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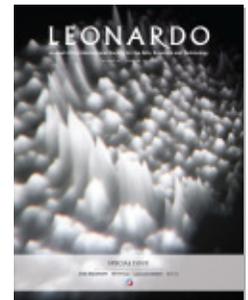
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## Dynamic Sites: Learning to Design in Techno-Social Landscapes

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# Dynamic Sites: Learning to Design in Techno-Social Landscapes

*Dermott McMeel  
and Chris Speed*

## PROJECT OVERVIEW

In this paper we explore the technological, collaborative and representational levels upon which interdisciplinary activities operate by scrutinizing a design project seeded with artistic as well as architectural stimuli. Our test case is a student project that took place at Edinburgh College of Art over a 9-week period within an undergraduate Bachelor of Art course in landscape architecture. Within this particular project, students were asked to conduct a site survey. We gave these student designers freedom to question and reconsider what traditional sites are, using the word *site* very generally to encompass web-sites, locations and positions. We also removed any notion that this survey would inform a subsequent architectural intervention. Released from this notion, the group was free to explore unconventional aspects of space as well as its traditional architectural constituents.

Students were invited to study aspects of place that are marginalized in typical design discourse and difficult to represent in traditional paper-based mediums—namely, the temporal, transitory and social. We encouraged the students to consider the temporary elements of space and asked them to consider place through de Certeau's notion of the *everyday pedestrian* [1], exploring how people and routine cause space to evolve qualitatively over time. According to de Certeau, space is distinct from place: "It is in a sense actuated by the ensemble of movements deployed within it" [2]. Stories are central in this translation; the nuanced melding of place (*lieu*) and its occupation by "stories" both creates and activates space (*espace*). Participants were introduced to work from beyond the discipline of architecture to provide grounding in architecturally unconventional representations. Artist Janet Cardiff's binaural recordings representing the spaces of East London were used to demonstrate how space can change over time, and Christian Nold's work was used to show how place can be depicted through experience. To further assist with the representation of these alternative aspects of architectural place, the group was introduced to a raft of contemporary digital tools that included GPS, CAD, MediaScape, blogs, YouTube and Flickr.

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## ABSTRACT

This paper investigates interdisciplinary research through an urban design project and explores the creation of broader architectural representations of place. It advances the case made by McCarthy and Wright for developing deeper associations between experience and technology. Drawing on artist Janet Cardiff's media representations of space, design students were challenged to represent richer descriptions of place that include factors such as temporal and spatial resistance, experiential laminations, and social linkages and their gaps. Findings support a view of design and transdisciplinarity as potentially compelling modalities for research in these complex contexts, discourage bringing technology to center stage and encourage propositions that recommend looking beyond the functional and attending to personal and social facets of our interaction with technology.

As the course advanced, students were encouraged to use these tools to reflect on their progress and their findings.

## Tools of the Trade

In addition to introducing the students to standard CAD tools such as SketchUp and AutoCAD, the course drew on digital art to create a broader platform of representational apparatus that included GPS, MediaScape, Max/MSP and Adobe Acrobat. Along the way we, as the course organizers, committed to teach new software such as Rhino and to improvise web applications that addressed designers' emerging needs. We designed the application GPStripper <[www.variablefrog.co.uk/GPSParser/](http://www.variablefrog.co.uk/GPSParser/)> for the specific purpose of stripping the XML tagging structure from GPS data so that it could be manipulated within 3D computer modeling software. These tools were utilized for manipulating, interrogating and ultimately visualizing gathered data. No single prescribed working method proved appropriate for all investigations. Typically several of the above software tools were tried and tested before a student was satisfied with the articulation of place and space.

Besides technical platforms, the class was also provoked with critical perspectives on technology and creativity from the domains of art, architecture and informatics. They were exposed to the work of Mark Burry [3], which utilizes technology for design innovation through the use of rapid 3D prototyping and computer programming. This stimulates what Burry calls "digitally sponsored collaboration" and promotes tacit events such as creative problem-solving. In contrast, we presented the students with more prescribed mainstream collaborative tools such as Building Information Models (BIMs) and other software for mediating design and construction that monitor explicit programmatic activities. From the discipline of art, students were exposed to Janet Cardiff's binaural recordings, which add layers of sound and narrative to conventional places chosen by the artist. For listeners to these recordings, the distinction between real experience and the artistic intervention into real experience is blurred. Christian Nold's biomapping work [4] uses GPS and body sensors to map visceral bodily experiences of stress by city dwellers; these mappings are then uploaded to Google Earth. These provocations were used to demonstrate the merging of technology, experience and space through an artistic lens and the examination of technology through extreme or playful engagement resulting in surreal or

unexpected juxtaposition of experience, space and emotion. Together with these emotive and fluid descriptions of place, the students were challenged to consider the value of emotive spatial perspectives and rethink conventional methods of architectural representation.

### The Aim

The project was motivated by the proposition that space has dynamic as well as static components. While the static is well represented within architectural documentation, the dynamic is not. Static geometry continues to be exposed to considerable scrutiny within design theory [5]. However, social anthropologist Michael Thompson, having studied complex social phenomena and value systems, draws attention to the phenomenon of the *culp catastrophe*, wherein accretions that naturally build up within and around a static, inflexible system eventually cause the system to fail—a necessary event to “reset” or return the system to some form of equilibrium [6]. According to this view, dynamic constituents within a system are highly valuable, as they ameliorate the inherent brittleness in static systems and help prevent catastrophic failure. We see examples of this in popular literature; Robert Pirsig, in *Zen and the Art of Motorcycle Maintenance* [7], explores static/dynamic dichotomies using motorcycle engines. Gaskets, chains and shims are dynamic devices that attend to the imperfections in a system’s static constituents. These mechanisms can be tuned, tweaked and replaced as they

eventually wear out; in their absence, major engine components would experience catastrophic—and often dangerous—failures, resulting in prolonged and expensive maintenance. In later writing, Pirsig specifically explores the complex relationship of these two elements [8]. Within architecture, it is not only static architectonic elements that contribute to spatial quality; the dynamic constituents, such as de Certeau’s stories of people, activities and routines, also influence place. These activities change over time, and so do their support for and resistance to amenities and commerce.

Returning for a moment to our contemporary workplace, the accretion and deletion of amenities can unexpectedly influence working practices, efficiency and creativity. Management and systems theorists Brown and Duguid provide compelling examples of this, such as a maintenance schedule that seriously affected repair productivity [9]. During their time at Xerox Palo Alto Research Centre (PARC), they observed a suspension of the morning briefing for photocopy repair technicians. Each technician instead received his daily schedule at home, reducing travel time and increasing time allotted to repair. However, after productivity fell dramatically, it was revealed that coffee before the morning meeting was actually a key knowledge transfer occasion, when the group shared stories, experiences, problems and solutions, ultimately making the technical team a more effective collective body.

The aim of this project was to appro-

priate new technologies that are more attuned to representing place through its invisible, fluid and arcane components and to create a site survey attending to dynamic and temporal aspects of space.

### THE ARTISTIC LENS

Heidegger articulated the benefits that may be gained from juxtaposing the artistic and the technological. He was critical of attempts to critique technology on the basis of its provision of functionality. Heidegger proposed that technology—like art—be critiqued only through personal or group interaction. Rather than simply providing utility, he argued, we enter into a relationship with technology, which attaches additional layers of complexity to our activities. To interrogate technology, Heidegger wrote against focusing on technological affordances and scrutinized technology from an artistic perspective [10]. Resistance to the utilitarian understanding of technology has also recently been advanced by McCarthy and Wright [11], who point to experiential and emotional associations between the tools we use and the activities for which we use them.

This suggests that introducing new technology into a process will have nuanced effects beyond the anticipated added functionality. To return to the domain of design, such interventions in the realm of human activity can have unexpected consequences within creative processes by influencing what Evans, pointing to the difficulty inherent in mapping precise causal relationships within intricate processes like design, calls “complex constellations of activities” [12]. Typically, viewed within a natural-scientific framework, investigating technological interventions and changes within complex systems is problematic. Variables must be analyzed and reduced so that quantitative data on the effects of a technological intervention can be gathered; the introduction of new constituents can have unexpected effects on causal relationships, invalidating the research. However, if we suspend this scientific framing of design and again make use of the artistic lens, introducing technology and increasing uncertainty is not necessarily problematic. In the following section, we discuss how accident and the uncertain can instead become opportunities for creativity and newness.

### Embracing Randomness

Lewis Hyde has explored this association between coincidence and opportunity. He uses the study of Native American and

Fig. 1. Nicholas Gruter’s spatial and temporal map of his journey between work and home. (© Nicholas Gruter)

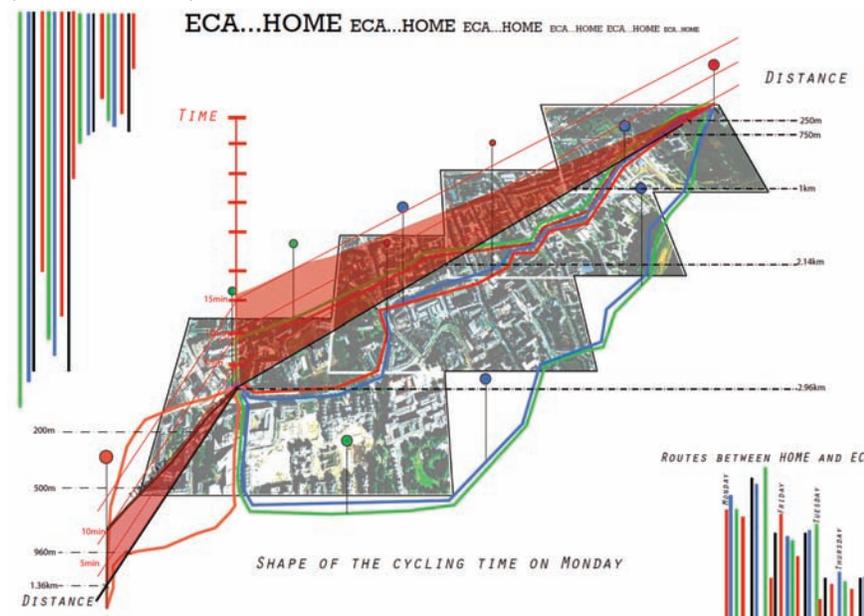




Fig. 2. (left) Handheld iPaq. (right) Participants experiencing “emotive” space. (Photos © Dermott McMeel)

African trickster figures, who are inherently opportunistic, to illustrate cross-cultural associations between creativity and locations—such as the crossroads—that sponsor chance and randomness: “In the Yoruba religion [this] phenomenon is well worked out in the figure of Eshu, who dwells at the crossroads, the classical focal point of true coincidence” [13].

In *Difference and Repetition*, Deleuze claimed that communication across discrete systems generates new larval or embryonic systems. He suggested that when something passes between discrete systems, “events explode, phenomena flash, like thunder and lightning” [14]. Coincidence and newness are associated in a variety of domains. In the biological sciences, the association has been advanced by Jacques Monod [15]. In the artistic realm, these elements have been brought to center stage by Janet Cardiff. Cardiff records material to be played back at a later time. In the process, the patterns and rhythms of place are blended with narrative and suggestion from the recordings. Each listening provides new juxtapositions between the recording and the changing place, providing fresh opportunities for new experiences while listening. It would be misleading to suggest that this work relies solely on chance and juxtaposition; exhaustive planning has gone into many aspects of these projects. However, we must partially attribute the success of Cardiff’s works to the unexpected results that emerge from the binding of experience and technology.

### Technology as Creative Catalyst

Technology that deadens and sterilizes the design process continues to be the subject of much debate; recent devel-

opments in BIM software have caused Yessios to voice concern regarding the implications for design [16]. Geometric and informational requirements are rigidly prescribed in BIM applications, usually without consideration for personal preferences and the social processes inherent in creative working. According to research by Plume and Mitchell, more often than not models constructed for the design and documentation processes need to be reconstructed before they will work accurately for BIM applications [17]; the modeling processes are so heavily prescribed that it is more efficient to discard the design model and build a new one. Technology often comes to center stage when it becomes unexpectedly problematic; nevertheless, this does not necessarily preclude the possibility that it may occasionally produce positive effects. Technology can stimulate innovation by promoting new forms of

interaction, although such accidents often go unnoticed. The artistic lens is thus a valuable tool that resists expunging chance or centralizing technology during design activity. Within the interdisciplinary landscape of art/architecture, technology does not necessarily sterilize and deaden innovation; we show in the following section how it can be a creative catalyst, allowing design processes to incorporate entropy, chance and accident.

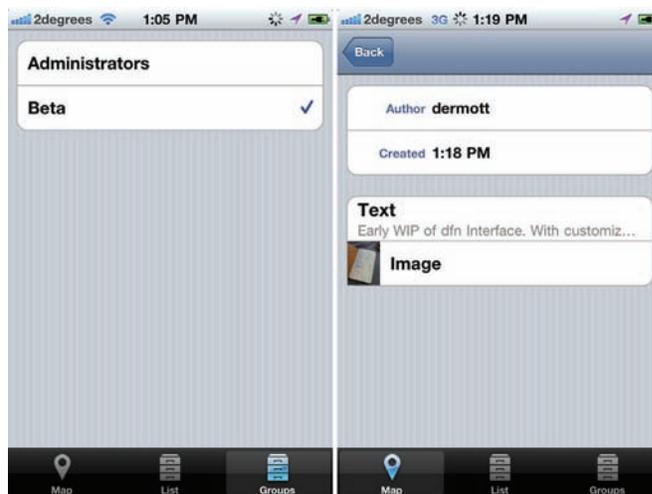
### GAPS AND COLLISION

In two projects, the themes of the “gap” and “collision” were brought to center stage. Within the language of design, gaps are perceived as problematic remainders of imperfect mathematical organization and a reminder of our lack of ability to bring order to complex environments. The gap is a more interesting proposition when viewed from an anthropological perspective, however. Hyde suggests that imperfections and uncertainty within a relationship offer the potential for creative play. He is quick to point out both the “way” and the “no-way,” suggesting that there exists no simple prescription for creative success, only its potential:

Out of the friendship of Ifa and Eshu (like that of Apollo and Hermes at the end of the Homeric Hymn) we get no tragic opposition, then; we get, rather, the creative play of necessity and chance, certainty and uncertainty, archetype and ectype, destiny and its exceptions, the way and the no-way, the net of fate and the escape from that net [18].

During the project, students appropriated different spaces, places and technologies throughout the city, which created programmatic gaps. These unresolved

Fig. 3. The digital fieldnotes app: screenshots of (left) the group selection screen and (right) a typical “fieldnote” containing both text and image. (© Dermott McMeel)



and untidy gaps became the catalyst for new interactions made possible over time and space. Below we discuss the collision of two separate projects, the energy that was released and what the results can reveal about design activity.

### Collision and Opportunity

Dichotomies, tensions and their negotiation are stable fodder for scholarly writing. In the novel *Crash* [19], J.G. Ballard brought our obsession with collisions into mainstream literature. The protagonist Vaughan experiences sexual arousal when involved in car crashes—literal and metaphorical collisions of sensations. As a locus of energy—either destructive or creative—collisions are a potent metaphor for opportunity.

The location for our creative accident was the Meadows, a popular public park in Edinburgh that is heavily used by pedestrian traffic. Two individual projects used GPS and audio/video recording equipment to survey different characteristics of the park. Nicholas Gruter mapped his personal journey to and from college across the Meadows each morning (Fig. 1), and Vladimirs Guculaks documented the use of the space by several dog-walkers (Color Plate F). In addition to recording their GPS routes, both students also recorded audio and video material, which they later combined to create media-rich representations of the experienced phenomenon. While both projects withstood the theoretical and technical scrutiny they were exposed to, it was the unexpected collision of the designers' two projects that caused particular excitement and became the locus for a discussion during the project review.

### Chance Accretions

One morning, while the two designers were working independently, documenting their journeys across the Meadows, it happened that they were in the same place at the same time. One was documenting a leisurely bike ride across the park, the other experiencing heightening stress and anxiety as he tried to GPS-track playful dogs around the park by running after them. Gruter's serene and relaxing bike ride was disrupted as a swearing and out-of-breath Guculaks crashed into the narrative. This "collision" left audio and documentary traces of each project on the other. Unexpectedly, this collision became the center of interest to the audience during the review several days later. When an audio recording of one designer's swearing and frustration with his documentation process was played within the context of

the other project there was an eruption of laughter. This served as a catalyst for further discussion that explored the capacity for digital systems to correlate individual timelines and connect otherwise disconnected social networks.

We will couch our observations in terms of chance and creativity. Bakhtin has commented extensively on medieval Carnival [20], which, unlike its modern counterpart, was not a holiday spectacle but a potent creative event. During Carnival, existing social conventions were suspended, creating new forms of interaction and the opportunity for a chance encounter. This suspension of social conventions created gaps not present in everyday discourse, which resulted in creative opportunities when participants chanced upon gaps and exploited them.

The collision of these two projects was a minor occurrence within the overall activities of both designers, and its recording could be seen as somewhat incidental. Still, the technology provided a scaffold that could present this temporary occurrence, and a commonplace design review was transformed into a

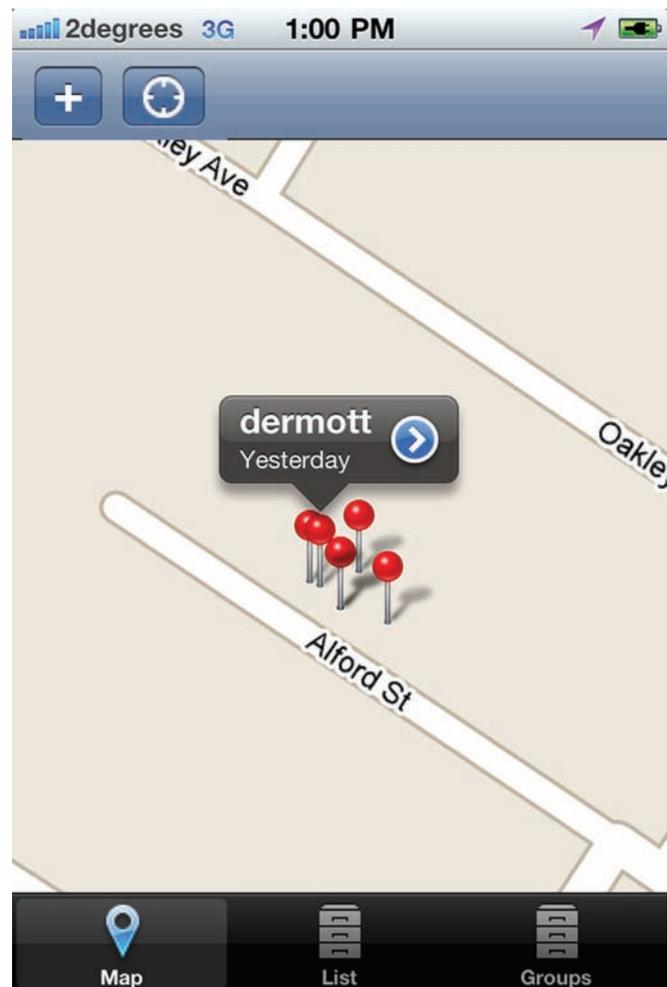
critical review of technology, temporality and space. As Brown and Duguid attest [21], the social accretions that accumulate around technology above—which we briefly discussed in the Aim section—are potentially more valuable to the creative discourse than its functionality.

### INNOVATION

Although this example of accident and innovation is somewhat anecdotal, it draws attention to the value of chance and randomness during creative activities. The organizational benefits of ordering and structuring working procedures, for example rigorous documentary format for recording official information or a strict protocol for communication, have been widely documented [22]. However, these structures can also sterilize design activity by isolating constituents and prohibiting accidental social and creative accretions, like the ones we observed during Gruter's and Guculaks's projects.

McMeel [23] has reported elsewhere how the organization of construction makes it progressively more difficult to

Fig. 4. A typical cluster of notes added at a meeting of a group of several users. (© Dermott McMeel)



cross-collaborate; this potentially prohibits chance encounters and the prospect of creative opportunity. The site meeting perhaps remains the only opportunity for communication across the independent disciplines and arguably the only opportunity to support the emergence of new larval systems. The technology—GPS in this example—provided a platform for cross-communication between Gruter and Guculaks. This supports assertions made by both Hyde [24] and Monod [25], who claim that cross-communication and contamination are vital for opportunity and newness. This draws attention to the arcane social life of design and construction, which may be marginalized through the adoption of organizational procedures. These procedures enable explicit facets of design and construction to be quantified, monitored and documented, which assists with maintaining progress. However, this project suggests that informal networks that come to exist within the process may have a profound influence on tacit aspects such as innovation and creativity.

## EXPERIENCE AND DIGITAL LIQUIDITY

In this section we turn our attention to another project that explores trace and digital media. This theme resonates with claims made by sociologist Zygmunt Baumann, who argued that modernity's legacy is liquidity: Lives, roles and social relationships are more changeable than at any point in recent history. This fluidity has been enhanced further by mobile technologies and our ability to work while in transit or collaborate across time zones and socioeconomic boundaries. However, the digital has a tendency to leave trace—another legacy of Baumann's liquidity. With this digital memory, our devices remember passwords and welcome us by name onto shopping websites.

Recent developments in GPS and RFID (Radio Frequency Identification) establish platforms of new technologies that create potential for fresh technological mashups. These technologies do not create enveloping virtual environments such as Second Life; rather, they attend to the minute detail of experience and construct an extensive, rhizomic interconnectedness. The science fiction author Bruce Sterling has termed these technologies *spimes*; they are not external or virtual manifestations that impress through their scale and complexity. They are revealed experientially and experienced emotively, as in the following project.

### Digital Liquidity

The Meadows in Edinburgh was also the location for this response to the brief. Charlotta Eriksson chose to challenge conventional representations of space by selecting a place and depositing a “digital trace” of that place in the Meadows. The chosen location was a café located 200 meters away in a quiet area that was not heavily used by pedestrians. Drawing from Baumann, this response was intended to put in question the concrete nature of space by leaving digital traces of other places in the Meadows. The technology that suited Eriksson's response was MediaScape: freely available software from futurelab that can run on a GPS-enabled Personal Digital Assistant (PDA) running Windows Mobile; in this case an iPaq was used (Fig. 2). Audiovisual material could be deposited in zones demarked by GPS coordinates. When the PDA moved into these zones, the audiovisual data would be automatically activated.

The nature of the Meadows prevented any physical architectural representation, at least without lengthy discussions with the local council. However, the technology allowed Eriksson's idea to flow around these ordinarily problematic architectural and programmatic obstructions, challenging conventional assumptions about the value placed upon the materialistic aspects of space and advancing McCarthy and Wright's proposition of an experiential facet to technology. In the absence of physical architectural representation, the emotive representation of space was brought to center stage. The sound of a conversation in Polish and provocative images of the café delivered through the PDA caused an emotional response that dominated participants' experience. With a heightened emotive connection made possible by the digital trace, the materialistic aspects of formal architectural space became nonessential.

In this project a proprietary piece of software—MediaScape—was used to deliver content. The intended experience was not hindered by prototype technology or cumbersome hardware. Instead the technology and experience contributed to an unexpected emotional engagement with a dislocated space, reinforcing the impact of stories in de Certeau's translation and distinction between place and space.

### Emotive Experience and Space

By drawing stimulus from technological and artistic disciplines, this project draws attention to the value of experience situated in the real and in the virtual. It also

draws attention to the value of emotive facets of space and place that can be augmented by technology. Within design and construction, technology usually attends to concrete, physical and materialist representations of space; this project used technology to create an augmented virtual and real experience. This resulted in an incident that conveyed emotive and experiential aspects of place. Digital technology was not appropriated for increasing the systemization, speed or efficiency of a complex process. Rather, by seeding this project with interdisciplinary provocations from the art and technological domains, we see the emergence of an emotional facet to architectural representations that resonates with artistic spatial experiences as promoted by Cardiff and Nold.

It is fitting within the context of this paper that, having appropriated the concept of photomontage from the artistic discipline, the course advances it within the architectural domain by utilizing spatial and audiovisual compositions rather than two-dimensional imagery. Virtual design and construction is well established within Second Life [26]; this test case illustrates qualitative experiential benefits from a hybrid virtual/real environment and also points toward technical platforms that can fuse them together. Using digital technology for capturing emotive as well as physical aspects of space challenges existing organizational paradigms that isolate computing for drawing, management or monitoring applications. This project supports discourse [27] calling for a broader understanding of this widening scope of technology within design.

## DIGITAL FIELDNOTES

In a follow-up project, we further suppositions regarding digitally sponsored collaboration. Currently in the process of testing, the Digital Fieldnotes iPhone application, developed by Dermott McMeel and Robert Amor at the University of Auckland, was informed by key findings from the previous examples. Namely, temporal and geographical information—although somewhat prosaic—can be effective at linking disparate personal timelines, serving as a catalyst for social or professional accretions.

The Digital Fieldnotes app is intended to create a framework based on these findings and exploits the contextual and temporal importance of informal information. The app—still in the beta-testing phase—allows for the organization of informal “fieldnotes,” which can be text

or imagery, using temporal and locative metadata. It enables the creation of groups (Fig. 3), and participants within a group can access all the fieldnotes of that group (Fig. 4).

The Digital Fieldnotes app does not presume to replace face-to-face communication; rather it is an attempt to augment it by providing access to the synergy that surrounds interdisciplinary group work and is normally obscured in the noise and clamor that accompanies it. Workshops employing the application point to even greater spatial and temporal striations than we initially anticipated. Insights on solving a problem often happen elsewhere, so an important relationship might exist between a morning meeting in one location and evening drinks in another. The app provides a scaffold more attuned to mapping these fragile spatial and temporal links.

## CONCLUSIONS

In these projects, the intricacy of the design environment and complexity of technological tools have acted as a scaffold that supported novelty and innovation. Gruter's and Guculaks's projects revealed that chance encounters can enable participants to connect through technologies to different ideas, places and times, vital stimuli for creative discourse, design activities and research. The catalyst for this creativity was the ever-present prospect of randomness and accident; these, however, are seen as problematic in traditional processes of design and construction, which are organized so as to expunge the unforeseen from their spheres of activity.

In Eriksson's project, invisible architecture and digital trace disclosed their potential to influence the design process and point to alternative representations of architecture through fused virtual/real space. Emotive aspects of one space can be translated to another in this project; unlike traditional design environments, it required no specialist design or technical knowledge. GPS technology circumvented specialist languages used in design and enabled participants to engage intuitively with a digital trace of a real place. This is of particular relevance given the recent proliferation of consumable and robust augmented reality (AR) applications for smartphones and the increasing presence of digital facets to space and spatial representation. This appropriation of technology may also ameliorate the brittleness inherent in individual disciplines' specialized lan-

guages and promote rather than hinder interdisciplinarity.

When compared to the pedagogical environment in which this project was documented, commercial design practice has contractual and legal restrictions that impede its freedom. Nevertheless, this project promotes a creative process that can engage with technology yet resist allowing it to dominate the discourse. It does not purge chance and randomness from working processes and allows freedom to attend to the arcane and nuanced aspects of a phenomenon. The Digital Fieldnotes research project capitalizes on the emergence of smartphones and mobile computing platforms such as the iPad. These platforms promote casual information densification, and access to the latter is not tied to a desktop computer. The noise and furor that surrounds social and professional networks—associated with creativity and innovation—is becoming more reliable with the proliferation of these mobile computing platforms, which has implications for the ever-increasing dataset of design and construction, decision-making and problem-solving. Design must remain responsive simultaneously to the changing social conditions and the changing technological landscape in which it operates.

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*Dermott McMeel's research is primarily conducted within the discipline of architecture, with increasing interaction between architecture, robotics, information sciences and art. With an interest in the social, collaborative, experiential and philosophical implications of digital media, McMeel seeks to advance the discussion on the influence of technology in both the design/making process and in the built environment. His current research focuses on locative media and the effect of GPS and mobile phones on the "craft" of design and construction in both commercial and educational contexts. He currently works at the National Institute for Creative Arts and Industry at Auckland University.*

*Chris Speed is a researcher and teacher working within the fields of digital architecture, human geography and social computing, developing new forms of spatial practice that transform our experience of the built environment. He is a Reader in Digital Architecture at the Edinburgh School of Architecture and Landscape Architecture at Edinburgh College of Art/University of Edinburgh, where he teaches undergraduates and masters and supervises Ph.D. students.*