Pathways & Paws(es)

Engaging human–animal partnerships for community building and slow cities

Jane Turner[†]
Design Lab, QUT
Queensland, AU
j.turner@qut.edu.au

David Browning
Topository
Queensland, AU
david.browning@me.com

Ann Morrison
Digital Life Lab, USQ
Queensland, AU
ann.morrison@acm.org

ABSTRACT

We report on an early design concept that focuses on how we engage with our contemporary urban environments along with animal companions. The project recognises that dogs and dog walking both contribute to mental and physical health and well-being, and builds on a growing awareness that companion animals and walking in urban localities also fosters community cohesion and social capital. We put these themes together in the context of designing for Queensland's growing senior population with the intent of gaining insights into connections made through place-making activities of human and animal companions.

The project is currently in its exploratory design phase as 'grounded' practice-based work with on-going emerging insights to underpin the development of a design scenario and cultural probe. We begin with insights generated from personal experiences and a desire to foster age-friendly, intergenerational 'slow' urban environments. This paper offers the background and context, and then considers some of the design dilemmas. We share an early design concept that draws on lessons learned from game design and theories of place-making that has the potential to reveal experience in place (for both humans and our animal companions).

CCS CONCEPTS

• **Human-centered computing** → **Design** • *Human-centred computing→ User centred design*

KEYWORDS

Age-friendly Cities, Animal Interaction Design, Experience visualisation, Intergenerational cities, Place-making, Slow Cities

1 Introduction

Pathways and Paws(es) is a early stage design concept which intends to understand and reveal the activities of both humans and animals as re-coupled 'citizens' of our designed urban environments with a view to understanding this activity and perhaps find ways to foster local community building. The separation of human and animal has been long problematised [13] and recent work in HCI [7, 15, 17] does much to draw attention to new ways of understanding ourselves as humans in a world with other sentient creatures. At the same time, there is a growing awareness of the need to design for 'slow cities' [8, 24] where opportunities for community cohesion and place-making are prioritised. In order to find ways to scaffold the slow cities vision, we started with our own experiences of being seniors (and designers) who enjoy walking our dogs in our local communities. The phenomenon of the community exchanges that occur when we take the dog for a walk inspires our wonder [18]. Such exchanges are invariably intergenerational; they are frequently regular and we typically see the same other walkers as part of our dog walking routines. We get to know these other walkers through our dogs and dog-based exchange can sometimes be the main touch point with community during the day. This gives us our initial point of focus [9] from which to allow theory to emerge [10].

The point of focus also gives us two growing population groups. There was an estimated dog population of 4.8 million in Australia in 2016 (20 dogs for every 100 people) with 58% of Queensland homes including a dog. At the moment 14% of the Queensland population are seniors and this figure is predicted to increase in the next few years and reach 24.2% by 2061 [16]. These numbers and our reflections on our own experiences suggest that this is a rich nexus to explore. Our research is positioned within a vision of sustainable, community-based 'slow' cities that prioritises local community connections, use of space and 'place-making' for humans and companion animals. It is underpinned by considerations of active ageing, social and community engagement, accessibility and support networks for Queensland's growing population of seniors.

2. Background: Beyond Human-centered design

Foth and Guaralda's [8] call to design urban environments for slowing down is a succinct voice in wider realisations in HCI that

we need to design for the post-anthropocene: that we share our world with other sentient beings. In the case of designing for urban environments, Foth and Guaralda argue for the importance of place-making opportunity and potential for co-creation and collaboration as opposed to the construction of places already made. Here, we look to a design which recognises that place-making and collaboration in urban environments is co-created through the activity of humans and their companion animals.

2.1   Companion animals & well-being

The Pathways project starts with those animals that we include within our domestic circles and take out into our community circles: our dogs. The importance of animal companionship is known to have health benefits beyond the immediate emotional ones [2]. Holbrook et al. [12] suggest a range, from the medical (reduction of stress) to the psychological (enhancement of security and well-being, reduction of isolation and depression) and the psychotherapeutic, where animals act as co-therapists. For the senior group, who are the focus of the first design concepts presented in this paper, animal companionship is particularly important. The health benefit of having a companion dog, which requires regular walking, is emphasised. Maintaining an active engagement in the community is critical for seniors' groups and an active healthy lifestyle can be supported through regular walking. Holbrook et al. add that this is not a merely utilitarian arrangement but, rather, offers additional benefits that are derived from the relationship between human and animal companion. Indeed, other commentary on the relationship between companion animals and humans suggests co-agency and meaning-making as an entwined being (e.g. [4, 11]). This phenomenon is particularly visible when we take our companion animals out into our communities.

2.2   Companion animals & community well-being

Holbrook et al.'s [12] concept of the relationship between human and animal as 'an end in itself' can be extended to the wider community. The relationship becomes a site for sharing of experience – pet owners share information about their animals with others in much the same way as parents will share stories about their children. In so doing, we expose communities of interest [22] that have potential to develop into communities of care. Members share a passion for their animals that not only demands the oft pleasurable activity of local walking, but, through the mechanism of transitory, chance encounters, permits easy communication with others, often expressed initially through appreciative verbal and physical interactions, directed through the other's dog. There seem to be fewer social constraints when it comes to making a fuss and interacting physically with the other's animal.

We believe that this has potentially far-reaching consequences. Broadly, research shows that dog walkers generate social cohesion, beyond immediate shared experiences and connections, into wider communities. Wood et al. [23] studied the indirect role pets have in communities, fostering social relatedness and community cohesion in terms of getting to know people, making friends and the creation of social support networks. They concluded that pets facilitate tangible support networks and 'healthy neighbourhoods'. In effect, walking the dog does much to foster the vision of the slow city. However, for the specified target group, there are some potential challenges.

2.3 Challenges

When it comes to walking in the community, we need to differentiate between those who are active and those who find themselves constrained by circumstances (e.g. health, mobility). This group can be differentiated from 'mobile' seniors, defined by Durick et al. [6], as those who are well enough to live independently and who actively engage in society and community, as well as having a diverse range of interests. While the mobile senior group are often dog walkers themselves, the less mobile senior group find themselves more inhibited. They may be wary of their on-going capacity to care for a companion animal, for example, concerned that they may not always be able to take their dog out for a walk or that illness may result in their beloved companion being left un-cared for [1]. Recent initiatives, such as the AWLQ Golden Hearts, recognises these problems and offers a range of support services, including veterinary and emergency pet care services. The Golden Hearts program is geared towards the increasingly fragile because of the recognition of the importance of animal companionship in active aging. However, we suspect that such initiatives would be strengthened if animal companionship based communities were more accessible.

The constraints of the current target audience are also interesting, as they have taken us into re-consideration of the assumptions we make about mapping spatial activity and creating community through technologies.

3. Design

On the face of it, the Pathways and Paws(es) design concept is simple: foster community building in a specific community of users with some technology that will allow users to connect, contact and communicate a limited set of information. For example, connect with other dog walkers that they meet regularly and communicate place-based information (ranging from an emergency contact to a really nice local walk (pathways) with good spots (pauses) to meet), perhaps even advocate for improved facilities for the community.

The design scenarios are all local. They echo Foth and Guaralda [8], who suggest that 'people are natural place-makers' and that community connection and health and well-being are improved through fostering natural place-making. Critically, 'natural' place-making must be allowed to occur rather than being designed and deposited. Place-making is a grass roots activity; it must emerge out of community participation. Data and participatory mapping for community and place-making is not new. Since de Certeau's insights [3] into the practices of urban dwellers as they re-make the conceived space of the designed city according to their own lived needs and routines, we have tried to use design to construct

space and turn it into place – even in the potential placeless-ness of the digital [20].

3.1 Design considerations

The design space creates some interesting challenges, particularly as the eventual target group is the less mobile senior. An initial design consideration is the digital literacy habits of this group. While active in their engagement with technologies that they deem worthwhile, they tend towards the utilitarian. For example, a recent activity and social inclusion study [21] with older adults (62-83) revealed good uptake with simpler 'off-the-shelf' solutions. The study found an ease in adjusting to new patterns of behaviour (including, for example, device charging, downloading, etc.), integrating social occasions and activity into the daily-weekly schedules, (despite disruptions, such as holidays, death in the family, illness etc.), in addition to healthy competition and sharing 'how-to' about the technology within the group. Most relevantly for the Pathways design explorations, the study group developed a community of care, where they kept an eye on each other, grew to know each other more and formed a cohesive whole, aware of each other's 'usual routines' and noticing disruptions.

3.2 Design for place-based community

We started by reviewing existent off-the-shelf technologies (apps) that could be either used as inspiration or adjusted for the specific purpose of the design concept. There are many examples of GPS tracking apps. Google Maps has a sharing location feature that allows both location and route sharing with known others. However, the sharing option is set up through use of Gmail accounts and thus dependent on a degree of general digital literacy and more intimacy than most dog walkers expect to exchange (e.g. email addresses), not to mention the practical issues around phone operation when handling a dog.

Beside the desire to created community connections and a network of dog walking friends, the overall intent of the desired design would seem to do nothing that is not apparently already available via various apps for iOS and Android. Walking and running apps which track, map journeys and show statistics abound. There are even dog walking apps such as Dogwalk, a dedicated dog walker's app that offers GPS tracking, photo stops and annotations such as those all-important daily business stops that for the human are important indicators of a companion's health and regularity and for the dog, a chance to share and contribute to the local neighbourhood dog version of social media.

However, all these apps are designed for a user that Foth and Guaralda [8] might conceptualise as a 'smart' city dweller. They overlay the environment with information which then exists, not in the environment itself, but in the placeless-ness of cyberspace. The actual physical community exchange and face to face connection which is the goal of the current design concept, is missing. This insight leads us to the beginnings of our design specification and the discovery of a new design opportunity.

The design constraints demand very simple activation of the app, perhaps utilizing an action that is already part of the dog walker's routine, such as clipping the lead onto the companion animal. The design needs to be extremely robust with easy access options as use may well take place in the presence of an excited dog, or in inclement weather. The design space announces clearly that use will occur in contexts where the user is focused on something - the dog and its activities - other than the app.

It is when we look more closely at the requirement for simple communication with a trusted network that some rich design insights happen. To really create a design which responds to calls to design for slow cities, we want the potential trusted networks to emerge through face to face contact within the locale during the walks. This design desire arises from the experienced phenomenon of the dog walking community where we often first know the names of the dogs we meet rather than the names and backgrounds of the people walking them. Through regular meetings, details do emerge and are perhaps exchanged but it is the nature of this community that it is based on the companion animals and very much in place.

3.3 Inspired by games

Exploitation of digital map APIs is not limited to tracking for utilitarian purposes. A number of mobile games use the overlaying of activity on the map for purposes of play and challenge. Some of these have been for social purposes and place-based marketing outcomes (e.g. alerting players to popular cafes and locations). For example, a recent game that uses the notion of locations coupled to place on the map is Niantic's Pokémon Go, an AR game which allows players to capture virtual creatures (Pokémon) and collect items from points on a map.

We find some useful take-aways from Pokémon Go and the ancillary Pokémon Go Plus wearable. The first is the emphasis on proximity to location as a primary design parameter. This concept flips that of the typical tracking app from an emphasis on the route or pathway to an emphasis on the location itself; the 'pause'. The dependence on population density for Pokémon spawning and the locations of the Pokéstops are notable by-products of a more natural, place-making because the system uses public places already present in the physical world. Place-making is a historic activity; places 'become' sticky through continued use, and as other commentators have observed, familiarity and experience with a location creates place [5, 19].

A second take-away from Pokémon Go for the design of the Pathways and Paws(es) app is the combination of the mobile device and a small wearable that allows the player to use the app and some of its functionality, rather than the mobile device itself. Add these two inspirations to our previous design insights and we have a firm set of design parameters that will be used: robustness of device and simplicity of device use; simple intuitive action-based device activation (e.g. attaching the dog lead); a focus on the loca-

tions and pauses (which have potential to become places) encountered during dog walks; and trusted networks emerge through face to face connection.

4. The design concept: place-making

To simplify the construction of the probe, the initial design uses a mobile device's location system and a dog-wearable Bluetooth device which is activated by attaching a dog-lead to the companion animal and that 'launches' the mobile device app. This allows the convenient development of a prototype. Data collection would use a system such as Foursquare's freely available Pilgrim SDK to collect 'pause' data rather than typical movement data in order to capture both human and animal experience. For example, short pauses in the walk (10-30 seconds) capture dog activity (stopping to smell and physical needs) whilst longer pauses of a few minutes or more will often indicate human activity such as stopping to chat or perhaps even breaking for a coffee or to enjoy a view. This map is thus concerned with stops and their duration, rather than a record of the path. This approach has potential to capture the experience as it emerges through the activity of both human and animal companion. Activity is embodied in place and revealed over time, creating nodes (Fig. 1). Nodes are both physical and temporal; they can be reinforced through repetition and can fade through non-use. They have the potential to create shared context, or indexicality, and allow meaning to emerge dialogically from the experience of an action or interaction [5, 20].

Fig. 1 A different approach to visualisation: A walk with companion animal. Node 1 is a short 'business stop' and node 2 is a longer stop for a chat.

4.1 Community connection

The initial data set showing the location, frequency and duration of the short pauses would be facilitated by data collection via mobile devices in combination with (dog) wearable Bluetooth devices which also enable the community connection aspect of the app. Each Bluetooth device could transmit a unique identifier (UID) allowing a dog name and icon to be shown at a particular location on the map. Icons would be selected by the users and ideally, be representative of the approximate breed of dog. All the icons would do in the first instance is alert walkers to identified dogs in the area. A walker may recognise, (i.e. determine by prior knowledge of), the other dogs by name, if they have encountered them and had an exchange with the other walker previously, or, perhaps, by breed, if they have seen them on regular walks but not engaged in any active exchange.

Once the walker actively joins the local network, their dog would be displayed as a presence on the map, providing the basis for 'trusted networks' in much the same way that we do tend to make stronger connection with other walkers whose dogs get on with our own. Trusted networks can then be created through Physical Community Exchanges (PCEs), generated when two Bluetooth devices (two dogs) come into proximity. Walkers would be alerted by the mobile device and then have the option of adding each other to a personal network.

This personal dog-based network could also utilise frequency and duration of meetings. One idea is to add tiers of 'trustworthiness' and to facilitate the emergence of a 'levels of trust' network that reflects the temporal nature of the network. So, an increase in frequency and/or duration would show as a higher level of trust, whilst a decrease would allow the 'trust' to be eroded over time. A system like this would deepen the place-making and experiential data visualisation. It would also allow for inclusion of interactive elements to enable community exchange.

We are considering graphical icon representations such as those informed by the work of Knoche, Rao and Huang [14], whose studies identified the need for easily interpretable icons as part of a robust, low-maintenance, easy to use system. We plan already to use icons as a direct means of communicating place and presence, so a fuller set of icons to communicate other functionality might be all that is needed. In these early stages, the communications we envisage would be three instances: (1) the equivalence a greeting (as in a wave or nod) towards another, (2) send an invite to another(s) to join them in a walk and /or (3) broadcast a request for assistance.

5. Reflections: place-making with animals

The Pathways and Paws(es) project is an emerging design concept. There is much to explore, analyse and refine. We like the way that the emerging design operates as a result of the partnership between the walker and their animal companion. We are particularly engaged with the potential for physical place-based community building opportunities where the central design metaphor is daily life. If we are truly going to design for slowing down then considering physical place as a collaborative partner in the designing is essential. We are also enticed by the potential of the re-focus on the pauses (places) of the typical GPS tracking app. If we include the pauses that our dogs make during the walk then we are setting ourselves up for designs that might look at constructing place-based mapping from the companion animal's perspective as well as the human partner. The design process and the insights behind Pathways and Paws(es) invite us to consider ways we might develop a technology and access the resultant data sets in order to produce a network which includes our companion animal's experience of the walks we take alongside our own.

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