip as a celebratory experience rather than a solemn one."* Even though the remix presented an emotional interpretation that didn't quite match how June initially felt about the recording of her dog, a sense of trust allowed her to appreciate the new interpretation instead of being left feeling misunderstood.

Natalie, on the other hand, had not been given as much space to explain her personal samples to Joe in detail; she didn't go through the same trust-building process that June did to reassure her that her remixer would care about her perspective. This contributed to her negative initial reaction to her remix. For Natalie, discussing the remix with the group in a supportive environment after this first listen marked a turning point. *"At this point, I felt a flood of gratitude and joy. I had shared my story and negative reaction with the group. Joe had listened to me and explained his thinking making the remix, and I was struck by how much thought and sensitivity he had put into it. Even if it missed the mark for me in terms of the sound itself, his thoughtful care felt like such a gift. I felt compelled to send a thank you email after the group meeting."* Natalie wrote afterwards: *"During those few weeks [collecting and sharing sounds], I had been feeling very nostalgic for times gone by and places I couldn't return to. Hearing the sounds from different aspects of my life stitched together into the remix provided a sort of synthesis and healing*." After learning more about the intentions behind the remix, Natalie interpreted the music very differently; this time it left her with a positive emotional reaction.

From Joe's perspective playing the role of remixer, the need for trust came with a sense of personal responsibility. After remixing the personal sounds for all five members of the group including himself, he wrote: *"Even though I have some experience playing this role through collaborating on projects with other musicians or artists, I felt a heightened sense of responsibility toward the sound owners here. Rather than thinking more broadly about who the audience for each piece might be, I was focused on the one person who shared the original sounds, because the emotional stakes were so much higher for that person. Because of these high emotional stakes, I spent more of my composition time trying to capture the stories at a high level and less time executing the details of any individual piece than I might have otherwise. While this composition process was engaging for me, it was also challenging. In particular, when my understanding of the story behind a certain sound was less thorough, I felt like I was making guesses and leaving things to chance - giving myself the opportunity for a round of revisions would have been a nice addition to the process."*

5. DISCUSSION

5.1 Perspectives on Delegating Creative Work to AI

Is it possible to trust an algorithm with remixing our personal material, with reinterpreting our precious personal stories? Lustig et al. highlight the increasing role of "Algorithmic authority" in society to "interpret, decide, and manage" [27] complicated situations that arise throughout everyday life. Howell et al. found that, when faced with a data-driven algorithmic interpretation of their own feelings, participants sometimes granted the display a concerning degree of authority, "trusting" it more than their own felt sense [28]. What are the benefits and risks of trusting or not trusting an algorithm to work in emotionally sensitive spaces?

5.1.1 Kumi's Perspective

Kumi is open to having an AI-based system "surprise" her once in a while with sounds from her life, much like the way Apple iPhoto or Google Photos provides "On This Day" (time based) or "This Place" (location based) memories automatically selected from the images and videos on a phone: *"When I see these automatically generated 'memories' on my phone, I am not expecting them to be perfect or even getting it right. I don't expect AI to 'understand' my life. But it is more about treating them like a gift of opportunity to reflect on things that would otherwise go unnoticed*." For Kumi, engaging in this exercise of attending to personal sounds made her realize *"just how little we pay attention to the sonic qualities of our lived lives."* Kumi explains that *"Currently, there isn't any system that suggests to us, 'Here's a personal remix of sonic experience based on where you were or who you were with. It may be imperfect and we might ignore it at first, but once in a while, there might be an opportunity for us to say, 'Hey, I appreciate this sound because I would not have noticed it otherwise, given the myriad of things going on.'"* The AI

generated remix of personal sounds might also be experienced much like the way we interact with traditional radio stations. *"If it ends up playing something that I do not like, I would simply switch the channel. With a human artist, we might be too polite to tell them I don't like what you made for me, but with a non-human AI musician, we might be more open to, or even empowered to speak up what we like or not like, and what we hope to see next, and be open to multiple iterations."*

5.1.2 Howard's Perspective

Howard envisions a cloud-based system that could provide him with a palette of sounds that might be interesting to him to remix on his own. This could be based on all the sounds he deliberately records from different apps and devices. Howard would like to be informed about the specific model the AI musician might use and the dataset the model was trained on, possibly through documenting methods like Model Cards [29] and Datasheets for Datasets [30]. With a sufficient level of transparency, Howard may be able to imagine having AI involved in an entire music creation pipeline.

5.1.3 Natalie's Perspective

Natalie believes it would be extremely difficult to provide a positive emotional experience with AI. Even with emotion-tagging audio, even with genre-matching to produce something in a style favored by the listener, and even with AI-generated music, interpersonal trust and relational care are what made the process meaningful for Natalie. Rather than attempting to use AI to generate music instead of musicians, AI can help in other ways. Adding human-AI collaborative features to existing digital audio workstations (DAWs) can provide greater creative possibilities for musicians to work with while remaining sensitive to emotional nuances. AI can help narrow the search space while leaving final decisions for humans, musician and listener. AI might even help listeners find musicians based on musical or emotional preferences, or other characteristics. For Natalie, rather than attempting to use AI to supplant the already precarious labor of musicians, it seems more equitable and just to instead use AI to help provide paid gigs for musicians, in the process enabling more non-musicians to engage the expressive potential of remixing personal sounds.

5.1.4 Joe's Perspective

Joe saw the potential for human-AI co-creation with personal sounds as a tool for creative inspiration: *"Hearing something that is uniquely yours suddenly take shape in a more fully realized form than you knew was possible - that can be inspirational and encouraging."* He imagined a future where AI sometimes serves the purpose of emphasizing sounds worth listening to (even if the AI often misses the mark). At the same time, after seeing firsthand examples of the surprisingly powerful emotional impact that personalizing and remixing sound can have, he started to picture a scarier future in which AI-generated music is deployed in a manipulative way - for example, to play on consumers' emotions in order to encourage them to spend money.

5.2 Privacy and ownership

Through the process of handing over life-defining sounds (whether to a human or an AI) to be remixed and recontextualized, this study offers a look into privacy considerations that can arise when designing personalized sound and music. While work in media studies, musicology, and law has examined ethics, cultural practices, and legal implications of sampling and remixing in music (e.g. [31–33]), the sampling discussed in this literature usually takes place between one artist and one sound owner (e.g., Public Enemy sampling James Brown). Personalized music created with the help of AI, however, opens the door to the possibility of sampling on a much larger scale, drawing from any individual's sounds that have been recorded and made available; training generative AI models on recorded music has been compared to sampling in recent debates around how generative AI should be regulated.

Considering a future in which some form of sampling can be automated raised questions about what constitutes ethical use of sounds recorded in everyday life. Sounds are all around us, able to be recorded, but ownership can be unclear. Most sound owners felt uncomfortable with the idea of sharing precious sounds outside the research group without permission–and yet, some of the personal sounds shared within the group were recorded with others present or even in public spaces. What if a recording captured by one person contains another person's precious moment?

Consent, intention, and sensitivity to cultural histories emerged as common themes when reflecting on the experience of allowing our sounds to be remixed. Joe felt uncomfortable with the idea of sampling one of the sounds he had shared with the group, because he knew that a person whose voice was captured in that clip would not want to be remixed: "*It feels wrong to change this recording from its original form. I know he would disapprove.*" Natalie shared having experienced a similar feeling while walking with a friend who expressed wanting to record the sound of people singing during a baptism in a river as they passed by - "*You can't use that!*" Kumi noticed one particular segment in which the sounds of her Japanese family were changed to sound different from their original cultural context. She felt surprised (but in her case, not uncomfortable), describing the sounds as "*Church like! Western European, unexpected and really different from what it is!*"

6. CONCLUSION

This study contributed first-person design research exploring a process of collecting, remixing, sharing, and reinterpreting personal sounds. We found that while personally meaningful sounds were expressive emotional materials to work with, they also presented chances for misunderstanding and discomfort. Interpersonal trust and communication

of stories behind sounds played an important role in shaping experiences with these sensitive materials.

7. ETHICS STATEMENT

This work aims to reveal ways in which AI music technology, especially when used carelessly, might cause emotional distress, with the goal of informing the research community about these risks. In the process, our user study asks participants to undertake vulnerable emotional work; to minimize the risks involved and to make this engagement safe and equitable, we chose to conduct our user study through first-person research, with 5 co-authors serving as the research participants.

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