Making There: Methods to Uncover Egocentric Experience in a Dialogic of Natural Places

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ABSTRACT
We reflect on two methods that explore personal experience of natural places within a human-centred framework for design. The methods attend to the meanings people make of their experiences in natural places and emotional and intellectual sense of being in a place. We use Egocentric Point-of-View video to explore transformations of immediate sensory transactions in natural places and Nature Probes to elicit affective qualities of experiences. We apply McCarthy and Wright’s dialogical approach (2005) to uncover relationships between place and self and discuss insights emerging from our methods with respect to belonging to a community through its natural landscape.

Author Keywords
Nature, place, embodiment, egocentric video, probes

ACM Classification Keywords
H5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

INTRODUCTION
We seek to elucidate personal experience of natural places to ensure a human-centred approach to technologies for usage contexts related to these experiences. Conceptions of place during design processes tend to obscure people’s emotional and intellectual sense of being in a place. Discussion of ubiquitous computing echoes with Weiser’s (1991) exhortation to pursue qualities of interactions that are “as refreshing as taking a walk in the woods”. Yet the field emphasizes a utilitarian view of space and design and urbanism towards people’s connection with place. Certain practical and socio-cultural “infrastructures” (Dourish & Bell, 2006), often linked to micro-managing time and space, are very overt in urban spatiality. We propose this may limit abstracting space in design and that considering people’s situated experiences of natural places may increase sensitivity to sensory and affective phenomena. Here, we describe formative endeavours to harness a dialogical approach (McCarthy & Wright, 2005) to uncover and depict relationships between place and self in the sense people make of their experiences of natural places.

We are creating a design framework for technologies to enrich community connectivity in tropical Queensland where the natural landscape is a distinctive regional characteristic. We aim to leverage qualities of experiences in nature that contribute to a person’s sense of themselves within a community. In the north it is not only indigenous Australians for whom natural landscape has cultural significance (e.g. Dourish & Bell, 2006). While, the bush might be a mythical place unadulterated by human activity in suburban imagery (e.g. Tuan, 1974) it dominates how people in “the regions” describe their “life-style”. The landscape is both worked, for agriculture, mining and tourism, and the primary milieu for leisure and self-expression. Currently, we have an undefined design vision of “digital patchworks” which will be compatible with people’s affective and informational experiences of natural places. This is driven by various local socio-economic and ecological needs arising from factors such as population transience and over-visitations of certain nature sites. Whatever digital patchworks may be (e.g. a situated display system or mobile guide) to enable people to “feel in place they need to engage them at the level of their personhood” (McCarthy & Wright, 2005). So, integral to the evolving design we hermeneutically refine our propositions (e.g. Strauss & Corbin, 1990) on the meanings of natural places and our methods to collect and analyse the data that shapes these meanings.

McCarthy and Wright’s (2005) dialogics refers to experience in which a place’s identity emerges from spatially-embedded interactions. It is a metaphor which distinguishes a person’s immediate experience of a place from the meaning of that experience. People’s enacted (i.e. pre-ontological) experience of place is embodied in interactions that do not separate mind, body and environment (Dreyfus, 1997). Theories of action (e.g. Suchman, 1987) refer to this in designing technologies for urban places, often supplemented by spatial frameworks (such as Alexander’s or Lynch’s). However, a place’s meaning as a construct separate from self emerges as a person reflects upon the immediate experience (i.e. ontologically) and then, personally and communally, appropriates this meaning. Thus, focusing on activity does not explicitly refer to the relationships that transform spatial settings to place. Undoubtedly, designs to support learning (Rogers, et al, 2002), navigating (Abderhalden & Krug, 2003) and communicating (Axup & Viller, 2005) in natural settings are helped by theories of action. However, abstracting a natural place as a space (Dourish, 2006) affording playing, relaxing and engaging with ecological and socio-cultural history excludes many aspects of the meaning of the experience. People’s immediate experience and interactions with nature are multi-sensory and corporeally replete. These intertwine with emotional, aesthetic, cultural, reflective, ideal, and material dimensions of experi-

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EXPLORING THE DESIGN OF EGOCENTRIC VIDEO
Potentially, automatic egoPOV recording can depict both fleeting and temporally-ongoing experiences which contribute to creating meaning during spatially-embedded interaction. EgoPOV video is likely to support interpreting the situated experience, as similarity between speaker’s and listener’s eye-movements in viewing scenes promotes comprehension (Richardson & Dale, 2005). Various wearable cameras systems (e.g. mounted on heads or in spectacles) have been used to capture activities and spatial resources from an egoPOV while mobile. Often these depict proximal objects and people during activities; for example, as people work (Mark, et al. 2001) or make decisions in urban and natural settings (e.g. Omodei et al., 1998; Bentley et al., 2005). Mausner (2006) has extended the method to gather data on multi-sensory perceptual encounters of natural landscapes. She trailed behind groups of hikers while one, wearing a camera, talked about features “which caught their attention in a special way” and especially “captivate[d]” the senses.

We explored using egoPOV to gather the detail and dynamics of engagement and intersubjective construction of natural places. We focused on different participants’ accumulated experience of places which, while not in their ordinary routines, have been visited regularly in the past. Natural places that hold memories enable uncovering ways that people recreate and augment place in managing ordinary routines, have been visited regularly in the past. The value of gathering data on momentary interactions in the specific setting in which people, think reason and act is unequivocal (Suchman, 1987). However, varied physical and social contexts accompanying movement thwart conventional methods to situate the researcher within a participant’s experience at different geographic locations (see: Hagen et al., 2005). Theories of perception of natural environments are often derived from laboratory-based questionnaires, rating scales and physiological indicators around images of natural environments (see: Sell et al 1984). These limit the immediate multi-sensory experience of nature place. In situ data on aesthetic preferences and landscape and environment assessment is often gathered by evaluating subjective responses as discrete events (e.g. surveys). However, this does not depict the contingent and ephemeral phenomena of “being in the world” (Dreyfus, 1997).

We use two complimentary, self-reporting methods to address the need for empirical data on personal experience of specific natural settings (e.g. Peterson, 1974) and the dynamics of the embedded experience. Participants in both methods express qualities of place arising in personal history and aesthetic and multi-sensory experience of nature sites. We analyse their immediate transactions with “spatial resources” (in: Dourish, 2006b) during experiences and the transformations of these experiences. To scope a range of interdependencies we avoid constraining transactions between a person and the setting by specific activities (e.g. fishing) around a device (e.g. fishing rod). Of course, regardless of simplicity, any data instrument will inextricably mediate the meaning of places depicted. For example, a place in a return from a camera probe (Gaver et al., 1999) is characterized by, and reflexively tied, to the instruction for the photo and all proximal objects the photo incidentally records. So, we also attend to relations between our methods and the meanings participants find in their interactions with nature.

We report on trialing our methods in separate pilot studies in different natural places. We first reflect upon spatio-temporal aspects of experiences of natural places in situ gathered by Ego-centric Point-of-View (egoPOV) video and audio. Next, we summarise using Nature Probes to elicit tangible interactions and affective qualities of experiences. In describing and reflecting upon our results we refrain from referring to current or imagined technologies. While such speculation makes it easier to convey the relevance of our approach to design, it distracts from the details of the complexly interwoven interactions in natural places that we seek to uncover. Instead, our discussion emphasises reconciling place and “personhood” in a dialogical approach to ubiquitous computing design. We indicate paradoxical and temporal characteristics in people’s use of spatial infrastructure. We conclude by suggesting what this means to spatial abstractions of natural places aimed to support belonging to a community.
CBD and we accessed it near Bald Rock via a causeway across a saltpan, which is, aside from bird-watchers, a starting-point for walks skirting the Range to the beach.

Participants wore the first prototype of our head-mounted video camera and microphone system. This consisted of a standard surveillance bullet cam (dimensions: 87 mm x 26 mm; resolution: 350 TV lines; lens angle: 60° horizontally, 44° vertically), and small microphones. The camera signal was recorded by a NV-GS400 Panasonic digital video camera with a colour ccd sensor (resolution: 582 x 500). Participants’ speech and some ambient sound were picked-up using two unidirectional, electret, condenser microphones. The camera recorded both audio channels and video simultaneously to simplify synchronisation. The audio was amplified to line level by a powered adapter and a custom-built small pre-amplifier powered by 12Volt batteries. The batteries, the camera and its 12Volt DC supply were put in a backpack (weight: 3.5 kg) worn by the participant. The bullet cam and microphones were mounted on a lightweight cycle helmet to provide a comfortable, adjustable and stable platform. While we showed participants the hat before going to the site, we set it up in situ easily using Velcro patches to set attitude (pitch, yaw and roll angles). The camera’s ccd was 15 cm directly above eye level and we adjusted the bullet cam to align the video image vertically and centrally with the participant’s binocular field of view with gaze ahead. It subtended approximately 33% of the horizontal extent of the binocular visual field (Dorr, 2004) and was tilted slightly downwards so its view corresponded as closely as possible to the participant’s relaxed forward gaze.

Capturing Post-Situ Retrospectives
One hour after visiting the site participants viewed their video and verbalized any additional information that came to mind. The egoPOV was displayed on a laptop computer in a university office and we recorded both participant and researcher using a tripod-mounted video. We asked participants to first view the video without audio to provoke their extending accounts rather than just ‘re-experiencing’ (e.g. Omodei, et al. 1998) the visit. Then they reviewed the material with the audio. We sought to de-emphasise any linearising effects on recall by encouraging participants to pause the video at any time and supplement verbal explanations with illustrations.

Theme Extraction
We transcribed all dialogue and open-coded video and audio for verbal content, visual content (e.g. spatial resources, gestures) and qualities (e.g. forward or lateral translatory movement) and ambient sounds. We axially extracted themes from the initial coding and used HyperRESEARCH (ResearchWare) to index and retrieve examples. Both authors independently viewed and analysed data to validate findings of one who was in situ.

Egocentric Video Themes
On average 19 minutes egoPOV was collected by each participant. Of that time, a mean of 64% of movement in the video was forward translations, from walking, and in the remainder there were lateral translations only, from head movements while the participant was standing. Only one person other than the researcher was captured in the video which reflected the absence of people in situ. Fo-cussed vision is relatively narrow (Clark, 1997) and eye and head movements are often closely tied (e.g. Land, 1992) suggesting that the video approximated to participants’ view. Timelines of video and the semantics of their verbal dialogue (e.g. Fig. 1) suggest that participants’ verbal themes are determined by what they view. Often a feature appears in the video followed by verbal thematic change and overt, reference to the feature. During walking, an average of 25% of the time the video showed the ground. This depended on the relative unevenness of the terrain traversed. For example, the video captured by an older participant walking along a stony, unpaved road and a muddy track often showed ground as he looked down to ensure safe footing. While, another walking mainly on smooth tarred paths and wooden walkways showed ground only 10% of the time.

Axially coded themes related to: familiarity with the place; family activities and concerns; social relationships; affects; aesthetics; motives for visiting; and, the rhythm of a visit. We describe these by relating them to how they draw, and are drawn by, the physical site into the dialogue. Objects participate in embodying meaning at a personal level in uniting self and place. For example, feelings of familiarity and wistfulness relate personal history to activities around specific landmarks and changes to infrastructure. We relate these themes to the use of egoPOV to enrich insight into in situ dialogue between participant, researcher and spatial resources. We illustrate these with examples that are in close temporal proximity to assist understanding amidst a diverse data set. However, these are a small fraction of the many representative examples we could use.

Video Records Scanning & Brief Glances
Different qualities of the views of objects aid interpreting what the participant is looking at. For example, when a participant says, “Never see much in the way of birds”, the video shows a scanning of the horizon as if on the look out for some. Momentary views suggest a participant glances in the direction of objects in a way that would be difficult to determine and record using third person POV. For example, while at the car park, a participant talks about using a road to “go round to Shelley Beach, a few times”. The view in the video suggests he indicates the direction by glancing at a particular end of the Many Peaks range. Sometimes repeated glances intonate or emphasise. For example, while a participant recounts her children showing their parents parts of the Creek they had discovered, the video very briefly shows fruit on a tree which 3 seconds later she begins to talk about. The fruit remains in the participant’s verbalisation and in the video except for two quick, blurred views of the walkway. Hardly pausing, she returns to a previous topic relating to improved site infrastructure, mentioning the walkway and glancing at remnants of a path.

Video for Disambiguation & Richer Interpretation
Capturing the setting on which the participant gazes enriches interpretation. The comments below take on a quite different quality when accompanied by the tranquil scene of the almost still water of the swimming hole:
Participant But this is, I mean this is just lovely here, and it's lovely at the moment because there are not many people here, but it can, it's pretty busy at times...

Researcher I can imagine.

Participant ...on a Sunday... ...lots of noise.

Researcher School holidays. ...

Participant Yeah.

Researcher Whatever. Yeah, it's just beautiful.

Participant Well this is the nicest time, because you can hear the cicadas and the birds in the background. You wouldn't hear it if there were lots of people, I suppose, would you? Now, it's gorgeous.

The video assists interpreting relations between the physical site and the mutual, ongoing shaping of references by participant and researcher. For example, a participant talks about the water level in the creek and wildlife associated with the creek. As the video turns from the creek to a first bench, the creek, the walkway, a second bench, and, briefly, a sign (see: Fig 1a - f), her remarks on "tourist-friendly..." seem to refer to the site generally, rather than wildlife (e.g. "turtles") or the immediate vicinity specifically. The video also indicated when both participant and researcher refer to the same physical cue. For example, when the participant says "...definitely, and obviously safer, with lots of danger signs" the video turns from the creek toward vegetation, a walkway and then back to the creek, suggesting the comment is about the creek, rather than other safety features (e.g. the walkway).

Indexicality & Space as Infrastructure
The video indicates that gestural eye or head movements enhance interpretation. For example, over a period of a few minutes, six sets of hills are clearly visible before the view rests on some particular hills and the participant talks about "these hills". His head orientation, shown by the video, clarifies which hills he refers to even though he never names or uses hand gestures towards them. This, reciprocally, shapes the interpretation of comments he makes later about a crumbling, disused road running along the foot of these hills. At one point the old access road is visible and at another point he distinguishes it from the track that he is walking along. Interestingly, this participant had said that it was unacceptable to point with his hand and instead oriented or gestured with his head, such as in referring to the airport. However, for other participants the video captures larger hand gestures, such as pointing upstream in the direction of a creek or at large rocks which were salient to verbal comments.

Participants’ comments related to specific spatial contexts, even when they did not name or describe salient referents. For example, when referring to increased water level after a recent rain a participant said “Well, the water just down there...” and pointed to a steep, vegetation-covered bank. The creek is not visible from that specific location and had not yet appeared in the video. At times such indexicality (Garfinkel, 1967) suggested participants assumed the researcher’s knowledge of landscape ecology or local geography. For example, one participant referred specifically to the river and its catchment without naming them when neither was in view. Careful inspection of the area later suggests the only cues would be slight differences in the relative density of trees and marginally disparate light and temperature. Thus, the shared context assumed by the indexicality does not reside in a built physical infrastructure (Dourish & Bell, 2006) such as a relationship between the creek and park facilities.

Participation of Space in Recall
Many instances of temporal relations between video and conversation suggested that information in the landscape prompted participants’ recollections. For example, as the creek comes into view, a participant shifts from talking about the walkway, on which she is walking, to recalling the creek’s water levels on previous visits. “I mean there was nothing like this here, there was no raised platform; you just had to walk on the creek bed and go down. And, of course, we’ve been at times when the creek’s been full and when the creek’s been empty.” Another participant, when looking at the Range, describes how he used to cycle along the foothills and an incident to dispose of a friend’s girlfriend’s “pretty objectionable cat” with a .303 rifle. He said the cat ran around the inside of the vehicle, on the “terrible trip” to the site, as if it knew “It was on

Figure 1. A 1.5 minute timeline of visual and verbal content captured egocentrically by one participant

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Spatial resources are appropriated to retain information. It appears that participants associated a memory with a particular feature and that feature, reciprocally, became a cue for recall. For example, when describing activities during past visits a participant refers ‘out there’ to some prominent rocks on the far side of the Creek (Fig. 1h). She draws on the reference 20 seconds later, when she has a clearer view of the same rocks. As she points at the rock with her hand she weaves them into previously described themes (e.g. walking across the creek, the children’s activities).

Spatial resources may flexibly extend a verbal theme or provoke recall of a similar feature. For example, a participant referred to a path when returning to a theme about the site in the past. Simultaneously, the concrete structures of a picnic table besides a path appeared behind some foliage in the video (Fig. 1o). Much later it became clear that this path is not the part of the ‘old path’ (Fig. 1p); however, the participant did not correct herself and seemed committed to using it to describe the site historically. Paradoxically, she had previously noted scrambling down banks and over pebbles because there was no path or walkway. This may relate to recalling changes to the site that accumulate for visits over several years. It also shows that spatial resources as retainers for memories and indexicality are dynamic.

Visual spatial resources seem effective in cueing recall of less intellectual aspects, such as affects. A participant said quite wistfully that whilst she enjoyed seeing the site when it was so peaceful, she would especially enjoy visiting it when families were there to remind her of visits with her own children.

**Temporal Relations in Spatial Dialogics**

The participant’s verbal theme interchanges occur frequently yet coherently. For example, in a period of about 2.5 minutes, mostly while moving forward a participant talks about: Her children’s history of visiting Cockatoo Creek; A sighting of a specific seasonal vegetation and her family’s past interaction with it; The site as it was before and is now; The state of the creek; Wildlife seen; Improved tourism friendliness; The state of the creek and its seasonality; Her children’s activities relating to the creek and wildlife; The state of the creek (again); Her children’s wildlife collecting activities; and, The site as it was before and is now (again).

Temporal relations between visual and verbal content suggested that objects in the landscape contributed to extending verbal threads. Momentarily, verbal themes significantly differ from the visual content. They retain a sequential fluency while the participant encounters the landscape visually along several different themes. However, verbal fragments appear to result from the visual interaction. For example, when the creek appears in the video for the first time, the participant’s dialogue smoothly but rapidly transitions from referring abstractly to ‘the creek’ to more direct, descriptions relating to ‘it’. As she walks along the walkway in view of the creek she remarks on the creek’s wild-life and depth relative to the walkway. Then the video briefly shows two benches (Fig. 1a & c) and the participant returns to noting changes to make the site more “tourist-friendly. A glance at a sign (Fig. 1e & f) with information about local wildlife may have provoked her to refer to safety and danger signs in adding to her comments on tourist oriented enhancements. Potentially, it may also relate to two warning signs (crocodiles, slippery rocks, strong currents) that she passed some minutes before but did not, at that time, remark on.

Temporal relations between the participant’s comments and the video during review indicate that visual resources extend verbal threads in multiple ways and cue recall of a ‘holistic-intuitive’ (Omodei et al., 1998). For example, a participant notices a main information board when viewing video without audio (Fig. 2). She talks specifically about the board in the context of changes to the site and its lack of facilities in bygone times provokes musings on how the family learnt about it. She assumes someone else told them and then recollects that they met people and found out about Alligator Creek via parents associated with her children’s schools.

**Future of EgoPOV Recording**

The range of data collected in EgoPOV suggests benefits from the basic method. However, concurrently exploring the design space in evolving propositions enables us to respond to participants’ comments on methods. One felt that, provided there were few people about, she might feel freer and less constrained to ‘entertain’ the researcher by recording her EgoPOV alone. She also said that she might articulate different details if families had been present or she had been accompanied by her husband who shared her past visits and would have supplemented recollections.

We are currently trialing a prototype panoramic camera system and wide-screen video review. All participants remarked that their 3-D in situ field of view seemed compressed in the video. One participant was struck by the size of a prominent landmark in the video during the postactivity review. He looked towards Castle Hill frequently in situ without commenting on its size; but remarked that it appeared to be ‘not much more than a pimple’ in the video (Fig 3a). It seemed he had a particular view of it as a very large rocky structure so afterwards we asked him to take a photo of it as he might have it in his ‘mind’s eye’ (Fig 3b). He regularly sees it from a variety of angles and sent us a view as he normally sees it whenever he leaves his residence at its foot. Wide-screen video seems likely to address this. Additionally, we collect data in the peripheral field and more ambient qualities using 3 simultaneous cameras to encompass the horizontal extent of the field of view. “Excessive footage” of the ground (Maunsen, 2006) represents the embodied experience of a place.
with uneven terrain. However, to capture the view that a participant might glimpse at even when their head remains lowered we have added a 4th camera on top of the hat that extends the vertical sub-tense.

**Probe Returns & Themes**

The activities influenced probe returns and participants’ descriptions in several ways. Participants returned from the Friday Walk with a fragment of glass, a breezeblock brick, a flat stone, and a rusted iron rod; and in the Arts Workshop, pods, earth, a branch and a variety of leaves, creepers and flowers.

**Tangible Aesthetics & Tactile Interactions**

Participants tended to speak appreciatively of the objects even if the associated feelings were not positive. They indicated particular, often subtle, lustres, colours, shapes and textures. For example, participants noted with particular pleasure the form factors of the spiraled iron rod and a creeper. Participants’ tactile engagement with objects during their explanations depended on the context of the discussion and their proximity to each other or the researcher effected. With only a researcher present, participants often placed the object on a desk or handed it to the researcher and pointed towards it. In contrast, when seated around other participants they generally held the object in one hand and moved the other hand and fingers around its features (Fig. 4).

**Relationship of the Probe to Land, Affect & Self**

All participants in the Friday Walk explicitly referred their objects to specific aspects of their destination. The fragment of glass was referred to as “finding something from the ground” and the stone conveyed sadness that the hill should “belong to everybody” but now the formerly publicly-accessible property was private. Two participants returned rubble of the building; the brick indicated its state as “unfinished” and “not pristine” in a similar manner to the iron which, skeletally, “sticks out from the top all around the building”. Several participants in the Arts Workshop also described the context of their return, for example saying a large fern “stands out against the other foliage” and demonstrating the way a creeper hung from a tree. When the researcher asked Friday Walk participants why they had returned a man-made object all indicated that their destination had particularly characterized their walk.

Affective responses to physical objects have both potential for expressing individuality and sharing understanding. Over both days of the Arts Workshop four people used Poinciana pods to describe quite different emotional states (Fig. 4). For example, one described being full of potential, while others described “cleaning all the dirt that has built up”, or being “exhausted”. These related to different features of pods, such as torsion in a twisted husk, smooth lustre inside the husk and the presence or absence of seeds. Some interactions referred to personality, for example a participant compared the unobtrusive slender leaf to herself “during in the week” but its dazzling, coloured tip to herself “at a party”. Despite such individuality the objects seem to support empathizing with associations. For example, when the researcher had not been in situ participants’ references to objects were evocative of the “spooky” aspect of the castle suggested by the iron rod or a “discovery when you go on a trip” by the tiny fragment of glass.

**EXPLORING THE DESIGN OF NATURE PROBES**

We were inspired to pilot nature probes to provoke research propositions by issues arising in EgoPOV recording. Participants capturing EgoPOV spent more time on tracks and walkways, rather than trundle across or sit on plant growth or rocks. They were not as bodily involved with nature’s materiality as they recalled in their personal histories of the site. Thus, Participant’s use of the built physical infrastructure obscured other possible tangible, visual-kinesthetic interactions. The nature probe aims to increase the scope for depicting qualities of the multi-sensory experience and specific, self-reported meanings. Probes accumulate diverse qualities of places across geographically dispersed participants. For example, video clips can gather remote data on ties between people, activities and localities (Isomursu, et al. 2004). Probes offer glimpses into spatial resources for verbalised and non-verbalised interactions and experience; such as a photo of a summit used as a rendezvous by friends might appear in a rock-climber’s scrap-book (Rouncefield et al 2005).

The nature probes simply involved participants returning an object which conveyed a significant feeling from a nature experience.

**Probe Methods**

We explored nature probes in two different contexts that arose, serendipitously, in pre-arranged activities. In both, participants returned from walks in nature with an object that in some way expressed emotion. This could be anything at all about their feelings before or during their walk and did not have to be connected to the environment or the activity. We asked school of IT staff members to bring back an object from a walk on a Friday afternoon. The participants, two females and two males including academics and administrators, had arranged the informal activity to mark semester’s end. Their 2-hour walk from the university’s rural Cairns campus followed a path up a rain-forested hill to a dilapidated building (locally known as “the castle”). Upon their return, they individually showed the researcher their object and explained what it was about it that represented their feelings. Over two consecutive weekends one of the authors participated in an Arts Workshop with 9 others in the Daintree World Heritage Rainforest. Participants were women, aged between 20 and 70 who were interested in meeting others in the area and learning new skills (e.g. painting, pottery, creative writing). At the beginning of both days each woman spent 15 minutes finding an object in the natural setting; then, sitting in a circle, in turn they explained to the others how the object signified their feelings.

**Probes & Nature**

On all days we made direct links between the objects participants brought back and the nature探es. Probes offer glimpses into spatial resources for verbalised and non-verbalised interactions and experience; such as a photo of a summit used as a rendezvous by friends might appear in a rock-climber’s scrap-book (Rouncefield et al 2005).

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**EXPLORING THE DESIGN OF NATURE PROBES**

We were inspired to pilot nature probes to provoke research propositions by issues arising in EgoPOV recording. Participants capturing EgoPOV spent more time on tracks and walkways, rather than trundle across or sit on plant growth or rocks. They were not as bodily involved with nature’s materiality as they recalled in their personal histories of the site. Thus, Participant’s use of the built physical infrastructure obscured other possible tangible, visual-kinesthetic interactions. The nature probe aims to increase the scope for depicting qualities of the multi-sensory experience and specific, self-reported meanings. Probes accumulate diverse qualities of places across geographically dispersed participants. For example, video clips can gather remote data on ties between people, activities and localities (Isomursu, et al. 2004). Probes offer glimpses into spatial resources for verbalised and non-verbalised interactions and experience; such as a photo of a summit used as a rendezvous by friends might appear in a rock-climber’s scrap-book (Rouncefield et al 2005).
to draw on spatial features to disambiguate and interpret not cease after data collection as the researcher continues source researcher in the evolving "socially. Indexicality reveals the participant involving the dialogic occurs repeatedly as for any embodied phenomena, is not measurable by a digital abstraction that enables a user to move fluidly through this bricolage. For "digital patchworks" of natural places we are alert to the consequences of the fictive constancy of place for community integration through natural places. Consider the changing emphasis on different cultural infrastructures in landscape as a newcomer is initiated into, and relates their self to, a community. Obvious physical infrastructure, such as the Parks Authority’s tracks, may reassure or disappoint the newcomer when contrasted with their imaginings of the bush. But as place and self transform such infrastructure recedes in awareness and the sense of being in the place relates to spatial resources tuned by other infrastructures. For example, a sense of belonging may be embedded into rocks, metaphorically “worn” smooth, by remembering children using them to slide into pools. Thus, our methods have revealed to us a temporal characteristic in a person’s use of the layers of spatial infrastructure that contribute to a sense of being in natural places. We believe our challenge is discover how to design a spatial abstraction that enables a user to move fluidly through this bricolage.

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