

See discussions, stats, and author profiles for this publication at: <https://www.researchgate.net/publication/312610580>

Designing, Arranging, and Assessing Augmented Places through Mobile Media Alignment

Chapter · January 2017

CITATIONS

2

READS

128

1 author:



Brett Oppegaard

University of Hawai'i at Mānoa

42 PUBLICATIONS 73 CITATIONS

SEE PROFILE

Some of the authors of this publication are also working on these related projects:



Locative Media [View project](#)



Listen, Feel and Learn App Research Project [View project](#)





2 Designing, Arranging, and Assessing Augmented Places through Mobile Media Alignment

Brett Oppegaard

A place does not just magically materialize. It is built, and it is maintained, and it is constantly being interpreted and reinterpreted by everyone engaged with it, through social processes. Such a dynamic is easy to imagine in the physical world, through the symbol of a homesteader encountering a vast prairie. The settler could build a house anywhere, but a certain spot is picked, for specific reasons, and the architecture and materials of the structure and its built surroundings are based on needs, expertise, and availability.

If more people then come together in this bounded area, they invariably interact and socialize, and create meaning of the built environment together. A distinct culture emerges through the intermingling, the related activities, and the artifacts they construct, all of which helps to establish a context and a history of the place. What once was just a transitory space, an endless grassy field, then, has been inscribed and ascribed and transformed into a distinguishable physical place, which might even connect or overlap as part of a hub of places, as a great city might contain many locales. When digital space, though, also is considered as a part of this already complex transformation process, especially as inseparably blended with the physical space, such simplistic flat-world metaphors begin to disintegrate amid the entanglements that arise from the limitations of a physical example as an illustrative cognitive tool for understanding a mixed reality, or hybrid space.

How such space is represented and visualized has everything to do with how that space is embodied, fueling broader understandings of culture, identity, and agency, and how that space is embodied is how it transforms and becomes a place. Space today exists in a constant state of interplay between the physical and the digital, and people do not perceive a significant difference, in the sense that virtual sensations can feel just as “real,” intimately linking space and embodiment. This perceptual shift—from human conceptualizations of embodiment within a physical world, with finite and distinguishable territory, to the openness and richness of a realm filled with endless hybrid space—changes how people regard materiality, space, and information in striking ways, especially generating new understandings of built environments. The rise of ubiquitous computing technologies, such as pervasive mobile devices, meanwhile keeps extending these perceptions and enriching these ideas, allowing people to see their surroundings as

“Rhetorical resonance will come not from lining up pixels on screens but from aligning content in various forms that connect and contrast with the user’s perceptions and needs.”

a layering of intertwined data, some of which they have access to, and some of which they do not, but all of which is there, as latent physical and digital sensations, seemingly just waiting for someone to free them from their dormant state and bring them to the accessible surfaces and interfaces.

Improving technical precision and capabilities in our technologies will open up these environments for further explorations, but rhetorical resonance will come not from lining up pixels on screens but from aligning content in various forms that connect and contrast with the user's perceptions and needs, establishing an embodied and situated sense of place and time. With mobile technologies, the user is able to move fluidly while staying connected, allowing deft designers to curate and arrange digital information and generate useful interfaces to develop not just networks of proximity to the user's physical environment but also to the spatial and the conceptual. Such multifaceted and perceptive alignment of information could become the ultimate challenge of augmented design, and designers need new tools, methodologies, and theories to better understand and build these mixed reality environments to serve users and also to assess their effectiveness. This chapter therefore attempts to break some of that ground, by proposing a paradigm based on the theoretical construct of mobile media alignment.

Reductionism, of course, could be a path to allow researchers to see a part of this place-making design process in action, and many valuable research studies already have been conducted on the precise technical aspects of augmenting physical space with digital material in various ways. Yet generally left out of these discussions are the designers and the users of the places, in terms of their practical experiences in these processes of envisioning, making, maintaining, appreciating, and assessing places, which dictates the real-world value of these augmented places as social constructs, which is the focus in this piece. So what I extend in this chapter is not a purely theoretical discussion about this topic, nor a purely practical one, but a mesh, based on an evolving paradigm of mobile media alignment, which is intended to provide new ways to consider the design, arrangement, and assessment of augmented places. Such a social constructionist tool clearly is needed to allow designers and users of augmented places to precisely and holistically examine the effects of built and augmented places, created from digital material woven into, and integrated with, the physical environment. By focusing on the practicality and symbolic ideas that the term alignment can generate, especially in bringing together the experiences of designers and users in authentic situations and in physical places, what typically are considered technical terms, such as registration and calibration, can transcend their status as merely mechanical distinctions and instead become symbols of larger

assessment ideals, as a way to ultimately judge whether a design works in its present form and delivery, or not.

Terminology and Context

I have already used a lot of terms with contentious histories, and the definitions of those words have been proposed and debated from many different perspectives. My intent here is not to initiate or revive linguistic debates. Instead, I attempt to make small and transparent adjustments to well-trodden terminology paths as a way to concentrate on the points I'm trying to establish, rather than to diverge into a discussion on definitions and semantics. While such debate is valuable and should continue, I focus elsewhere here on trying to develop a paradigm based on the user's experience in augmented reality and how designers can improve those experiences. That said, some discourse on the vocabulary of this work could be fruitful. But my hope is that rather than get sidetracked on debates about terms, we can establish the vocabulary, as used in this work, and then proceed to think more about alignment.

Distinguishing the word space from place, for example, and determining how those terms symbiotically coexist, has been a central topic of extensive discussion in various disciplines for many years. This chapter will build primarily from the definitions proposed by Tuan, who states that space is more abstract than place. In short, he writes, space is a realm without meaning, or a fluid zone of transition. When meaning is ascribed to a space, though, this zone gains its boundaries and its frameworks and transforms into a place. Conversely, when meaning of a place is lost, or that meaning dissipates, this zone reverts back into space, like the grassy plains that might eventually cover the remains of the homesteader's log cabin. Space, in turn, offers openness and freedom. Place, as a contrast, offers security and stability. One is needed to define the other. Space, from this perspective, therefore can be likened to movement, and place can be envisioned as the pauses, or stops along the way, in which people interpret the viewpoint and get to know a realm, however they define it, endowing it with value.

Developments of digital file sharing, mobile technologies, and ubiquitous computing have expanded such understandings of space and place in different ways, and from those foundations this chapter delves into the additional complexity created by the layering and interweaving of digital and physical spaces known broadly as augmented reality. Even that expansive um-

rella label can be debatable, though, with de Souza e Silva noting the three distinct categorizations coexisting in recent scholarly literature, based on technology use, plus innumerable inconsistent variations pervading industry texts. Even this single book on augmented reality contains various author impressions of the term.

In this chapter, the base understanding of the concept comes from Milgram and Colquhoun's broad second categorization of augmented reality, or on cases in which any mixture of real and virtual environments overlap. The key to that categorization, from this perspective, is that the boundaries begin formation from the physical environment, as a place, and the augmentation element refers to digital layers applied to that place. That overlapping is where alignment occurs. An even broader third category of augmented reality also is proposed by those authors, called "mixed reality," and this chapter drifts toward that direction of even a more mingled physical and digital, attracted to de Souza e Silva's extension of the idea, with a merging of mixed reality, augmented spaces, mobility, and sociability that she calls "hybrid reality." Within hybrid reality are hybrid spaces, she writes, which are built by the connection of mobility and communication and materialized by social networks, developed simultaneously in both physical and digital spaces. This is a situation in which a real-world context is dynamically overlaid with "coherent" location or context-sensitive virtual information curated and arranged by designers and assessed by users. This is not a situation in which virtual experiences are enhanced by elements of the physical environment, which is a different concern, called augmented virtuality. This also is not a situation in which universal media is designed to appeal to users anywhere, which leans even more toward the virtual.

Within these hybrid spaces are the hybrid places, or physical locations that offer "embodied spatial" interactions blending the physical with the digital in specific ways that denote meaning of the place. While a place might be static long enough for examination, like a lava flow, the theoretical lens developing here includes the idea that as space becomes place, place also always is in a state of "becoming," as described by Pred. Place, therefore, needs to be understood as an embodied relationship with the world, constructed by people doing things, including designers curating and arranging built experiences, and understood in a never "finished," or even fixed, state. Yet, through this theoretical lens and the moment of pausing and examin-

ing a place, the transfiguration happens at such a pace, like grass growing, that observations can be relevant and accurate for extended enough periods for adequate evaluations to be made. Also, from this paradigm, there is no longer a homogeneous context for any given spatial area. Instead, pockets of different contexts exist within each place, open to differing interpretations, and any of these perspectives could be considered valid.

Making just a slight move sideways from these established positions on terms as a way to lessen the concentration on mobility and social networking, I also am using the label “augmented place” as an extension of augmented space, to bring the attention of the inquiry to the pausing point and to the mix of physical and digital sensations at a moment, from the user’s perspective, starting from the foundation of the physical location but including the cognizance of digital layers as well, as part of a holistic understanding of a spot on this planet from the viewpoint of a ubiquitous computing user, such as someone equipped with a smart mobile device, at a particular point in time.

While these users certainly still could be classified as mobile, that overall fluidity of mobility pauses for a moment, with the user’s mobility, in the process of creating the place and making connections to its augmentations. The social connections, if not related to the place-making, meanwhile are tangential to this place-oriented perspective. The mobility in this case, in a broad sense, could be visualized as a registration or calibration process, as the designer of the place curates and arranges the material in alignment with the augmented place, although not in the limited technical sense most often attributed to those terms. Instead, I envision the place coming into a sort of a momentary focus, through perceptions both digital and physical, and the user, at that point, being able to assess whether those perceptions are aligned with expectations and needs, or not.

Beyond Technical Issues

Augmented reality, as a concept, not a specific technology, has been under development for decades as part of the societal shift away from desktop computing and toward pervasive interactions with “smart” services, anytime and anywhere. It can be considered one of the core forms of ubiquitous computing, as envisioned by Weiser. Despite the many and diverse efforts expended to date, though, augmented reality arguably remains in its developmental

infancy, especially in terms of satisfying users' expectations and providing positive user experiences, critical criteria for encouraging widespread adoption and acceptance. This stunted growth likely is because the most pressing of those needs is pragmatic relevance, including contextually relevant information easily available that allows for novel interactions with the physical world. Augmented reality systems, at this point, simply do not satisfy those needs very well. The major augmented reality systems—Layar (www.layar.com), Junaio (www.junaio.com), and Wikitude (www.wikitude.com)—all show great potential but also suffer from significant sensory inaccuracies and regularly misaligned content. Many perceptual issues have been identified in the application of current augmented reality technology as barriers affecting overall performance and thereby negatively swaying user perceptions. Those generally can be categorized as implementation errors (creating perceptual inaccuracies due to calibration errors), technological limitations (including static and dynamic registration mismatches), and “hard” problems (such as dealing with an expanded depth of field). Many of those technical issues can be fixed, and will be fixed, eventually. What cannot be simply addressed through better registration and calibration, though, are the bigger content and contextual issues; as in, when the novelty wears off, what will augmented reality truly offer the user, in terms of relevant and interactive information, that cannot be accessed in better ways in other technological forms, including even paper products, established and reliable, such as brochures. Augmented reality should consider itself in competition with every other mobile media technology, including paper, and focus on what it does best, and that is to dynamically align with augmented place.

Part of the current problems in the field are due to a combination of the various technical issues but also the attempt to rapidly increase in scale, as in trying to reach a large enough audience to make massive profits with a technology that has not really figured itself out yet, with augmented information not often enough adequately aligned with the user's location, spatial environment, and context. That overall dynamic is less technical, then, than theoretical, with a relative lack of focus on the user experiences and a lack of research on user-centered development in augmented reality, which helps to perpetuate that foggy view. In turn, user acceptance of augmented reality is equivalently low, based on perceptions about ease of use, value, and trust in the given technology, and it likely will remain low unless that primary par-

adigm of augmented reality is adjusted and aligned with user interests and common use-case scenarios.

Some researchers, in response, have focused upon improving registration and calibration from a practical viewpoint. Technical improvement, of course, would be beneficial in many ways, and is needed on many levels, but mobile augmented reality arguably has matured enough already to offer high-quality services. Audiences, though, still are not accepting and adopting augmented reality on the scale many suggest should be. Part of that disconnect seems to be caused by perception, or the recognition and interpretation of sensory stimuli, which is complex and multimodal, with each sense providing different information, simultaneously, which guides interpretations. The environment offers cues, both digital and physical, revealing affordances and constraints, and when those cues smoothly align, a positive user experience naturally materializes in satisfying ways. But when those cues are misaligned, or conflicting, as augmented reality systems today regularly confound a user's senses, this system creates noise that repels users rather than attracts them. From a user experience perspective, and on a theoretical level, both instrumental (utility and usability) and non-instrumental (joy and appeal) elements should be assessed, as subjective and holistic considerations of design, and augmented reality as a concept, should include not only the application and its functionalities but also the curation and arrangement of content, and that content's alignment in space and place.

In hybrid space, a person must pause and focus on a particular point of view related to the surroundings and layers of digital information, or simply flow onward. At that moment, through such crystallization of a perspective, distinctive attributes of the domain come into focus and others fade away as interpreters intuitively make sense of what the place means, to be right there, right at that moment, assessed from their diverse perspectives. Augmented places cannot be fully perceived at a distance, or remotely, since that would separate and mediate the experience from the physical world and filter out the sensations and unconscious tacit understandings that come only from sensory immersion in physical settings. Augmented places cannot be fully perceived on a physical level only, either, since the related digital information in the ether is as important to the engagement in the experience as air, whether the person accesses all of the information, or just a small sample of it, and regardless if the full potential of the situation is ever re-

alized. This chapter will contend that a closer examination of such stabilized moments, by sustained concentration upon what can be understood about the physical-digital alignment of the situation, could lead not only to a better understanding of augmented places but to better user experiences within augmented realities and quicker development and adoption of the theoretical infrastructure needed for the growth of this field. To reach that level of sophistication, though, more grounding in the pragmatics of the idea is necessary.

From the design perspective, mobile media alignment can be thought of as a system of analysis and guidance. From the user perspective, it can serve as a system of assessment. In short, if the digital information is not aligned with the physical information in mindful ways, either the user is momentarily placeless or the information is momentarily lost in space. In a generic classroom context, Shaffer and Resnick envision authentic learning as meaning either: (a) materials and activities are aligned with the world outside the classroom, (b) assessment is aligned with (what students really should learn from) instruction, (c) topics of study are aligned with what learners want to know, and/or (d) methods of inquiry are aligned with the essential practices of a discipline. As an extension of that educational metaphor, if the users of ubiquitous computing technologies are understood and visualized by designers as situated and lifelong learners, they are not flowing through spaces, but pausing in places, educational settings needing alignment of materials and activities, designed to meet contextual lifelong learning needs of what users want to do and know, through methods tried and tested within the related disciplines.

Learning, from this perspective, does not happen at predetermined times in prespecified places. It happens whenever a person breaks from routine, reflects on the current situation, and resolves to address a problem, share an idea, or gain an understanding. These environments, in turn, dynamically are constructed in situ by mobile device users, as they interact with their surroundings. That description illustrates the natural alliance of learning as a contextual activity with mobile devices and the physical environment as complementary interfaces. The presence of a hidden reality, toward which our clues are pointing, and the discovery which terminates and satisfies a particular pursuit, is sustained by the same vision, that a small portion of reality has been contacted, and more of it exists. Physical and symbolic clues continually alert the minds of the open and the curious toward interactions

within the global network, as points of immersion into humanity's collective intelligence and as reaching toward more contact. Even beyond the realm of explicitly documented and expressed knowledge, though, tacit knowledge also exists in ways that, as Polanyi stated, "We can know more than we can tell." One can envision this process as the mind reaching a pause of a place, opening its petals, and eagerly waiting for the intellectual dew. When flowing through space, the person finds a focus, and the personal participation of the knower in the knowledge that the person takes possession of, as it takes root within a flow of passion, as intellectual beauty, guides the discovery. When such a connection is made, alignment is evident and needs no further declarations. But augmented reality, in its present forms, rarely offers such clear payoffs. Designers of augmented places, for whatever reasons, generally are not regularly curating and arranging digital material in relationships with the physical environment of the user in the ways users crave to get it. Maybe a guidance system, like mobile media alignment, would help the focus remain on augmented reality's three greatest strengths, which start first with the knowledge of the user's location, then with knowledge of the user's spatial environment, and finally, and maybe most importantly, with knowledge of the user's context.

Tier 1 Alignment: Location

Ancient Greeks, forming the foundations of Western thought, first began describing place poetically, in recognizable patterns of expression, as a way to distinguish how one place was different than another, more than 2,500 years ago. Humans have been inscribing and ascribing their spaces and thereby transforming them into places for millennia. Those activities have included paintings on cave walls in France and carvings into stone in Egypt but also re-enactments of historic battles, at places such as Gettysburg, and guided tours of the Stations of the Cross in Israel. Even early mobile delivery systems, such as papyrus scrolls, gained power not from their fluidity, or mobility, but from their eventual alignment with a particular location (such as providing prices in the local market), from their alignment with a specific spatial environment (such as the ways in which a map might flexibly inform an entire region), or from the alignment with a particular contextual situation (such as the news of the results of an important battle and what that might mean for the people

during the rest of the war). So alignment of information, in a contextual life-long learning sense, is not necessarily new, nor is it inherently digital.

Yet the importance of location, place, and alignment of information with augmented place shifted significantly in 2002 when the Federal Communications Commission began requiring GPS-locating hardware on every mobile device. That legislation meant that wireless carriers inherently were able to locate subscriber devices anywhere they happen to be, with great precision, and, in turn, data providers could know where the person was when they were receiving data. Since mobile devices, such as smartphones, have become like other appendage technologies, like shoes and clothes and eyeglasses, designers suddenly could know exactly where their audience was, what was around those people, likely what activities they had done, and through data analysis, also what they were probably most interested in doing in the future. Such information offered the potential for designers to more intricately and intimately arrange helpful services for users. From the user perspective, aside from the significant privacy concerns, the release of this information to designers meant that potentially their needs, whatever they were, no matter how individualistic, could be met more efficiently and effectively.

Location therefore became the foundational attribute of mobile apps, providing digital media that in many ways could respond to, and augment, place. Location literally creates the conditions under which interaction occurs, and it also provides the context from which information is interpreted and incorporated into use. No matter where you might be in cyberspace, there is not an alternative to being grounded in a location, and therefore, to be a part of a space that could be transformed into a place. So while a map, and other media technologies, has related place to a person's embodiment in a specific location before, mobile devices perform that orientation dynamically, and for the most part, autonomously, thereby becoming more an aspect of becoming cyborg than wielding a tool.

From the mobile media alignment perspective, then, an understanding of location starts in the physical environment. Since digital media is connected to place through GPS coordinates, or some other similar tracking and linking system, designers have the discretion to determine the radius of the tether to a place. Since much of my mobile media design work has been at heritage sites, I will use an example from that kind of situation. Imagine you visit a historic site, and you walk up to a historic house. Until you reach

a place in which the designers of this built environment have arranged and programmed an interaction, you essentially are flowing through space, walking the paths, gathering tacit sensory data, seeking a focus. But once you reach the front porch of the house, for example, you logically might want to know more information, and the designers therefore would want to be in a position to give you some, since aligning an augmented place comes from a deep understanding of the user's needs, not from fulfilling a designer's whims. At this point, again imagine the petals of the user's mind fully opened, the most promising alignment potential would come from providing digital information about and related to either this front porch, the central element in the location, or whatever else can be perceived through the senses in this specific location. At probably no other time in the user's life is this front porch going to be more interesting than at the moment in which that person is there, in that location, communing with the place. So the mobile media alignment paradigm could be enacted by sharing in that place, at that moment, a video reconstruction of an important event that happened in that same spot, or an audio track giving voice to a letter written by someone who sat there once, or a still image of that same porch 50 or 100 years ago, showing other people from the past using the place, or an animation demonstrating the construction techniques used to make that kind of structure, or whatever. As long as the location, and what the user can perceive at that location, is in the forefront of the curated and designed and arranged experience, then alignment smoothly can happen; the more tailored to the location, the more aligned the experience could be. The more aligned the experience becomes, I theorize, the better the user experience will be. But tailoring information to the location is just the start of the design and arrangement process, an important but also limited part of creating alignment.

Tier 2 Alignment: Spatial

Location can be envisioned as the GPS-located spot on the map, and all of its surrounding perceptions, from the user's viewpoint when occupying that location and experiencing all of its sounds, sights, smells, etc. The spatial component of alignment is a recognition and awareness of everything physically nearby the user yet outside of the direct perceptions. Using the map comparison, again, imagine that the designer has the map and an understanding of the greater surroundings, while the user only can perceive what can be seen,

heard, smelled, etc. To align on a spatial level is to not only curate, design, and arrange digital information to what the user can directly access through the senses, but also to be able to guide the user to even richer and broader connections just beyond perceptual reach, through such techniques as suggesting other locations to visit, importing information about nearby landmarks, attractions, and artifacts, and generally extending the senses of the user, thereby allowing a greater alignment to the augmented place through an expanded perspective of the location.

At the historic front porch, the user might be aligned to the location, per the example above, yet not be aligned at all to the larger space and what it offers. What if this particular porch could be used as an example of how people served and ate meals in the mid-1800s, before the widespread adoption of the formal dining room idea? The user might be able to learn that information and appreciate that perspective for its limited value, but if the designer of the augmented place also gave the user information about the old oak tree, just around the bend of the hill, where the village often came together to eat meals and build community instead of eating alone, the isolated information of just the location, while important and interesting, could grow even more in significance and rhetorical resonance, enlarging an example and transforming it into a theme.

Location can be considered the core of the alignment concerns, because without an augmented place there can be no expansion or abstraction of that central point. Without alignment of location, one might as well be sitting in a dark room, or a nondescript cubicle. Spatial awareness, though, is just the start of the superpowers that ubiquitous computing can bring to society. If designers can better align the spatial perspective with the needs of users, based on a location, an array of opportunities could present themselves to both, and contextual awareness then could create an unprecedented level of media alignment from those foundations.

Tier 3 Alignment: Contextual

Each of the three levels of alignment inherently increases in abstraction, yet because of the core tether to the physical location, and the augmented place, even contextual alignment remains grounded in practical concerns. In short, the more we use ubiquitous computing technologies, the better they get to know us, from the data we create, and the more predictive our needs



Figure 2.1: This Fort Vancouver Mobile video of Cowlitz Tribe drummers and chanters (www.fortvancouvermobile.com) has little meaning outside of its original context, as a ceremonial blessing for the opening of a reconstructed village at Fort Vancouver National Historic Site, in Vancouver, Washington. But when this video was embedded in the place, where it happened—through computer programming—and made available to visitors who could trigger the video to play on their mobile devices by entering the GPS-located push zone at the physical site, a novel sort of hybrid space was produced. This mixed-reality space can be embodied by the app user, and the mobile device can become the interface for the augmented place, not just a peephole through which to see information. In turn, the user can align the physical environment with that of the digital environment, to engage Tier 3 Mobile Media Alignment effect, and recreate the ceremony through a new kind of hybrid experience. (c) 2013 by Fort Vancouver.





Figure 2.2: To further illustrate the potential of a Tier 3 Mobile Media Alignment strategy, of creating and distributing media in a particular place, this Fort Vancouver Mobile video reconstructs the arrival of the story's protagonist, William Kaulehelehe. His new home in the Pacific Northwest is much different than the one he left in Hawai'i. The period Hawaiian chant at the start of the video therefore transitions the context of the situation from a hopeful, new-day-is-dawning theme to the rigid English doxology, representing a dramatic change in culture for Kaulehelehe and foreshadowing troubles ahead. The mobile app user receives this video at the very doorway that Kaulehelehe enters, offering little in terms of expositional framing but instead allowing the user to create an immersive context-building experience through the augmentation of the physical scene. (c) 2012 by Fort Vancouver.

can become. When many people use an augmented place, broad patterns of use emerge, and common actions repetitively appear, which can indicate to designers the richest opportunities for serving those users. When designers understand their audiences in great depth, or at least better, they can create more useful designs and more engaging experiences.

Contextual awareness, through such data gathering, provides virtually unlimited potential for contextual alignment or the precise matching of mobile media design to user's needs in place and in customized configurations. This type of alignment also is the most complex, dependent upon recognizing and serving needs that sometimes are motivated by desires not even conscious to the users. Related activities can be physical, psychological, social, etc., and they can tap into any number of technological resources in the vicinity and be accessible, connecting with mobile media that has been extracted, interpreted, and prepared for just that moment.

With mobile media, as with archaeology, context is essential, though, and an archaeological metaphor could be helpful for explaining this level of alignment, through envisioning the digital fragments that exist, signifying life past and present, and how those shards of people, places, objects, events, and activities—spanning space and time—can coalesce around a location through curation and imaginative design, and through precise arrangement become aligned with the user's specific needs. While any user can discover meaning in a mosaic, contextual alignment means a mindful and purposeful placement of these parts, based on location, embedded in an augmented place that begins with an understanding of the GPS-precise spot on earth being enhanced by mobile media, then recognizes the nearby affordances of the area, and finally, from the viewpoint of a designer serving a user, incorporates all of the data available about the user and the location to tailor contextually relevant and rhetorically resonant mobile media.

Conclusion

Looking through the augmented reality lenses of mobile devices, anyone can see that something, in a general sense, is slightly off-kilter. Beyond pixels not lining up just so, something deeper in this type of platform is out of registration and needs calibration. Many people have predicted that augmented mobile media will be great because it can present dynamic new ways to experience what is all around us, through elaborate sensory extensions, and that

could be a powerful ability indeed. Embodied and present, mobile-device users inherently are immersed in dynamic juxtapositions of digital media and the physical sensations of the environment. They have fallen into an unpredictable and peripatetic swirl of information, technology, and haptics, gradually being understood as an augmented reality. Scholarly researchers, though, still are struggling to make sense of these complex mixed-reality situations, particularly from a theoretical perspective. Augmented reality is not a stabilized concept yet, either in terminology or technology. Compared to other platforms, such as social networks, it is not in widespread use. That novelty, at this point, might accentuate its effects and true potential and send researchers down wrong paths. Yet these paths need to be walked to discover what augmented reality will eventually deliver.

Mobile media alignment might be a way to positively affect a sense of emplacement, or an embodied and situated sense of place, and develop the sense of a “thick” authenticity to an augmented experience. Designers control such development directions through the curation of materials, the design of the experiences, and the arrangement of the pieces as they make them accessible through the interfaces they also create. But the users are the judges. They assess the augmentation and determine whether it works for them, or not, and in the hyper-competitive world of mobile apps, they vote with their fingers, every day, all of the time, by either using an app or swiping it away and discarding it.

Embodied and present, mobile-device users inherently immerse themselves into these mixed-reality environments, just by turning their devices on and experiencing what happens next. The unpredictable and peripatetic swirl of information, technology, and haptics can be disorienting and overwhelming. Scholarly researchers are struggling with how to make sense of such complex situations, particularly from a theoretical perspective. Mobile media alignment, at this stage, is an idea that could lead people, especially designers and users, toward a new perspective on augmented reality and the augmented places it can create. Such an initial framework, though, once extended as in this chapter, and, ideally, further refined through dialectical discourse afterward, needs to be put to the practical test.

If this idea creates an increased awareness of the importance of aligning mobile media with location, the spatial surroundings, and context, then that is a start. If this idea leads to an operationalization of the concepts, sys-

tematic interventions, and empirical data to establish the edges of its value (or lack of value), even better.

From the mobile media alignment perspective, designers should focus first on the user's needs in the location. The potential for users and fulfilling their needs in the spatial surroundings should be considered next, and then concern should be on the specific context of the user and how that context could create and predict needs, but also how it could fulfill those needs in dynamic and interesting ways, always tethered to the distinctive features of the location. The impression should not be made, though, that this is a linear process. Instead, the vision of mobile media alignment is of a design process that grows more complex, as it rises through the tiers, only to circle back around to location and continue through the process again and again for refinement. In short, if the designer does not have a great grasp of location, then any work on spatial or contextual issues would be flailing at the wind. Through each cycle of iteration, though, the designer should gain greater understandings of the place and the value of the augmentation, and get better and better bearings.