

Blind Spot

A Matter of Perception

Heather Haden, John Luchin

In 2017, the Massillon Museum opened *Blind Spot: A Matter of Perception*. The 1,950-square-foot exhibition explored methods through which we could make abstract art accessible to our primary audience for this exhibition: patrons with blindness and low vision.¹ Additionally, we wanted to promote empathy in sighted visitors by engaging them to think about what it is like to be blind or have low vision. We see this exhibition (along with related programming and a potential forthcoming traveling version) as a catalyst for institutions, nationally and internationally, to discuss and explore ways to make all art accessible for the 285 million people worldwide who have visual impairments.²

The Massillon Museum's first experiment with tactile accessibility components was the 2011 photography exhibition, *Faces of Rural America*.³ Inspiration came from the Fratelli Alinari Museum of the History of Photography in Florence, Italy, to make two-dimensional, image-based exhibitions more accessible. The Alinari Museum produced tactile renderings of photographs to make them accessible to patrons with blindness and low vision. The Massillon Museum's exhibition included four tactile renderings of photographs created by local artists, and incorporated braille labels.

1 The Massillon Museum partnered with the Canton Symphony Orchestra and students in the Cleveland Institute of Music's Composer Fellowship to create audible interpretations for three paintings. Three Cleveland Institute of Music students each chose a painting in the exhibition and wrote a composition that captured what they believed to be the essence of each painting. The compositions were performed by a Canton Symphony Orchestra quartet at the exhibition's February 18, 2017 opening, with an encore performance and panel discussion at the Zimmermann Center, home of the Canton Symphony Orchestra, on September 19, 2017.

2 This estimate includes 39 million who are blind and 246 million who have low vision. See "Visual impairment and blindness," *World Health Organization*, last modified August 2014, www.who.int/mediacentre/factsheets/fs282/en/.

3 This exhibition was the recipient of a 2012 Award of Merit from the American Association of State and Local History.

Four years later, our interest in accessibility was heightened when the Americans with Disabilities Act celebrated its 25th anniversary. Nationally, in response to the anniversary and the press surrounding it, more museums acknowledged greater inclusivity for the arts with innovative accessibility initiatives. Internationally, we also saw a rising increase in the availability and affordability of three-dimensional printing technologies, giving museums the tools to offer patrons with visual impairments more opportunities to experience artworks topographically. At the Massillon Museum, we followed all of these developments with great interest.⁴

Most art exhibitions with enhancements for blind and low-vision audiences, including *Faces of Rural America*, have focused on representational art, which can be duplicated in three dimensions fairly easily using tactile art supplies (as in the *Faces of Rural America* exhibition) or three-dimensional printing. But abstract art – art that does not seek to represent objects as they exist in external reality – poses a greater challenge for museum and accessibility professionals.

It is precisely this gap that the Massillon Museum sought to fill with the exhibition *Blind Spot: A Matter of Perception*, which featured 10 abstract paintings from the museum's collection.⁵ We embraced Universal Design, "the design and composition of an environment so that it can be accessed, understood and used to the greatest extent possible by all people regardless of their age, size, ability

4 The Ohio Arts Council funded Heather's attendance at the 2016 and 2017 Leadership Exchange in Arts and Disability Conferences, providing an invaluable opportunity to acquire knowledge in 2016 and to present on the *Blind Spot* exhibition in 2017.

5 To learn more about the exhibition and its related programming, as well as to view videos of exhibition content, please visit www.massillonmuseum.org/blindspot.

or disability” in every stage of exhibition development.⁶ To engage sighted patrons in the exhibition’s mission, we provided low-vision simulation goggles for them to borrow, lending an experience of the exhibition from the perspective of individuals with macular degeneration.

Inspiration for *Blind Spot*

Part of our inspiration for this exhibition was the 1932 book *Laughter in the Dark* by Russian-American novelist Vladimir Nabokov, in which the protagonist, art critic Albert Albinus, is blinded in a terrible car accident. In a whirl of sensory prose, Nabokov relays Albinus’s revelation that he has been permanently blinded. Nabokov’s writing style is heavily influenced by his life as a synesthete, an individual who involuntarily perceives separate senses together (i.e. synthesized). Nabokov was a chromesthete; chromesthesia triggers the experience of perceiving specific colors upon hearing certain sounds. The author incorporated his own experience of synthesis and chromesthesia as a literary device in his writing. In *Laughter in the Dark*, he induces the experience of his own unique sense of perception through his writing, combined with the plotline of losing one’s vision. Heather began to wonder if sound and other sensory frameworks could act as tools to circumvent visual impairment in making abstract art accessible to patrons with blindness and low vision.

Using Different Sensory Frameworks

Abstract art presents its own challenge for interpretation: how, for example, does

6 “What is Universal Design?” *National Disability Authority*, <http://universaldesign.ie/What-is-Universal-Design/>. See also: *Exhibition* (2015), “Creating an Inclusive Experience: Exhibitions and Universal Design,” https://www.name-aam.org/exhibition_fall2015.

a sighted curator introduce a visual art form, one so reliant on subjective response, without lending sight bias? As abstract art lacks reliance on objects that can be cross-referenced by touch, Heather hypothesized that communicating abstract art to audiences with blindness and low vision would require more diversity in sensory interpretation. What would happen, she wondered, if we developed a method to ask individuals with visual impairments what each abstract painting *sounded* like? We decided that we would explore each painting by touch and sound via braille and tactile models of artworks, and produce an interactive touchscreen app that included a sonic interpretation of each painting.⁷ In turn, this would allow patrons with blindness and low vision to explore a variety of sensory channels and to develop independent subjective responses to the artwork.

It was crucial to the success of the *Blind Spot* exhibition that we avoid sight bias in curatorial development. We invited two community members who are congenitally blind, siblings-in-law Barry Stirbens and Jan Stirbens, to serve as co-curators. In line with the “educational turn in curating,”⁸ beyond selecting the original 10 abstract paintings of the exhibition, we acted merely as coordinators in order to remove our own sight bias and to allow Barry and Jan, as well as the voices of other organizations for the visually impaired, to direct the exhibition.

Barry had served as a braille proofreader for the *Faces of Rural America* exhibition, and we felt he would be an invaluable part of

7 While early on we had discussed the potential of incorporating smell and taste, we ultimately sought to focus on touch and sound to streamline the exhibition.

8 Amanda Cachia, “Disability, Curating, and the Educational Turn: The Contemporary Condition of Access in the Museum,” *On-Curating*, no. 24 (2014): 51–66.

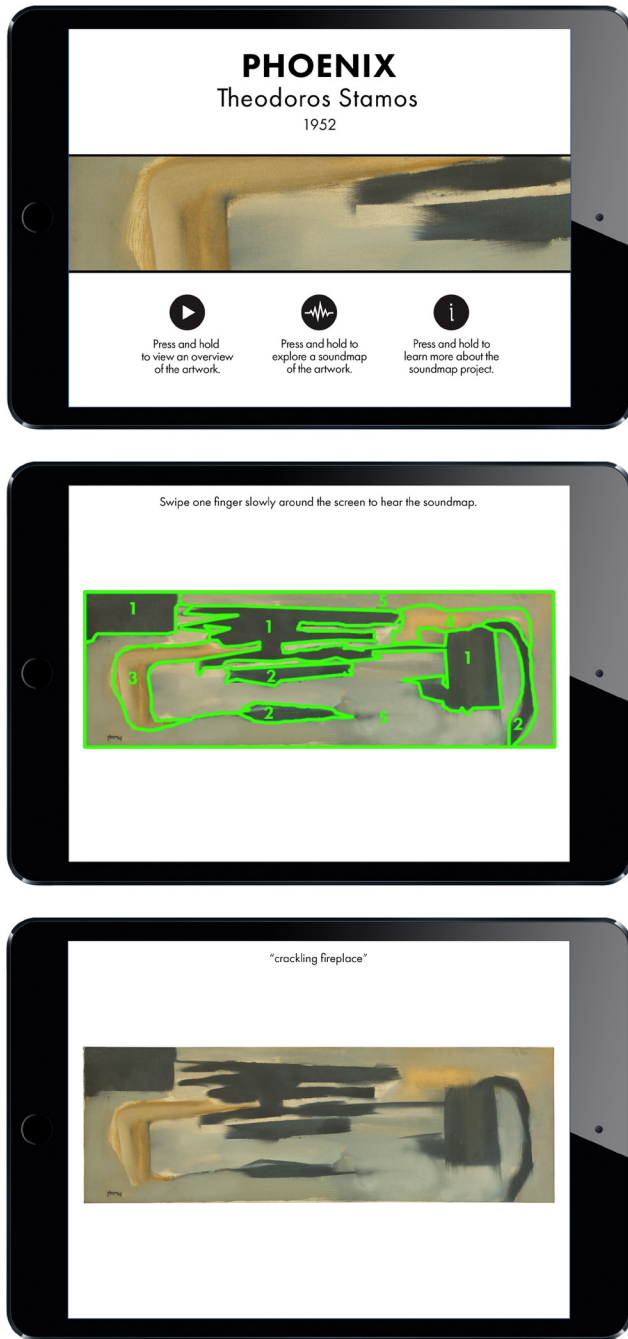


fig. 1. We included narration and subtitles in all areas of the apps. In the soundmap, sections of the painting, outlined here for illustration (center), correspond to sounds assigned by Barry Stirbens and Jan Stirbens.

the curatorial team, as he is a supporter of the arts and someone with a background in music (he's a drummer). As our second co-curator, and one with a non-art background, Jan perfectly complemented Barry's personal history, and served as an effective control for the exhibition experiment. Neither Barry nor Jan had ever experienced abstract art before their participation in the project. Heather discussed each artwork with them, and in turn, they translated the visual content into sonic descriptions that would ultimately inform the translation of each painting into sound. Working with Ohio-based Classic Interactions, we developed what we called a "soundmap," an activity in which one could swipe a finger over an image of each painting; as they did, sounds curated by Barry and Jan played (**fig. 1**). The list of sounds was selected in response to tactile models and visual narrative descriptions. Akin to a paint-by-number, the soundmap was created like a "paint-by-sound."⁹

Commissioning Tactile Components

The Massillon Museum commissioned Canton, Ohio artist David McDowell to craft the tactile models out of aluminum (**fig. 2**). While many museums offer tactile models in three-dimensionally-printed nylon resin, McDowell's approach as a professional artist, combined with his highly detailed process and choice of materials, provided a higher degree of nuance and durability. Ultimately, the models afford patrons with blindness or low vision a new dimension in the meaning of color. For instance, color is an important formal quality in many abstract paintings. While patrons with blindness or low vision can understand color as a semantic concept,

⁹ After defining the borders of formal elements in each painting in the back-end design software, specific sounds were applied so they would play only when a user had his or her finger on that area of the app.

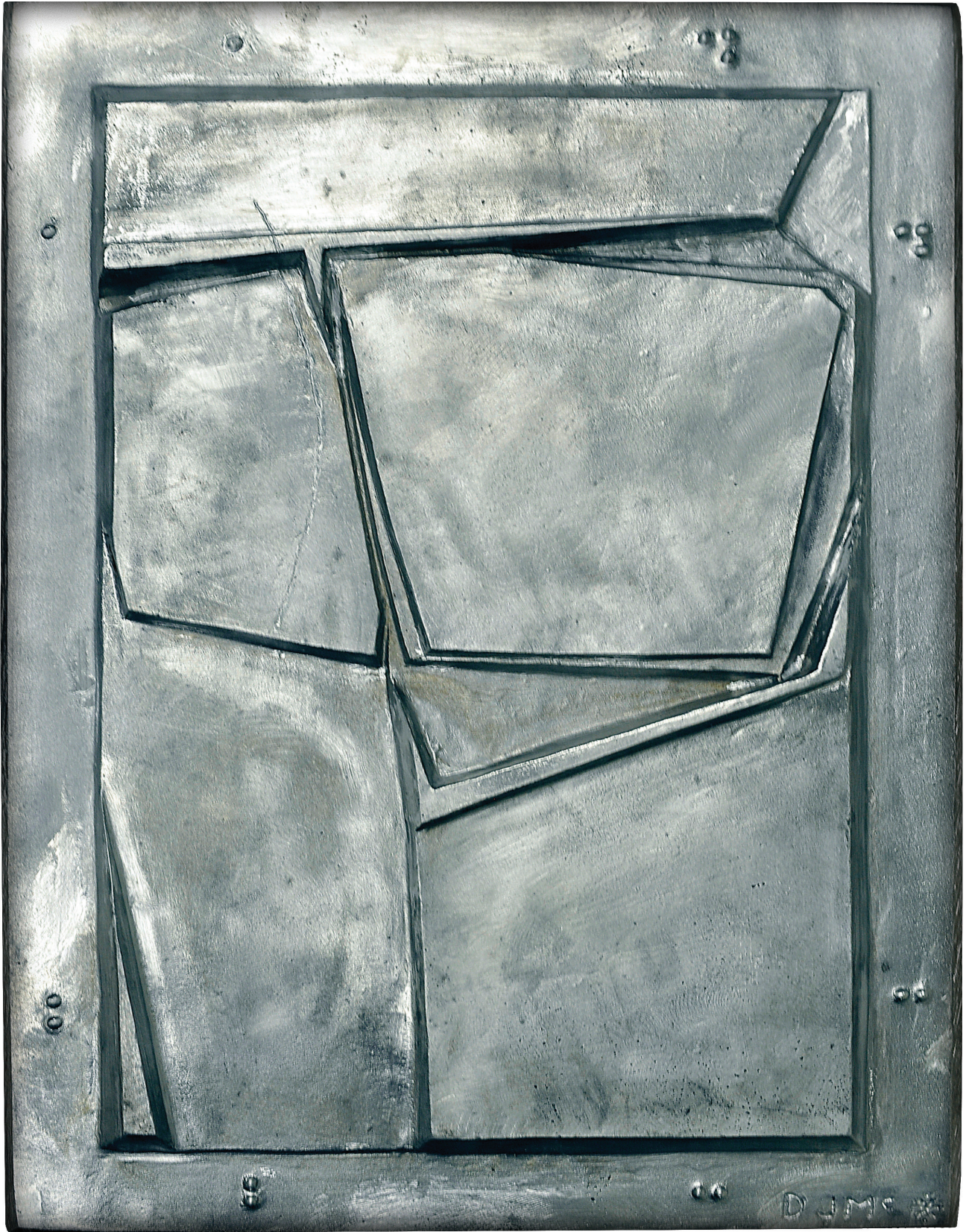


fig. 2. David McDowell communicated bright orange passages in David Appleman's 1968 painting *Earth Four* in aluminum by playing with relief; here, the brightest passages advance forward most dramatically.

The tactile models of each artwork were invaluable tools in the process, as our discussions relied on both tactile and verbal reference.

akin to any other adjective in the English language, those same patrons may not previously have had access to the experience of color interactions appearing to advance or recede in space. By closely studying each painting, McDowell had thought deeply about the ways he could communicate the phenomenon of color through the physical depth and relief of his aluminum tactile models.¹⁰ One painting from the exhibit, David Appleman's *Earth Four*, is composed of a mainly blue palette with slivers of bright orange punctuating the visual surface. McDowell communicates this striking orange color in the tactile model by having the corresponding physical areas of the surface project considerably. Barry selected a jarring sound to be assigned to these passages of the painting, proving the success of McDowell's translation of color intensity.

What Does This Painting Sound Like to You?

The tactile models of each artwork were invaluable tools in the process, as our discussions relied on both tactile and verbal reference. With a team of interns, Heather wrote objective verbal descriptions, combining formal descriptions and art historical information, to accompany tactile models of each painting, aiding the co-curators in understanding, discussing, and translating each artwork into multisensory components.¹¹ We placed the tactile models on a framed corkboard

10 No two paintings shared the same translation method from two to three dimensions.

11 We wrote verbal description narratives after reading through training resources published by Art Beyond Sight, a collaborative that advocates for arts accessibility for patrons with blindness and low vision. See: "Verbal Description Training," Art Beyond Sight, www.artbeyondsight.org/mei/verbal-description-training/.

with a simple string crosshair attached. This allowed Barry and Jan to focus on the tactile model in quadrants, for deeper exploration.¹²

By exploring each artwork in this fashion – while listening to the accompanying verbal description – our co-curators were eventually able to independently locate, upon verbal reference, specific formal qualities on the tactile model, catalyzing discussions of what the painting might sound like (fig. 3).¹³ We made notes on printed images of each artwork, circling areas of the painting and annotating sound effects as our co-curators described them. We sent these notes to Classic Interactions to begin finding the closest approximation of each sound description to create an audio palette that would ultimately be used for a touchscreen. Desired sounds were generated in a variety of ways. Most came from a sound effect library, Soundsnap.com, while others we created ourselves.¹⁴

Creating the Interactive Apps and Soundmaps

We tested the apps and tactiles with users at Clovernook Center for the Blind and Visually Impaired in Cincinnati, Ohio.

12 To create the string crosshair, Heather screwed a nail into the center of each side of the frame, and strung a taut string across, forming a plus sign approximately an inch above the corkboard. In our series of discussions with Barry and Jan, each tactile model was slid onto the corkboard and beneath the string, in turn. This method allowed them to slide a hand beneath the string to consider the artwork as a whole, or to use the string as a divider to consider the artwork one quadrant at a time.

13 Verbal descriptions were written for the artwork as a whole as well as for each quadrant to specifically focus on the four areas of the painting.

14 These included a few violin notes played by local violinist Stacy Luchin and one especially complex sound, inspired by a section of "Strawberry Fields Forever" by the Beatles, created with the music creation software, GarageBand®.

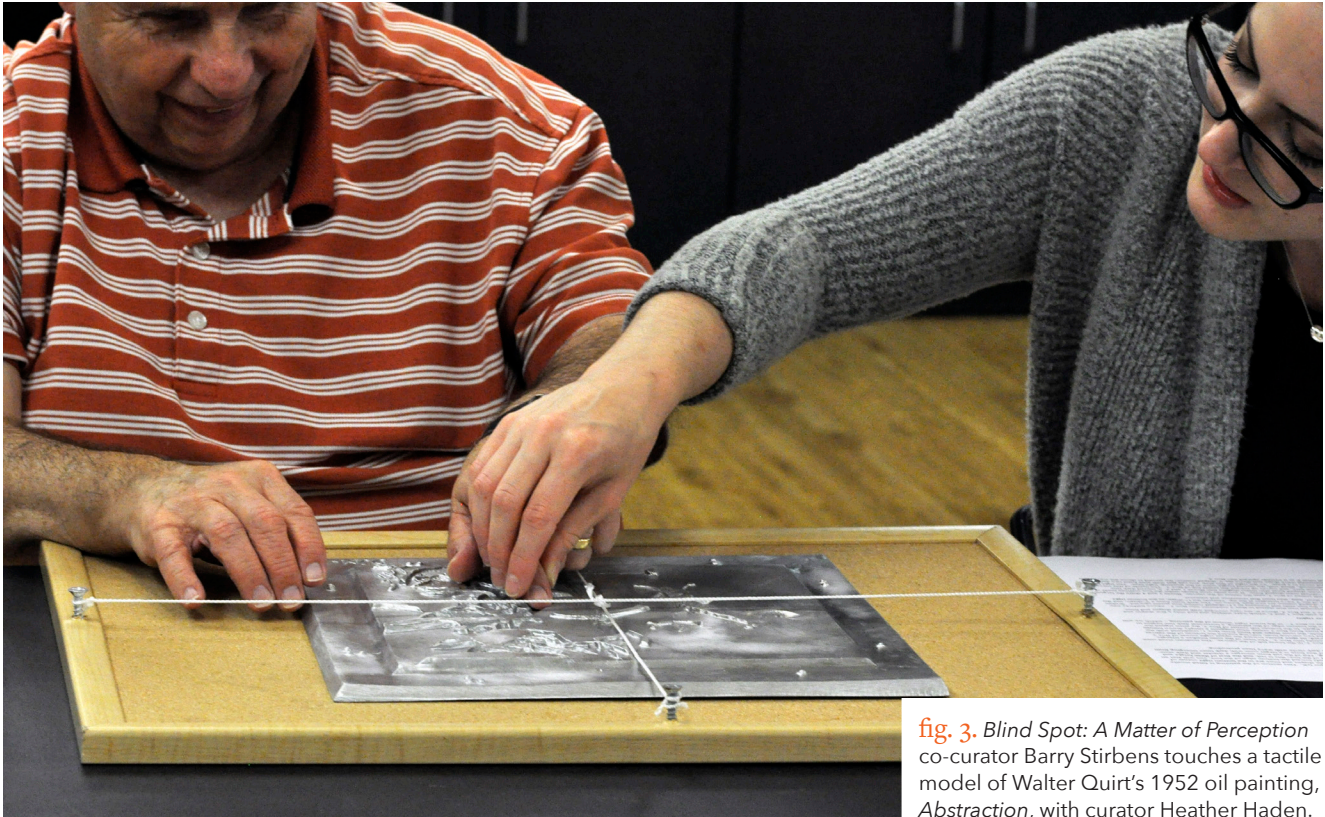


fig. 3. *Blind Spot: A Matter of Perception* co-curator Barry Stirbens touches a tactile model of Walter Quirt's 1952 oil painting, *Abstraction*, with curator Heather Haden.

Clovernook is a not-for-profit corporation and braille printing house that has, for more than a century, supported individuals with blindness and low vision to be active and independent citizens. The center has sites in Cincinnati, Ohio and Memphis, Tennessee. Following user testing at Clovernook, Classic Interactions chose to create a custom interface that would better engage Universal Design principles and exceed the usability provided by off-the-shelf screen readers. The original touchscreen concept was a single soundmap, but this plan quickly expanded to include two 60-second videos to provide users with more information about the paintings, the exhibition, and the purpose of the soundmaps.¹⁵ These additions allowed us to add a home screen to each app, offering navigation to what ultimately included three sections. In addition to audio considerations, all elements of the touchscreens, and the videos presented within, were captioned for patrons with hearing difficulties. Each screen, button, and interactive function was narrated

¹⁵ The first video describes each artwork through audio narration. The second video provides an overview of the entire accessibility thrust of the exhibition.

by audio instructions to inform users of the location of their fingers on the screen. After considering various hardware options, the team selected the Apple iPad Air 2[®] on which to present the interactive activity.¹⁶ Classic Interactions then created an “app brief” for the project, which is a visual instruction sheet in the form of a PDF outlining every aspect of the touch screen applications.¹⁷

Partnering with Clovernook Center for the Blind and Visually Impaired

We partnered with Clovernook’s Cincinnati, Ohio site throughout the development of *Blind Spot* to evaluate exhibition elements with people who are blind or have low

¹⁶ We have found iPads[®] to be a low-cost exhibition touchscreen solution that provides a stable environment for running software. The iPads[®] also enabled Classic Interactions to deploy applications using Apple’s enterprise developer account, allowing the company to seamlessly deploy the testing and final applications remotely to the Massillon Museum without having to publish the applications to the Apple App Store.

¹⁷ The brief included screen-by-screen visual mockups which detailed all functions, animations, sounds, and transitions. This facilitated better communication throughout the development process for the entire team, allowing design decisions to be made before getting too far down into the coding process.



fig. 4. A Clovernook Center for the Blind and Visually Impaired staff member, who is blind, responds to the tactile model and app for Clare Ferriter's 1970 mixed media painting, *Camelot*, with his ceramic artwork, titled *Musicscape*.

vision. Evaluating content and interpretive strategies with our primary audience was critical to the project's success.¹⁸ Clovernook provided braille printing for the project, as well as a tactile exhibition logo with accompanying braille, and hand-tooled, tactile gallery maps which we installed throughout the exhibition.

User Testing at Clovernook

In early 2017, the 10 tactile models and the first draft of the test apps traveled to Clovernook. After each app was created, the museum held focus groups and facilitated

¹⁸ We also conducted user testing with the Philomatheon Society of the Blind in Canton, Ohio with community members who are blind or have low vision.

user testing at Clovernook as well as at the Philomatheon Society of the Blind in Canton, Ohio so that we would have a larger pool for feedback. We tested the apps and gleaned more information to ensure the exhibition was universally accessible.

At Clovernook, we coordinated a response artwork workshop to engage the exhibition's primary audience in eliciting a subjective response to abstraction, and to facilitate an immersive layer of user testing (**fig. 4**). Each participant was assigned to a specific artwork, given access to the corresponding app and aluminum tactile model for that artwork, and prompted to create an artistic response in clay. The response artworks were later fired, glazed, and exhibited alongside the aluminum tactile model for the source painting, as a second tactile rendering for all patrons to touch.

Displaying Multisensory Components

To accommodate all of the Universal Design interpretive elements, we built and installed tilt-top kiosks near the original artworks, on which we displayed corresponding tactile exhibition elements for each painting (**figs. 5 & 6**).¹⁹ We needed to clearly communicate that elements on the kiosks were the only exhibition features that could be touched, and not the original paintings hanging on the wall. To clearly delineate what areas of the exhibition were open for tactile interactions, we installed wide strips of low-pile carpet in front of each kiosk to serve as textural markers on the floor, and we created higher contrast around kiosk edges

¹⁹ The museum consulted the "Smithsonian Guidelines for Accessible Exhibition Design" when designing the kiosks. See: "Smithsonian Guidelines for Accessible Exhibition Design," *Smithsonian*, www.si.edu/accessibility/sgaed. The kiosks were designed to be 46 inches high in the back and 36 inches high in the front, to accommodate the side-reach of individuals who use wheelchairs.



fig. 5. A patron interacts with a touchscreen app at the exhibition opening. We invited patrons with blindness and low vision and their families to experience the exhibition an hour before the public reception.



fig. 6. Each kiosk includes the following elements (left to right): a tactile gallery map; a response artwork with a braille label; an iPad® app with headphones; a tactile, aluminum model with a braille label to the right; and a large-print label (above the kiosk).

We wanted feedback to improve the exhibition as a replicable model and, because of our target audience, we had to develop an accessible method of completing visitor surveys.

and behind each painting.²⁰ We did not install carpets anywhere else in the exhibit; where there was carpet, patrons could touch what was within arm's reach.²¹

On-Site Testing and Findings

We wanted feedback to improve the exhibition as a replicable model and, because of our target audience, we had to develop an accessible method of completing visitor surveys. We prominently displayed one binder of visitor surveys for sighted guests to complete, and we kept another at the front desk, where receptionists could help patrons with blindness or low vision complete them. After scheduled tours with organizations servicing the blind and visually impaired, we conducted post-tour surveys in person. One element we were not able to add due to time and budgetary constraints was an accessible touchscreen visitor survey. However, it is a feature the museum is seeking to add should the exhibition travel.²²

20 The museum originally intended to affix to the floor a nonhazardous, flat, textured surface akin to anti-skid tape, but we determined that the textural difference was not noticeable enough. We painted a white border on the grey wall behind each artwork and a white border to outline edges of the kiosks, also painted grey. The gallery palette was a medium grey from a previous exhibition. While we discussed the option of painting kiosks black against a white wall, or using a red and yellow palette – both color combinations most visible to individuals with low vision – we opted to use grey and white to accomplish our goal of contrast with white borders, defray the expense of repainting the gallery, and maintain aesthetic design for sighted patrons.

21 In the original iteration of the exhibition, we did not order acrylic encasements to prevent visitors from touching the abstract paintings. From an artistic and historic standpoint, encasing abstract paintings in acrylic covers would betray abstract expressionists' vehement opposition toward the "frame."

22 Demo surveys were created and tested through a survey-generating app, but there were technical difficulties synchronizing these with VoiceOver®, an accessibility feature available in Apple products that narrates buttons as they appear and/or are pressed on the touchscreen. Knowing how to engage with VoiceOver® requires previous access to Apple products, and prerequisite access to this technology creates a financial barrier. Therefore, the museum hopes to commission from Classic Interactions a custom, accessible touchscreen survey in the future.

Survey results from this exhibition were overwhelmingly positive. Of all patrons who voluntarily completed surveys, 77.5 percent rated the exhibition as excellent, 19.2 percent rated it as good, and 3.3 percent rated it as fair. No one rated it as poor. As for which of seven element(s) visitors found most helpful in experiencing the exhibition and its artworks, participants ranked them in the following order, from most helpful to least helpful:

- tactile models
- iPad® apps
- large-print labels
- response artworks
- kiosks and navigation features (tied)
- braille labels.

We seek to make continued improvements on the exhibition's braille labels and the apps. While all text was presented in large print and braille, with some text also presented in audio form, only about three percent of individuals with blindness or low vision read braille. Additionally, all braille panels for this exhibition were produced in Unified English Braille (UEB), a newer form of condensed braille officially implemented in January 2016 that many of the museum's older patrons may have not yet learned. Indeed, some older patrons with visual impairments who visited the exhibition were unable to read the braille labels because they were unfamiliar with UEB. Thus, the museum will offer a braille guide and labels in the older standard of braille, English Braille American Edition (EBAE), should the exhibition travel, to accommodate patrons who are unfamiliar with the newer standard of braille.

Classic Interactions conducts its own post-mortem reviews in an attempt to streamline processes and improve client services. Throughout this project, we observed

significant improvement in user experience after we made updates to app navigation following user testing at Clovernook. However, although the home screen made the apps more accessible, throughout the exhibition we observed that users occasionally had difficulty discerning the precise location of the buttons on the home screen. Classic Interactions is currently exploring added features such as tablet vibration when elements like navigation buttons are pressed.²³ If on-screen buttons could vibrate, it would lend a pseudo-tactile element to the buttons that would act as a finding aid for our primary audience, improving the accessibility and navigation of the touchscreen interface.

Collectively, visitor feedback to date indicates that exhibition elements made the abstract art on view accessible and were convenient to use. The user response artworks supported the hypothesis that design elements such as tactile models, braille labels, and interactive soundmaps can effectively allow for individuals with blindness and low vision to interpret abstract art. The Massillon Museum, by reinvestigating and mining the “visual” in visual arts, succeeded at inspiring an intergenerational audience with blindness and low vision to not only create art, but to experience it more immersively – and sighted patrons were encouraged to consider the ways in which they take eyesight for granted. Countless patrons were astounded at the level of visual difficulty they experienced while wearing the low-vision simulation goggles, many of whom had individuals in their families with low vision.

²³ While iPads® do not currently support the concept of tablet vibration, luckily, by using Unity – a cross-platform game engine primarily used to develop video games for consoles and mobile devices – other hardware could support this feature with minimal changes to programming. The capabilities of Unity are vast, making it a solid solution for exhibition touchscreen creation, and allowing for deployment on multiple types of devices.

Despite previous accessibility endeavors, mounting the *Blind Spot* exhibition inspired a sea change of interpretation and approach across all departments of the Massillon Museum to better accommodate all visitors. The museum has promised the community that moving forward, all main gallery exhibitions will include accessible labels, a promise we have delivered on and will continue to do so. This is not a token exhibition for our institution, and we caution institutions wishing to replicate our endeavor to consider such a project as a permanent, and overdue, paradigm shift in the nature of accessibility in cultural institutions.

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