*Equal contribution
between the authors

Şölen Kıratlı
solenk@gmail.com
**University of California, Santa
Barbara, USA**

Hannah E. Wolfe
hewolfe@colby.edu
**Colby College, Waterville,
ME, USA**

Alex Bundy
alex@planetariummusic.com
**Planetarium Music, Santa
Barbara, CA, USA**

Cacophonic Choir:
An Interactive Installation

Cacophonic Choir is an interactive installation aimed at bringing attention to the
first-hand stories of sexual assault survivors, and the ways such stories may be
distorted by the media and in online discourse. The work is composed of nine
embodied vocalizing agents distributed in space. Each agent tells a story. From
a distance, the viewer hears an unintelligible choir of fragmented stories and
distorted voices. As the viewer approaches an agent, the story becomes soni-
cally clearer and semantically more coherent. When in the agent's immediate
personal space, the viewer can hear the first-hand account of a sexual assault
survivor. The work has two versions, one intended for physically present exhi-
bitions and the other for virtual exhibitions.

Description

Cacophonic Choir is an interactive installation aimed at bringing attention to the first-hand stories of sexual assault survivors, and the ways such stories may be distorted by the media and in online discourse. Digital and mass media can empower oppressed people by providing them with platforms for sharing their stories, as we have seen in the *#meToo* movement. Participation on these platforms can, however, also expose the stories to doubt, distortion, and hostility. For example, it has been found that on Twitter, tweets that engage in victim blaming get retweeted more than ones that support sexual assault survivors (Stubbs-Richardson et al. 2018). Media coverage of sexual assault, especially combined with the hostility and distortion that one often finds on these platforms, can be overwhelming to survivors. *Cacophonic Choir* is aimed at both reflecting these feelings of being overwhelmed, and encouraging people to step away from these arenas to listen to individual survivors' accounts. While sexual violence is a systematic problem, the experiences of those who have survived it are all different and deserve to be heard.

Fig. 1. Cacophonic Choir (2019) is composed of nine embodied vocalizing agents distributed in space. ©Şölen Kıratlı & Hannah Wolfe. Photo credit: Gökhan Tugay Şeker.

Fig. 2. A video asset (https://vimeo.com/364662275). Cacophonic Choir (2019) is composed of nine embodied vocalizing agents distributed in space. ©Şölen Kıratlı & Hannah Wolfe.

The installation is designed to embody and reflect this feeling of inundation in the face of hostility and distortion, while highlighting the first-hand stories of the sexual assault survivors. It is composed of nine embodied vocalizing agents distributed in space (Fig. 1, 2). From a distance, the agents all look alike, and their vocalizations are sonically distorted, semantically fragmented, and indistinguishable from one another, altogether forming an unintelligible choir. As the viewer approaches a particular agent, three things happen gradually. First, the voice of the approached agent becomes sonically more clear and less distorted. Second, the utterances of the voice become semantically more coherent. And third, the membrane that envelopes the agent gets brighter and more transparent, rendering the unique form inside visible. When in the agent's immediate personal space, the viewer hears the first-hand account of a sexual assault survivor. Here, we are using spatial distance between the agent and the viewer as a metaphor for the 'distance' between the original story as told by the survivor and its renditions in social and mass media.

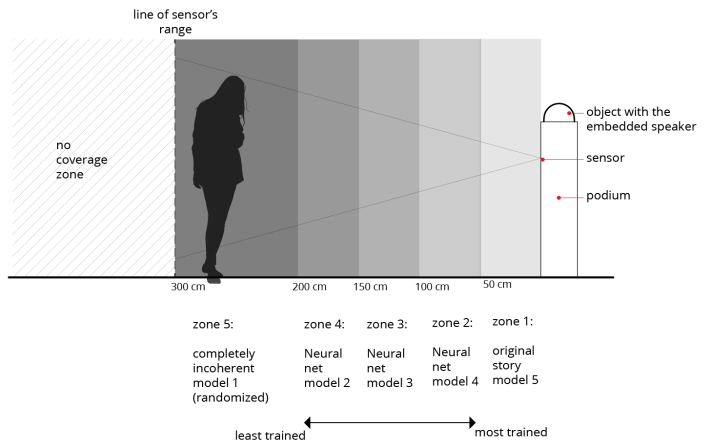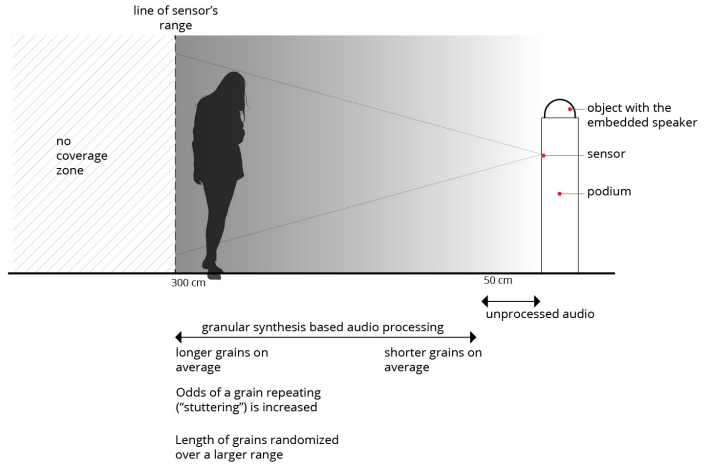**Fig. 3.** The discrete mapping of space to neural net models.

line of sensor's range

no coverage zone

object with the embedded speaker

sensor

podium

300 cm   200 cm   150 cm   100 cm   50 cm

zone 5:

completely incoherent model 1 (randomized)

zone 4:

Neural net model 2

zone 3:

Neural net model 3

zone 2:

Neural net model 4

zone 1:

original story model 5

least trained   most trained

line of sensor's range

no coverage zone

object with the embedded speaker

sensor

podium

300 cm

50 cm

unprocessed audio

granular synthesis based audio processing

longer grains on average

shorter grains on average

Odds of a grain repeating ("stuttering") is increased

Length of grains randomized over a larger range

For this piece, the data we used consists of over 500 first-hand accounts of sexual assault survivors collected from *The When You're Ready Project*, an online platform for "survivors of sexual violence to share their stories and have their voices heard" (Reid 2019). The aim of this installation is not to inform the visitor precisely of statistics and data about sexual assault, but rather to reflect the ways in which the stories may be amplified or distorted in online media. To this end, using the *textGenRNN* library, we trained an LSTM (long short-term memory) recurrent neural network model on stories from *The When You're Ready Project*. The idea was to capture the system at various levels of training, so that we could modulate the original narrative, generating versions of the narrative with different levels of semantic distortion. We used text-to-speech synthesis to convert the generated texts to audio. This helped us modulate the linguistic and auditory coherence of these narratives based on the proximity of the observer to the narrator. Using a proximity sensor, we mapped distances between the agent and the viewer to the different training levels of the RNN (Fig. 2). The full narrative is revealed only when one is in very close proximity to a given voice.

Fig. 5. The body of each agent is composed of a sculptural form encased in a soft translucent membrane. Some of these forms are fully contained within the membrane, while others burst outwards.
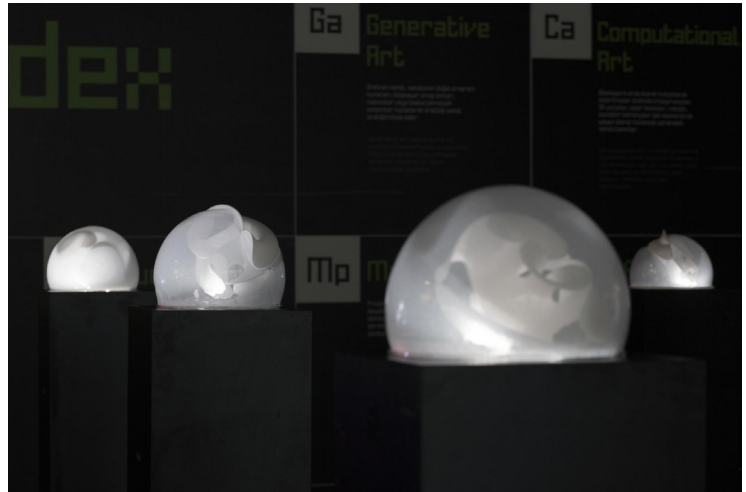
In addition to this semantic modulation, the installation also responds visually and sonically to the viewer's proximity. The sonic response employs text-to-speech synthesis and granular synthesis to create a stuttering effect which dissipates as a visitor comes closer, representing how survivors' stories are distorted (Fig. 3). The visual response is light-based. The body of each agent is composed of a sculptural form encased in a soft translucent membrane (Fig. 4). Some of these forms are fully contained within the membrane, while others burst outwards. Proximity of the visitor modulates the light source within the membrane. As a result, the translucent membrane gets gradually more transparent as one approaches the agent, revealing the intricate geometric form within. Here, our intention was to reflect the fact that the individuals and their voices may look and sound alike from a distance, but when focused on individually, each is found to be complex and unique. This simple light-based interaction, coupled with the material properties of the sculptural elements (i.e. transparency) also allowed us to reflect the inherent tension in the public coverage of private events – since opaqueness and transparency have strong connotations of privacy and publicness in many cultures.

Cacophonic Choir has two implementations: an embodied interactive installation, and a virtual environment built using the Unity framework. In the virtual environment the semantic and sonic coherence of the agents are modulated and spatialized by the distance the visitor is from them. As the visitor moves closer to an agent the membrane becomes more translucent, revealing the parametric form within. We are exploring different layouts and visualization techniques; the current version of the virtual environment reflects the original layout of the agents in the physical installation.

Cacophonic Choir was produced in 2019 and debuted in the sub-exhibition titled *Plug-in '19,* within *Contemporary Istanbul,* an international contemporary art fair. The piece was located in a fairly noisy environment, which prompted visitors to put their ears directly next to the agents in order to hear them over the din. This created an unintended but desirable level of intimacy while listening to these emotionally hard-to hear stories (Kıratlı & Wolfe et al. 2020). Furthermore, *Cacophonic Choir* was exhibited in *SIGGRAPH '20,* which took place virtually, and won SIGGRAPH Art Gallery's "Best in Show" award. For this exhibition, we started developing a virtual version of the work (Wolfe & Kıratlı et al. 2020) using Unity, which we then also exhibited in IEEE Visualization Conference's Art Program '20. As of 2021, *Cacophonic Choir* continues to evolve in both virtual and physical platforms. We will continue exhibiting this work both in the digital and physical modalities and plan to study the differences in the way that visitors interact with the work virtually and in person.
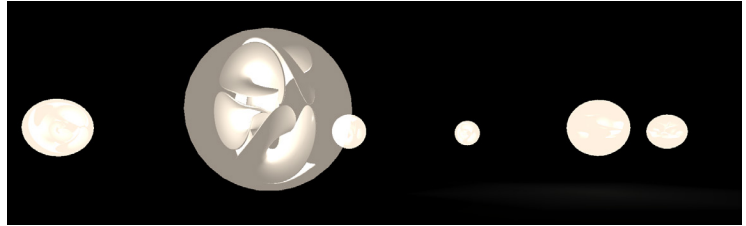
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