Mourning Absence: Place, Augmented Reality (AR), and Materiality in *Border Memorial*

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Abstract

Thousands of migrants have died trying to cross the United States-Mexico border since the institution of Prevention through Deterrence in 1994. In the Sonoran Desert of Southern Arizona, migrants are intentionally exposed to dangerous environmental conditions that not only place their lives in danger but erase their deaths from public view. Many of these deaths are never publicly acknowledged or mourned, amounting to a pervasive and state-sanctioned crisis. John Craig Freeman's augmented reality piece, *Border Memorial: Frontera de los Muertos*, works to grieve for those who have been erased under the weight of American sovereignty at the border. The piece plots the places where migrant bodies were recovered and memorializes each migrant through a digital calaca. Using *Border Memorial* and its digital calacas, this article examines the overlapping anti-immigration systems that deliberately hide the deaths of thousands of migrants. Looking at *Border Memorial*, I consider the importance of place, the environment, and the materiality of digital memorials as essential to understanding how migrants are continuously unacknowledged and unmourned. Examined at the intersection of new materialism and ecocriticism, I consider how each digital calacas has an effect beyond the screen and radically shifts the desert space itself. *Border Memorial* is just one of a few digital art pieces that memorializes those lost in the desert, but the augmented reality app that hosted the piece is no longer available. While the piece has reached obsolescence, its approach to the material body, experience of place, and need for continuous mourning remain.

Keywords

borderlands, digital memorial, mourning, place, desert, materiality

Standing in the middle of the Southern Arizona desert, a cell phone pings. With the camera open, a calaca appears on the screen, floating above the ground directly in front of the cell phone; it looks like a found object in a video game—an item to collect and inventory. Lifting the phone toward the sky, the calaca follows, floating ever upward like a beacon. There's no sound, just the quiet of the desert. Or maybe there's highway nearby. The calaca remains floating from all angles, its seemingly 3D body shows the thickness of its bones—a skeletal smile (or is it a grimace?). When the phone is gone, the calaca is gone, but the surrounding space is different. The calaca was never really there, and yet it remains.

Under the strain of contemporary immigration policy, the United States-Mexico borderlands is a deadly site for migrants. Beginning with the 1994 policy, Prevention through Deterrence (PTD), thousands of people have died trying to cross the desert in Southern Arizona.[1] Marked by wildlife reserves and state parks, the desert borderlands are a remote but dangerous point of entry for many migrants moving into the U.S. Contemporary border policing, fixated on walls and other arcane solutions, works to protect major metroplexes along the border (i.e. Tijuana-San Diego, El Paso-Cuidad Juárez) and relocates the movement of migrations into increasingly isolated and dangerous areas. Since its inception, PTD has weaponized the desert environment and places hundreds of people in danger every year. However, given the remote location and political discourse, these deaths go largely unnoticed, unmourned, and silenced. Mourning in the borderlands raises questions about the visibility of grief for those who are forgotten or never found.

Created in 2012-13 by digital artist John Craig Freeman, *Border Memorial: Frontera de los Muertos* is an Augmented Reality (AR) piece created through the now obsolete app Layar that documents the places where migrant bodies were recovered in the Southern Arizona desert. *Border Memorial* identifies each site with a calaca (or a skeletal figured used to memorialize loved ones during Día de los Muertos). Each calaca is a digitized, almost cartoon-like skeleton, that hovers above the ground, serving as both a marker and representation of the person recovered at that particular site. Mediated by a cell phone, the calaca appears in the space directly in front of the user in real-time. The calacas are small, fitting on a cell phone screen, but they loom large through the technology depending on the user's distance. The calaca can appear as large as a human body or just a blip in the distance. They are both real and unreal, collapsing the expectations and experience of space, memorial, technology, and materiality.

This article considers the creation of place, the environment, and materiality in digital memorials. Looking at *Border Memorial*, I examine the shift from space to place as an essential part of mourning, particularly for a population that remains largely hidden by the desert and anti-immigration policy. I illustrate how locative technologies, specifically Augmented Reality (AR), aid in the creation of place by making visible new information, experiences, and landscapes. As such, I consider the dynamics of materiality at its intersection with place as the piece is both real and unreal, tangible and ephemeral. *Border Memorial* resists conventions of memorialization because the piece is simultaneously moveable and location dependent. The piece illustrates the continuous need for collective and communal mourning, not for specific people but in individual places. *Border Memorial* resists naming the individuals shown within the piece and instead emphasizes that human life is worthy of

remembrance regardless of specifics. Through GIS mapping, place becomes the identifier for each person as the seemingly empty desert is shifted under the continuous haunting of mass death at the hands of border policing. However, as of 2014, *Border Memorial* is no longer accessible, which raises questions about the obsolescence of digital memorials and what is lost when they no longer work in their intended form. Built to be experienced, the loss of *Border Memorial* shows the limitations of locative technology while illustrating the need for continuous mourning.

Border Memorial

John Craig Freeman, a public artist and professor based in Boston, MA, uses "emergent technologies to produce large-scale public work at sites where the forces of globalization are impacting the lives of individuals in local communities" ("About"). This approach to public viewing of global issues is present in many of his works that bring the realities of seemingly distant crises to the American public. Freeman staged an interactive viewing of *Border Memorial* at the MOMA in New York that replicated the Sonoran Desert via the Layar app. The interactive exhibit was temporary but used technology to move the desert to New York, making it visible to a removed population. However, in his accompanying statement of the piece, Freeman asserts the importance of memorial and awareness of migrants, stating that it was "designed for the citizens of the United States and intended to impact the formation of national identity by remembering the sacrifice which has been made on behalf of our shared values"(*Border Memorial: Frontera de Los Muertos*). Like the piece itself, Freeman is demanding the attention of the American public to recognize the problems of sovereignty, citizenship, and their participation in migrant death. Utilizing new technologies like VR and

AR, Freeman's work collapses the distances between the American public and global issues with the aim of inviting introspection, reflection, and action.

By making the Sonoran Desert visible in New York, Freeman emphasizes the importance of the environment within immigration policy. Prevention through Deterrence radically changed the American approach to immigration—shifting the focus from a seemingly passive form of enforcement to active policing (Andreas 5). The decision to push migrants into dangerous spaces relies upon the environment as "a tool of boundary enforcement *and* a strategic layer of border crossers" (De León 67). Navigating the desert is a harrowing experience requiring migrants to simultaneously avoid detection and survive the heat. *Border Memorial* honors those difficulties by focusing on each recovery site. The piece "uses geolocation software to superimpose individual augments at the precise GPS coordinates of each recorded death, enabling the public to see the objects integrated into the physical locations as if they existed in the real world" (Freeman). In this way, the piece "marks the landscape as haunted" and allows users to recognize and interact with "what surrounds them just beyond the edges of the visual" (Murphy 44). Using what Lev Manovich calls "augmented space," or "the physical space overlaid with dynamically changing information" (220), *Border Memorial* unearths the dangers of the landscape by memorializing both person and place. Unlike the exhibit at the MOMA, *Border Memorial*'s intended AR form was anchored in Southern Arizona and only accessible within that space. Videos of *Border Memorial* show how the phone pings when the user comes across a site where a body was recovered—the phone mediates the landscape and makes the unseen seen. Mapped on to the physical landscape, *Border Memorial* reveals what lies just out of sight, an "invisible landscape" that is only accessible through knowledge of the app, the place, and awareness of the border. Moreover,

Layar's obsolescence makes the app and the memorial within even more inaccessible. While the limitations of the piece are clear, the use of AR highlights what it means to recover deaths and how they are continuously silenced under new waves of border security. The violence of bordering often remains invisible and is only accessible to those already concerned and aware. But seeing each calaca breaks the silences that surround it and changes the landscape itself. The interaction between the real and the digital, the immaterial and the material, emphasize the power of the unseen.

Protected Spaces, Dangerous Bodies

The visualizations of *Border Memorial* bring the desert environment into sharper focus, showing the far-reaching and persistent crisis created by border policing. Visualizations show hundreds of calacas in far-off or hard to reach places in the desert—placed according to data used by Freeman, they reflect the isolated reality of migration. Many of these spots are in the middle of wildlife reserves, national parks, and other protected landscapes. The use of protected lands as a means of entry is part of how the environment "is invoked to make anti-immigration not just a national security imperative, but an ecological one. That is, immigrants are trespassing protected ecosystems, not just national boundaries" (Ray 140). Protected landscapes provide an additional barrier for border crossers as their isolation makes them largely invisible to policing and places them in constant peril. These environments doubly criminalize migrants because their movement through them is deemed illegal on top of their entry into the country. The desert is part of the attempted erasure of migrants—it is a barrier to their movement and often the cause of death.

Border Memorial does not explicitly highlight protected landscapes; there are no overt indications about the ways in which land is used against migrants, but its invitation to explore

the environment is predicated on users' legitimate access to that environment. In other words, the piece implicitly depends on the user's inclusion in the sovereign state to enter national parks and wildlife reserves. Citizens have relatively unquestioned access to these spaces, and the means to move through them safely.[2] With this, *Border Memorial* points to the many hypocrisies of who has access to the borderland's environment and the deployment of protected landscapes in the name of national security. As Sarah Jaquette Ray emphasizes in her book *The Ecological Other*, migrant movement is perceived as a threat to "a very modern view of the 'nation-as-ecosystem,'" which is reinforced through the creation of parks and protected landscapes (Ray 140). Presenting the borderlands environment as "pristine" and "untainted" makes migrants a continuous environmental and national security threat.[3] By placing the calacas in the places where they were recovered, *Border Memorial* makes visible the deaths of border crossers within the deadly landscape itself. In doing so, the screen mediates the environment, particularly that of protected landscapes, to show how they are continuously deployed against migrants and how those found in far-to-reach spaces are not often publicly mourned.

Places of Mourning

Meant as "joyous rather than mournful," each calaca is a celebration of death, but the sheer amount of them elicits far more grief than joy (Freeman and Auchter). Seen from videos on Freeman's website, the calacas overwhelm the desert—like an army of the dead. But the piece relies on the individual experience of interacting with the calacas, not necessarily seeing them en masse. The landscape shifts when each calaca appears on the screen, showing "an unseen layer of usage, memory, and significance—an invisible landscape … of imaginative landmarks—superimposed upon the geographical surface" (Ryden 40). The calacas are not

visible on conventional maps or even in the space itself without the use of the app. The space is lively with memory and haunting, bringing the user into direct interaction with the invisible landscape itself—making the user privy to the complexity of the space. Through the piece the user is invited into direct interaction not only with the migrants in the memorial but also material intra-actions that encompass place, environment, policy, and memory. *Border Memorial* uses technology to create a "web of relations" that encompasses "other humans and the more-than-human world, including the natural and built environments through which we move and to which we develop attachments" (Holmes 10). The calacas draw the user further into this web of relations, revealing the outward effects of the invisible landscape as both physical and immaterial.

Each death is not only visible but interactive and experiential. The landscape is lively with calacas, showing their materiality and bringing forth the human consequences of the border as an environment. The piece relies on the interplay between the physical environment and technology, created an "augmented space" that continuously brings forth new calacas as the user moves. This overlaying of space allows for the creation of place which "becomes vividly real through dramatization" or interaction and experience (Tuan 178). As Jason Farman writes, AR applications do the work of imbuing a "space with meaning, thus transforming a space by giving it a sense of place" (39). Locative media, specifically AR in this case, aids in the construction of place through the experience of seeing a dramatized symbol of death in the form of the calaca.

By using AR, *Border Memorial* disrupts the seemingly "abstracted, geometrical, [and] undifferentiated" space of the desert borderlands to expose the realities of violence (Ryden 37). Using a mix of real and augmented environments, each site is an experience and one that blurs

the lines between the digital and the material as the memorial is only accessible at the intersections of the physical and digital (Farman 87). The desert's seemingly desolate landscapes lends to it as a space that is a "blank surface on which areal relations, physical landforms, and social patterns are dispassionately outline" (Ryden 37). While some spaces in the Sonoran Desert are easily recognizable, *Border Memorial* undoes the presuppositions about the desert as a site of nothingness. Customs and Border Patrol benefit from the environmental space of the borderlands as blank and devoid of association as a tool of border policing. They often disguise "the impact of its current enforcement policy by mobilizing a combination of sterilized discourse, redirected blame, and 'natural' environmental processes that erase evidence of what happens in the most remote parts of southern Arizona" (De León 4). The emptiness and lack of "place" allows for the deaths of border crossers to remain largely invisible within social, cultural, and political structures.

Border Memorial's emphasis on place is possible because "mobile technologies are able to offer users new ways of visualizing information" (Farman 39). The experience of place makes it impossible for users to turn away from the heat of the day or the dryness of the air as they use *Border Memorial*—rather, it is woven into the very nature of the piece itself. By focusing on the locative aspect of AR, *Border Memorial* is built with the expectation that users will experience the environmental conditions that are deployed against migrants. As such, the desert is no longer just part of a large or abstracted space but a harsh and deadly environment simultaneously worthy of reverence. Each spot is no longer blank but part of a larger narrative of the borderlands.

The sites in *Border Memorial* are unnamed—each time the phone pings a new calaca is discoverable, but all of the calacas in the piece are the same. By focusing on the experience of

place, Freeman built *Border Memorial* based on specific locations rather than emphasizing the importance of individual names. The lack of names is a striking contrast to other memorials as identity is often anchored in the name itself—it is an essential tool for asserting the humanity of those stripped of their identity. Similar projects like Josh Begley's *Fatal Migrations* and Luz Maria Sanchez's *2487* focus on the importance of naming the dead. *Fatal Migrations* uses images aggregated from Google Earth to display the environment where migrant bodies have been recovered while *2487* is a digital sound piece that recites the names of border crossers at random intervals. Both pieces emphasize the importance of uttering and repeating a name as a continuous memorial and demand for humanity (Sánchez)(Alarcón). But the lack of names does not make the deaths in *Border Memorial* any less impactful. Rather, the piece challenges conceptions of grief and mourning by asserting that names are not the only structure through which to mourn. A central aspect of the piece is not the names of border crossers but the continuous silence that surrounds their material bodies. Each death is visible through the digital body within *Border Memorial* but, more importantly, through its connection to place. The continued focus on grieving names, dates, and other identifying information reduces border crossers to those identifiers, effectively obscuring the physical realities facing migrants. Consequently, migrants are distilled to the structures that reduce them to names in a collection, instead of an acknowledgement of the overlapping influences that resulted in the person's death.

Focusing on the importance of place upends expectations of a memorial and illustrates, as Jessica Auchter demonstrates in her analysis of *Border Memorial*, the violence of statecraft and the consequences of bordering. She experiences *Border Memorial* as way of thinking of the "impossible place of the migrant body in our own national imaginaries," arguing that the

piece "memorializes this impossibility by drawing attention not to the individual life lost, by naming it, as in traditional memorialization, but rather to the very impossibility of place itself" (Freeman and Auchter). The calacas are not about the name attached to each but the mass amounts of death that occur in a place that is essential to American sovereignty. Migrant bodies and movement are positioned as a threat to sovereignty: in terms of rights, the environment, and the consequence of porous borders. *Border Memorial* makes visible the loss of life directly attached to that American imperative that does not rely on names but the weaponization of the space itself. This awareness haunts beyond the limitations of naming by demanding interaction between the user and the calaca. This kind of interaction with each place makes the calacas felt beyond the limits of the name, drawing users into the impossible place and allowing them to interact with someone who is both there and not there. Naming is, and will always be, an essential part of mourning, but *Border Memorial*, like the deaths of border crossers, is entwined with the material realities of place and the environment.

Border Memorial invites users to mourn through the experience of place rather than the specifics of individual names. Users can move physically through the space of the borderlands, making each site where they stop to see, experience, and grieve noteworthy. In this way, the piece complicates conventions of memorial as each user is not seeing an individually identified calaca but experiencing the conditions of the real world in real time. Users are also experiencing individual places rather than one specific location identified as a memorial. By placing an invisible layer on the landscape, the piece is "fus[ing] history to location and [giving] that location significance" (Ryden 39). Of course, the border already has significance, but the piece suggests that the state should not be the only one crafting that narrative. *Border*

Memorial is not merely about seeing the calacas but the experience of standing in the same spot where a body was recovered—where someone died.

The Materiality of Mourning

By making visible the histories of the borderlands, the piece invites the user into a shared understanding of the contemporary realities of the borderlands. The piece itself does not necessarily create a "sense of place" that is based upon sustained interactions with each location but emphasizes the importance of place as a mode of memorial. Within this, *Border Memorial* challenges conceptions of memorial as many memorials, often plaques or statues, are deemed worthy of remembrance and are representations of loss that happened elsewhere or long ago (Blair 35-6). Rather, the use of locative technologies challenges what and who is grieved by making memorial moveable, interactive, and experiential. In turn, *Border Memorial* reflects the different experience of migration and the longevity of the crisis itself. The significant downside to this approach, as opposed to other memorials which are fixed in place, is the loss of the piece itself when the platform is no longer accessible. The loss of *Border Memorial* is not merely the loss of the app but the erasure of an entire memorial. Despite this, *Border Memorial* illustrates the possibilities of AR through the entwined nature of movement, technology, and the physical world. The piece's place-based approach works on the matter of the body through the senses and the experience. After the users put down their phones, leave the locations, and as the app fades into obsolescence, the places are marked and changed by mourning—visible or not.

Border Memorial localizes grief through the direct connection of the user to the site where loss occurred. AR collapses spatial and temporal distances by documenting the sites in real time, calling forth the materiality of the body through the digitized figure of a skeleton.

The calaca both betrays the technological limitations of the piece and is the point itself. Floating above the ground, the calaca is a digitally rendered object whose outline points to its imposition upon the landscape. It is both there and never there. Held within the phone, the calaca is anchored to the location and only made visible through the technology that produces it. The user's physical interaction with the phone is the link to making the calaca visible. Its materiality is "ontologically inseparab[le from] agentially intra-acting 'components'" (Barad 133). The ontology of each calaca within *Border Memorial* is contingent upon its intra-action with everything that surrounds it. The calacas are "real" because "reality is not composed of things-in-themselves or things-behind-phenomena, but of 'things'-in-phenomena" (Barad 135). The piece has real effects not because it continuously interacts with itself but because of its intra-action with the world outside the code. Put another way, as the user stands in the desert, they are interacting with the calaca who is interacting with everything around it. The calaca changes the landscape from a very human perspective, but the environment is haunted by legacies of loss. While the calacas are overlaid onto their surroundings, the users' interaction with the environment, the cell phone, and the calaca itself make it have real and material effects. The cascading effect of making the calaca appear shows not only intra-action of all things but how its effects are felt through a larger web of relations. Simply put, each calaca is relational in terms of geolocation software, the user, and the phone. But more broadly, the visibility of the calaca shifts the space and introduces the overlapping systems of statecraft as essential to placing the calaca there at all. Within this structure, mourning brings together the complexity of materiality, place, and intra-action.

Each user's interaction with a calaca leads to the digital exposure of a material body and, consequently, death. Despite the joyous intention attached to each calaca, they are

ultimately skeletons. The calacas are not people but a symbolic representation of the human form in its most basic physical parts. Not only is the skeleton both the beginning and end point of the physical human body, but it is largely reminiscent of different figures of death. Within *Border Memorial* the calacas are symbolic but also suggest a kind of voyeuristic representation of decay. To see each calaca is to see far more than memorial and creates the direct association between the bodies recovered in each spot and the realities of death. Moreover, the calacas are not accurate skeletons but skeletal figures with sharp edges, brown-white color shading, and an outline that approaches the edge of uncanniness. The calaca's materiality is felt through its visibility and notable through its intra-action that unifies the world around it. It is not flat but a 3-D object with contours and dimensions that add to its digitally rendered bones. The calacas are both real and unreal in exposing the human body and hiding the realities of death. They are seemingly physical, both in their representation and the ways in which they change and shift other bodies. Yet they are ephemeral, disappearing when the screen is gone and only reappearing when mediated by technology. The calacas clash with the real physical world on the screen behind them, drawing attention to the interplay between the real and the digital.

But the materiality of mourning is not limited to the interaction between the user and the phone; it continually manifests in the place itself. The desert is haunted regardless of the ability to see the bodies that have been recovered there. There are small and vibrant reminders of how the space is deployed and those who have died crossing it. In her book, *Vibrant Matter*, Jane Bennet writes about the political force of all matter, one that "runs alongside and inside humans" that is visible "if we gave the force of things more due" (Bennett viii). This is not to say that the people recovered in the desert are "things" but rather that their representation as calacas has far-reaching and continuous force. The vibrancy of the calacas is part of their

continuous intra-action between the user, the environment, and the technology that makes them visible. The people recovered in the desert are often reduced to dangerous matter, only made visible through their appearance in protected landscapes. However, *Border Memorial* highlights their vibrancy, or the political force of the bodies both living and dead, and makes it visible through the calacas themselves. This interweaving of real bodies with their digital representations changes the space, makes it vibrant and persistent under political pressures. The bodies are and always have been vibrant—they are "cultural forms … material assemblages with *resistant force*" that positions them as a continuous problem for the state, but more importantly lively and vibrant (Bennett 1). *Border Memorial* highlights this vibrancy, makes it continuously visible, but that vibrancy does not stop once the phone is put away. Rather, the space is changed under the vibrancy of bodies and remains that way through the need for continuous mourning. Vibrancy highlights the intra-action beyond the screen itself. Each calaca is vibrant, continuously affecting the user and those who interact with them, but more importantly this vibrancy leaves its mark on the space itself. Vibrancy is an essential part of the experience of shifting space to place; it is part of the dramatization that makes the place memorable and grievable. Moreover, each calaca is vibrant through its digitized bones because through its digitization each death has increasing political force. Through the phone, *Border Memorial* makes mourning tangible while showing the persistent violence of bordering.

Obsolescent Mourning

In enabling the work of mourning, *Border Memorial* captures the complexity of how a space is accessed, mediated, and experiential through movement and technology. Considering the place-based nature of AR, *Border Memorial* invites users to utilize the possibilities of the screen and the privileges of movement to see the realities facing migrants. A 2015 article

published in *New Media & Society* speaks to the promise of user-created AR pieces as a way

for users to question "who has authority over space and to reconstruct political and historical

meaning in place" (Liao and Humphreys 1420). In blurring the lines between the real and

technologically mediated, AR has the potential to change human interaction with the physical

world. AR allows users to complicate and add to the spaces that surround them in political,

social, cultural, and historical ways. The article looks specifically at Layar, an app that

"displays points of interests (POI), user-created annotations, graphics based on the Global

Positioning System (GPS)" (Liao and Humphreys 1419). Launched in 2009, Layar was one of

the first AR apps that allowed users to view and create their own Augmented Reality pieces

(supported by both Android and Apple). However, Layar was purchased in 2014 by Blippar, a

large tech corporation, and moved away from AR via phone technology to more

commercialized software (augmented marketing materials, etc.). Layar hosted a wide array of

projects including Museum of London's "Street Museum," which allowed users to see

historical events overlaid on the streets of London, and MyBurb, created by the Australian

Broadcasting Corporation (Hutchinson 38). These projects all point to the possibility of

Augmented Reality as an educational and informative technology but now are all inaccessible

regardless of location. There are, of course, many other apps that allow users to create AR

pieces or experiences, but the loss of Layar points to the struggles of continuous mourning and

technological obsolescence.

The end of Layar, like other now-defunct apps that stood on the brink of new

technologies, points to the ways in which new media makes visible lingering and systemic

issues. *Border Memorial* mediated and complicated the space of the borderlands through the

experiential process of shifting space to place and simultaneously making visible the

continuous violence of a weaponized environment. The crisis in the borderlands is unfolding

slowly and consistently while migrants disappear under the pressures of border policy, the

environment, and anti-immigration rhetoric. The violence enacted on migrants is persistent and

invisible, often not understood as violence at all but rather the natural consequence of using a

hostile terrain as a part of border policing. *Border Memorial* not only made this violence

visible, but its use of technology made it tangible and continuously felt. Users had the

opportunity to grieve for the hundreds of migrants who died through the experience of place

and the continuous intra-action with the human and non-human world. Layar's technological

obsolescence erases this experience, but each calaca's possibility shifts the space through the

continuous unfolding and becoming of the surrounding world. The deaths in the desert are not

always visible, but their presence is continually felt and an integral part of the landscape itself.

Conclusion

All along the fences that line the United States-Mexico border are maps warning migrants

about the dangers of entering the desert. The maps are dotted with the places where bodies

have been recovered—there are thousands of dots. Like *Border Memorial*, the maps make

visible the harsh realities facing border crossers and the weaponization of the environment in a

search for stronger borders. In some ways the maps are analog versions of digital art pieces

that mourn border crossers, but these will fade under the desert sun and decay as quickly as the

bodies marked on the maps. Unlike the digital footprint of *Border Memorial*, the decaying

paper leaves small remnants of what was once there—only to be replaced by another map.

Taken together, maps provide a new way of seeing the lived reality of politics enacted upon the

space itself. However, what the maps can't do and what *Border Memorial* makes visible is the

matter of mourning. The use of AR shows how the real world and the landscape are as

essential as identifying information when it comes to understanding what is actually grieved.

Matter is at the center of *Border Memorial* through the connection of the user-to-the-phone-to-the-place, but more specifically through the ability to materialize someone who is no longer there. *Border Memorial* works on the bodies in the piece and those interacting with the piece through a vibrancy that moves through the digitized bodies and is experienced repeatedly (now that the app is gone, this is still somewhat possible through digital maps and videos of the piece). Each calaca calls forth the material body, despite not ever materializing outside the confines of the screen. Moreover, when the piece no longer works, the matter of those bodies is preserved elsewhere while what remains continues to haunt the places in the desert. The effects of matter, especially in a crisis that is largely invisible, do not stop at the ability to see it but move through our ways of understanding the weaponization of certain spaces and the persistent effects of bordering. While *Border Memorial* is no longer in its initial and intended form, the digital interactions with the piece still highlight the complications of grief for a population that remains largely unmourned and unrecognized. Despite the realities of obsolescence, digital memorials provide a more encompassing picture of grief that push against exclusionary memorials which are often sanctioned by the state. Instead, digital memorials and mourning offer more interactive and dynamic narratives about who is publicly grieved and who is silenced. They provide different points of access than fixed memorials by focusing on overlapping systems that resulted in the deaths, rather than merely focusing on the names of victims. Consequently, the matter of *Border Memorial* remains because the desert is impacted by human interference, including the deaths of hundreds of migrants and their integration into the landscape itself. The material effects of *Border Memorial* don't end with

the piece but continue to press for a broader understanding of whose matter matters and whose

grief is visible.

Notes

[1] Implemented in 1994, Prevention through Deterrence pushed migrants away from city centers an into harsher and more deadly terrain. The policy worked to keep migration invisible while simultaneously making it more difficult for migrants to cross into the United States. Enforced through Operations Gatekeeper and Hold the Line, ports of entry are militarized, making areas like the Sonora Desert more desirable for crossing despite environmental dangers. For more information, see De León; Nevins; and Andreas.

[2] Non-profit migrant aid groups have been criminalized for entering wildlife reserves and leaving supplies for migrants. These charges are typically on the grounds of littering and illegal entry into natural areas. As of the construction of this article, all volunteers have been acquitted.

[3] As Ray and others have pointed out, the imperative to create pristine landscapes often occurs by removing indigenous peoples from their land. Organ Pipe National Monument in Southern Arizona was created by removing the Tohono O'odham people.

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