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# A Practice-Based Approach to Post-Human Computer Interaction: Design Notes from Nature Scenes

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## ABSTRACT

This pictorial explores the processes and methods of designing for non-human animal users and human visitors through the example of Nature Scenes. Nature Scenes are a set of urban outdoor interspecies shelters and feeding stations designed by us, the Interaction Research Studio, commissioned by Jane Withers Studio for Brompton Design District 2019, as part of London Design Festival (LDF). In this pictorial we document the various steps of designing, prototyping and deploying the ‘scenes’, and examine the animal-human relationship in context of product and interaction design with the intention to advance the current discourse on interspecies and post-human practice-based design research. We unpick the complexities and contradictions that come with designing for animals as well as for humans, and introduce suggestions of how Post-Human Computer Interaction (PHCI) can be approached going forward.

## Authors Keywords

Design process, practice-based research, interspecies design, post-human, HCI, PHCI

## CSS Concepts

•Human-centered computing~Human computer interaction (HCI)~HCI design and evaluation methods~Field studies

## PRELUDE

It’s early afternoon in mid-September, the sun is out and the backstreets of South Kensington are a bit busier than usual. In a leafy private garden, in an affluent residential neighbourhood, sits a mayfly, a grey squirrel and a Eurasian jay. Hidden in the bushes they wait until all human sounds and smells are far enough away, then mooch and mingle amongst especially designed dwellings constructed from timber, orange peel, gourds and Raspberry Pis. They nibble on seeds and brightly coloured fat balls, entirely oblivious to the notion of post-humanism.

Meanwhile someone orders a beer in a local pub. They glance to the back of the room to see which match is on the TV. The screen flicks through a slideshow of squirrels climbing a wooden frame, a blue tit sitting inside a dried gourd and wood pigeons gathering around some seeds under a tree. They nibble on their scotch egg, almost entirely oblivious to the notion of post-humanism.

## INTRODUCTION

Increasingly practitioners across multiple disciplines are grappling with decentring the human, questioning human



Fig.1 Nature Scenes frame photographed in our studio

exceptionalism as a response to the current climate crisis and our exploitation and destruction of ecosystems. As a practice-based design research studio we have been exploring for the past years how DIY (Do It Yourself) technological devices can connect human citizens to their surrounding wildlife.

This project, Nature Scenes (Fig.1) sits within a portfolio of the studio’s projects exploring more-than-human issues including Sunglasses for Puffins [5] and More-Than-Human Data Interactions in Smart Cities [3]. Most significantly Nature Scenes is one of many outputs from My Naturewatch (MN) [12], a four-year collaborative research project between the Interaction Research Studio and the Design Products programme of the Royal College of Art that centres around an accessible DIY wildlife camera.



Fig.2 My Naturewatch Camera



Fig.3 Site visit in the Alexander Square garden



Fig.4 The Hour Glass pub visit



Fig.5 White Post Gallery

In the context of Human Computer Interaction (HCI), the project adds to current discussions exploring how more-than-human issues are translated into practice-based research [6, 17]. This shift has also become more prevalent amongst art and design practices [4, 7, 9, 21]. Responses are diverse across creative disciplines, showing how the notion of a post-human future is a contested one.

Within this emergent area of study, Nature Scenes is distinctive in that it draws upon elements of HCI, craft and urban ecological engineering to design for the needs of both humans and urban wildlife within the context of LDF. This pictorial illustrates an account of the design and deployment of a series of custom installations that recontextualized the MN Camera for a post-human design exhibition, and considers how human and non-human animals experienced them in different ways. In doing so we aim to highlight the complexities and negotiations encountered when applying a more-than-human approach to practice-based research.

The Interaction Research Studio has been pursuing HCI research through designing and making situated technological devices for over 15 years [2, 10, 11, 13]. The deployment of fully functioning research products [16] within specific communities and social situations (e.g., cloistered nuns or bird ringers) is characteristic of our approach. As we slowly and organically move into

the post-human landscape on the one hand it feels like new territory for our group, yet on the other it continues our commitment to engaging others - where our work is now also experienced by mice and mayflies. In doing so we consider an expansion of HCI and propose a new term 'Post-Human Computer Interaction' (PHCI).

#### MY NATUREWATCH

The My Naturewatch Camera [12] (Fig.2) was developed to be built from low-cost and commercially available electronics and simple household materials. MN Camera was created in connection with the BBC's Natural History Unit. The wildlife camera was introduced on the popular documentary series Springwatch by naturalist and TV presenter Chris Packham. The project has helped over 3,500 people discover and learn about their local wildlife, engage with open-source technology and form a community of camera makers and users [1]. The camera consists of a Raspberry Pi computer with custom software using motion capture technology to detect movement. It takes pictures or short videos and creates its own Wi-Fi network for the users to log into, calibrate settings and download content directly to their own device. It also offers users an intimate and close-up perspective of local wildlife, capturing shots of how these animals behave in the absence of humans. The installations developed for Nature Scenes evolved from experiments conducted during the extensive development

of the MN Camera.

#### BROMPTON DESIGN DISTRICT

Brompton Design District (BDD) is an annual two-week festival in west London, and a well-established part of LDF. The 2019 BDD theme 'Nature/Nurture' examined "our changing relationship to nature, looking at what design is doing to protect and learn from the natural world and reconsider our physical and emotional connection to nature, particularly in the urban environment." Jane Withers Studio [2019] invited a range of designers to respond and exhibit work outdoors in the urban gardens and green areas of Brompton. The brief had an emphasis on adopting an 'animal vernacular' using organic materials to make installations responding to local wildlife. We were allocated three spaces to design for: Alexander Square garden (Fig.3) – a communal garden for the residents of Brompton Road as our main space to interact with non-human animals. The Hour Glass Pub (Fig.4) – a local pub just down the road from Alexander Square garden, a watering hole for human animals as well as a design festival hub hosting talks and debates. White Post Gallery (Fig.5) – a small vitrine just outside of South Kensington station that functions as a signpost for exhibitions and events for Brompton Design District.

As project advisors, urban ecologists Professor Robert





Fig.6 Nature Scenes composition

Francis and Brandon Mak from Kings College London contributed to the Jane Withers Studio brief. We received general advice on practices of urban ecological engineering and advice on designing for specific species.

Alexander Square and its gardens were built in the early 19th century and have only ever been open to resident key holders. The garden is meticulously kept by gardeners. It contains several pine trees, mulberry, acorn, various scrubs, evergreens, and seasonal scented plants as well as many other types of flora. The large trees and fence along the main road of the garden create a secluded space. As an urban green area, the garden is an ecosystem that is built by humans for other humans to enjoy. Throughout the project we interacted with several members of the neighbourhood, each fondly attached to their communal garden, sceptical about our designs and somewhat worried about the invited human and non-human audience.

#### OUR APPROACH

Our design direction unfolded through an informal and exploratory process of sketching, tinkering, reading, discussions within the team, and engagement with more-than-human approaches within other research projects. Significantly the articulation of our design direction, as follows, arose from an open period of practice-based experimentation that embraced emergence [14].



Fig.7 Bowerbird nest and show ground ©Stefan Marks

We set out to create a series of installations, later titled 'Nature Scenes' that would serve complementary roles for animals and humans. Each 'Scene' would feature a MN Camera framing and capturing images of the animal inhabitants of Alexander Square garden which would be shared publicly during LDF. The footage captured over the course of two weeks would be made available online at [mynaturewatch.net](http://mynaturewatch.net) [15] as well as broadcast locally to the TV screen of the neighbouring Hour Glass Pub. Such an endeavour would require designing from a post-human perspective - considering how both humans and non-humans would engage with the project from quite different perspectives with partly contrary agendas.

From a non-human perspective, we intended the installations to offer welcome to various species - acting as shelters for some, and feeding stations and watering points for others. The structures were to be built from predominantly natural materials that felt contextually familiar within the environment of an urban garden (Fig.6). In conversation with the ecologist advisors, we anticipated that birds, squirrels, rodents, insects and even foxes might be active in the area, and therefore our designs would have to be appropriately diverse in scale, positioning and composition. We envisioned a variety of deployments including tree-hanging and ground level installation.

From a human audience perspective, these spaces would



Fig.8 Making inspired by DIY

act as small scale cinematic 'sets' or 'still lifes' to gently entice and photograph animals. We intended that they would express to humans that the natural world and the human world are inherently intertwined in urban settings. Natural materials would therefore be interspersed with touches of the human-made – a notion inspired by Fig.7. of a bird's nest made partially from single-use plastic.

In the spirit of the MN Camera, we resolved that everything we designed and made should be created with a commitment to craft, orientated to the skills and means of the hobbyist maker. Therefore, Nature Scenes would be created using simple construction methods and reappropriated materials to encourage humans that our designs could be easily replicated and adapted. Although the objects would not come with explicit instructions, they would embody an attitude to making inspired by the DIY theme that runs through the MN project more generally (Fig.8).

To navigate the diverse requirements of multiple project stakeholders, it was necessary to adopt a hybrid design approach. Catering to a human and non-human animal audience simultaneously, required bringing together diverse and contradictory notions of functionality – accommodating squirrels, design festival curators and other species in-between. As the project developed, understanding and mediating this complexity became a recurrent practice for developing a PHCI approach.

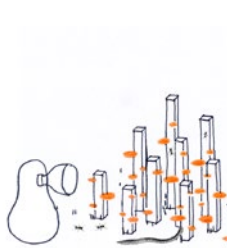


Fig.9  
Camera and 'front of camera'



Fig.10  
Integrated assemblage

## EXPLORATIONS

Here we expand on the different steps and experiments we undertook to develop the final designs of Nature Scenes. Following a thinking-through-making approach [19], the process was substantially shaped by material exploration.

A series of sketches began to illustrate two distinct aspects of the project: firstly, how to reappropriate and orientate MN Camera technology using natural materials; secondly, how various elements could be positioned in front of the MN Cameras, akin to film props and stages, designed to respond to animals' needs. Fig.9 shows a clear distinction between 'camera' and 'front of camera' yet Fig.10 depicts an assemblage that integrates the camera and filmed objects within multifaceted sets. The sketches also show our propensity for simple construction methods and reappropriated materials.

The notion of framing was expressed with geometric physical frames which, from a human perspective, outlined the garden landscape in the background as well as focused on the wildlife activities in the foreground. From a non-human perspective each frame could functionally support a variety of different food sources, containers, perches and shelters (Fig.10). Through these distinctive hybrid structures, a focal point established a somewhat theatrical setting both natural and unnatural,

and in doing so aesthetically expressed the intertwining of the natural and the human-made.

We experimented with dried out fruits and flowers, natural dyes and stones, alongside reappropriated objects such as plastic bottles, jam jars and machined timber. Such explorations aimed to contrast and collide the organic and the human-made materials – e.g., banana leaves and orange peels would be cut in perfect circles and laid out as foliage within rectilinear wooden compositions (Fig.11).

As an assembly of electronic components, the MN Camera has specific technical requirements, from power access to waterproof enclosures. These issues had been solved in the original DIY design with the use of plastic airtight food containers and a custom lens cover made from plastic bottles. To follow the material requirements of the brief, we explored the use of organic containers such as cored watermelons and butternut squashes (Fig.12, 13) that would inevitably rot in a matter of days and subsequently changed our studio lunch menu. Eventually, we settled for dried gourds and coconuts (Fig.13), purchased near our studio in South London, which offered a sturdy yet playful enclosure to the camera.

Another key area of exploration was the design of feeding stations, from the configuration and materiality of containers to the food itself. We developed colourful fat balls, a feature made with a mix of suet and bird seeds as traditional feeding balls, with added natural food colourings that were appropriate for non-human animals to eat. The mix - developed to have the right consistency, nutrients and bright tones - was carefully cast onto branches using 3D printed moulds (Fig.18). The resulting balls resembled odd fruits that happened to appear naturally on a tree.

Throughout these experiments, we had to consider the effects that organic materials would have on the installations. For example, while orange peel would offer colourful spots to the compositions, it could attract some species, such as snails and slugs and simultaneously deter others, namely ants and aphids.



Fig.11 Prototyping in the studio



Fig.12 Butternut squash Camera



Fig.13 Prototyping with other fruits



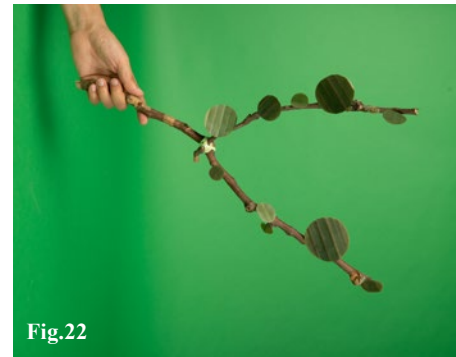
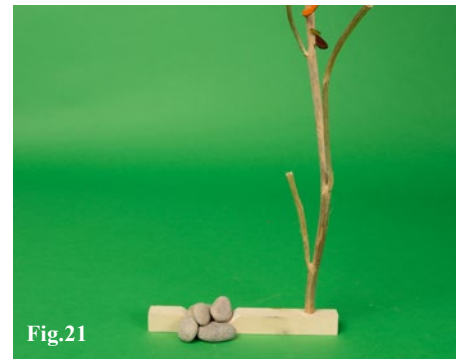
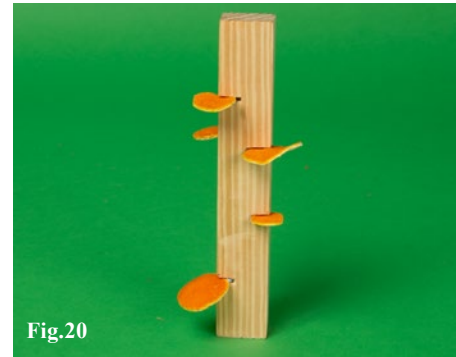
## CAMERA ENCLOSURES



## FOOD SOURCES



## FOLIAGE



## DWELLINGS



Once the prototypes numbered around sixteen, it was possible to photograph and organize them into four distinct categories. **Camera enclosures** - Fig.14 Pomegranate, Fig.15 Coconut, Fig.16 Butternut squash. **Food sources** - Fig.17 Sugar, yeast and beetroot mix, for painting onto branches, Fig.18 Bird seed and suet 'Fat Balls' cast onto branches, Fig.19 Mixed feeding containers: paper pulp, orange peel, coconut and gourds. **Foliage** - Fig.20 Orange peel cut-outs inserted in machined timber, Fig.21 Branch, pebbles and timber composition, Fig.22 Banana leaf cut-outs attached to a branch. **Dwellings** - Fig.23 Gourd roof, Fig.24 Dried watermelon with perch, Fig.25 Gourd alcove with integrated camera.

We composed multifaceted objects that brought the elements of food, foliage, dwellings and cameras within specific functions and scenarios. Each scene strived for a balance between an organic and a man-made aesthetic, juxtaposing branches, pebbles and dried fruits with geometric timber constructions, glass jars, plastic bottles and visible cables. **Fig.26 Coco-Cam** – In pursuit of a waterproof, natural and DIY appropriate housing for the MN Camera we settled upon a coconut shell, bonded onto a jar lid that screwed into a glass jar containing a removable USB battery surrounded by pebbles, which acted as a weighted base. The bottle top functioned as a waterproof lens shield – a feature carried over from the original MN Camera. **Fig.27 Gourd Shelter** – designed to accommodate birds and squirrels at ground level. Beneath the waterproof roof we composed a food bowl and suspended bird perches. The structure was supported by a pile of stones aimed at attracting insects in a bug-hotel fashion. **Fig.28 Gourd Photo Studio** – Here we considered how to create a photography set specifically for birds. The gourd served as a photographic backdrop with bird seed left to recompense avian visitors. A fixed position Coco-Cam was installed at the optimum position to photograph birds. **Fig.29 Gourd Bird House** – A circular nesting hole and stick were added to a gourd and elevated above ground level with a wooden dowl and timber base. The stick functioned as a bird perch as well as a protrusion on which to skewer bird food such as fruit or fat balls. **Fig.29 Feeding Branches** – To offer food intuitively to many species, we added vibrantly coloured food sources to tree branches – a process that involved casting two hemispherical fat balls onto a branch using specially designed 3D printed moulds. These feeding branches were then mounted onto timber bases and incorporated into frame compositions. **Fig.30 Low Frame** – A frame structure, intended to be positioned on the ground, was composed of a feeding branch, an insect stone pile and a suspended white textile, backlit by a UV light - designed to attract moths. **Fig.31 Hanging Frame** – A second frame structure, designed to be suspended from a tree. Within the frame we introduced feeding branches, perches, food bowls and Coco-Cams.



Fig.26



Fig.29



Fig.27



Fig.30



Fig.28



Fig.31



## DEPLOYMENT

In anticipation of deployment, the Nature Scenes were remade out of untreated oak timber, a material that lasts well in an outdoor environment. All the pieces were fabricated by the design team in our studio workshop with simple yet refined craft sensibilities, such as disguising screw joints with an oak wood cap. This production phase also included a degree of further development and problem solving, as well as an expansion of the collection to include other objects that would allow us to capture a richer variety of footage of non-humans interacting with the installations.

Some of the additional objects included a hanging T Frame (Fig. 32) with an inbuilt Coco-cam strategically placed to capture the activity in the Hanging Frame from an external view to complement any footage collected from within the frame. A new typology, Top-Down Gourd (Fig.34), not previewed in the exploration stages, consisted of a wooden tripod structure supporting a downward facing infra-red camera housed underneath a semi-circular Gourd roof to obtain overhead shots. Whilst many of the scenes were designed to attract birds, squirrels and insects, here we hoped to entice and photograph foxes.

We conducted several site visits with ecologist Brandon Mak to understand where best to position the pieces in relation to the needs of our animal users, as well as our human audience. Within the long narrow garden, we chose three locations that presented opportunities to attract animals at ground level (Fig.33, 34), nestled deep within undergrowth (Fig.35) as well as high up in trees (Fig.32). The works were installed by the design team two weeks in advance of LDF to give animals time to develop a familiarity with these new interventions, as well as to iron out any technical issues associated with using multiple battery powered cameras in an outdoor setting.

A specific constraint of the garden was that it was not publicly accessible, to humans at least, as access is restricted to local residents holding a key. Whatever we designed and deployed in the gardens would only be viewable by human spectators standing on the pavement,



Fig.32 Hanging Frame suspended from a tree branch



Fig.33 Low Frame in the shade



Fig.34 Top-Down Gourd and Feeding Branches ©Studio Stag



Fig.35 Gourd Photo Studio nestled in the undergrowth ©Studio Stag



peering through a fence. This site-specific challenge heightened the sense of otherness between humans and non-humans, situated starkly on either side of a fence in a manner not dissimilar to Jurassic Park – albeit a low-risk Jurassic Park, set in West London. The larger of the Nature Scenes were easily noticeable from the human perspective, however, the size and positioning of the smaller scenes posed certain interspecies issues.

In the case of the smaller installations, the chosen locations, nestled deep and low in the undergrowth (Fig.36, 37) made them, we hoped, more appealing to non-humans. Conversely, this made them harder to spot from the perspective of a human passer-by. Therefore, human-facing wayfinding became an important feature, indicating from the street - via bright red dots - significant places to stop and look more carefully for Nature Scenes activity (Fig.38, 39). The Festival team installed wayfinding on the pavement as well as in the foliage in consultation with us, to highlight designs that were easier to discover that could act as an entrance point into the wider exhibition. Human visitors had to spend some time and sharpen their eyes to spot some of the more hidden designs.

The maintenance of our installations involved a series of daily tasks such as keeping the power banks of the multiple cameras (Fig.40) charged, topping up feeding stations, configuring cameras via the app (Fig.41) and downloading images (Fig.42). Throughout the design festival, the exhibition needed regular visits by us researchers (Fig.43) to ensure that the cameras would be working to capture species when they were more active – early mornings, night-time and dawn –even though it would be the least busy time for human visitors.

The resulting footage broadly accords with the kinds of non-human animals we expected to see, with the notable exception of foxes. What is startling however is the intimate portraits of these individuals and their interactions with our Nature Scenes, photographically captured in states undisturbed by human presence - a perspective uniquely enabled by technology.



Fig.36 Fat balls



Fig.37 Gourd, timber and rock

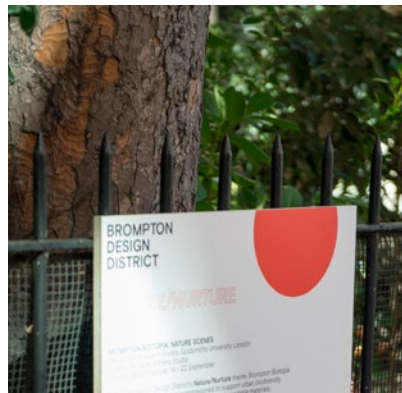


Fig.38 Festival signage



Fig.39 Festival wayfinding



Fig.40 Infra-red Gourd cam



Fig.41 Setting up the MN Camera



Fig.42 Downloading camera images



Fig.43 Maintenance





Fig.44 Blackbird (2019/06/25 17:39)



Fig.46 Grey squirrel (2019/09/15 10:54)



Fig.49 Grey squirrel (2019/06/25 17:42)



Fig.45 Field mouse (2019/06/25 16:48)



Fig.47 Mayfly (2019/09/12 17:54)



Fig.50 Great tit (2019/09/15 15:27)

### ANIMAL ENGAGEMENT

The camera footage was collected by the team during the festival and published daily on our project website as well as within The Hour Glass pub, situated across the street from the garden. Each morning throughout the festival, traces of the non-human visitors hinted to the activity in each of the settings. In some of them, food had been eaten and elements disarranged, while others had been left untouched. The bright fat balls disappeared quickly through the week bite by bite. When reviewing the camera contents, the shots revealed details of the



Fig.48 Robin (2019/09/12 14:33)



Fig.51 Field mouse (2019/06/25 18:05)





Fig.52 Eurasian jay (2019/09/18 08:10)

hidden stories of mice, squirrels and birds using the installations that provided helpful insights into what elements worked better. For example, the Hanging Frame that was designed to be squirrel-proof, showed photos of squirrels carelessly enjoying the fat balls and inspecting the frame. Some of the activities were not covered by the cameras, as shown by slug traces on the orange peel cut-outs of some of the settings.

The footage not only revealed a range of species across the site, it also revealed activities during various times of the day and night. It also showed how the location of the settings had an effect on the activity. For instance, the Top-Down Gourd was nestled in the garden shrubs and the setup positioned an infrared MN Camera at a distance from the food source. This setting collected a wider variety of species and activities than at scenes that were less sheltered or with a shorter distance between the camera and food source. From our own experience with the MN Camera and according to the urban ecologist's advice some species are more cautious than others to approach foreign objects. They might also be more sensitive to the scents of us humans and of the materials we placed into the garden. The Gourd was designed with a fox in mind, however no foxes appeared in our footage but many other species were visiting the space.

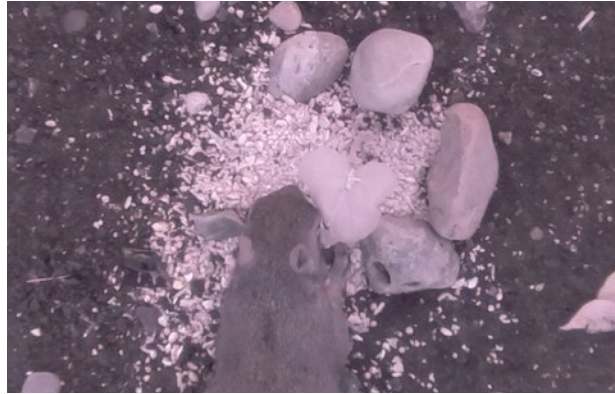


Fig.53 Grey squirrel (2019/09/13 17:00)

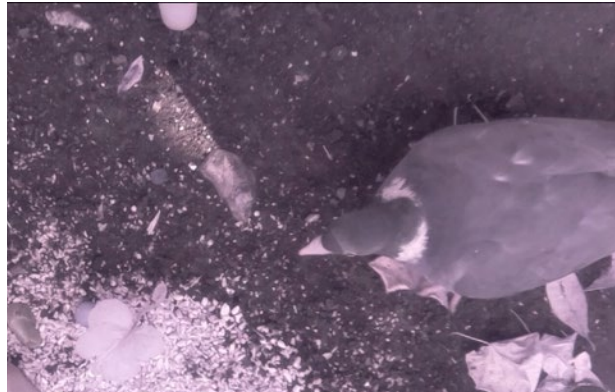


Fig.54 Wood pigeon (2019/09/18 14:05)



Fig.55 Dunnock (2019/09/13 17:45)

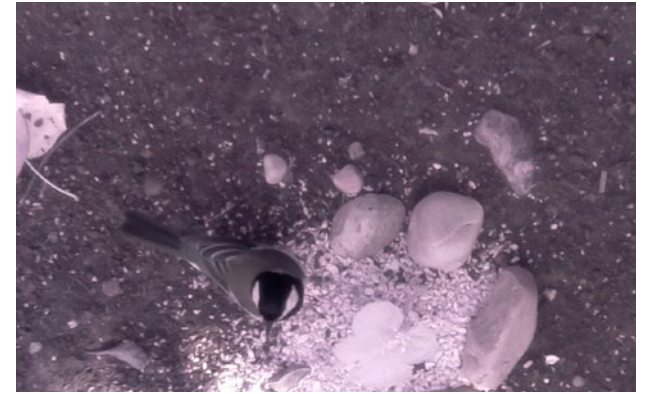


Fig.56 Great tit (2019/09/13 12:54)

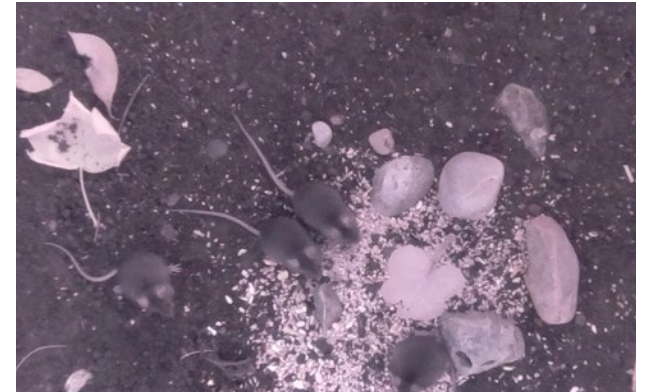


Fig.57 Field mice (2019/09/13 18:26)



Fig.58 Field mouse approaching dusk (2019/09/13 19:56)





Fig.59 Nature Scenes TV



Fig.60 Wildlife Diorama



Fig.61 White Post Gallery ©Studio Stagg

## HUMAN ENGAGEMENT

Humans engaged with the scenes in Alexander Square gardens by looking at them directly over the fence, via the camera footage documented on the project webpage, as well as two satellite locations: the Hour Glass pub across the street from the garden, and the White Post Gallery, a highly public vitrine atop a pillar outside South Kensington Tube station. If the garden setting was considered a predominantly non-human domain, these complementary locations catered to humans.

Within the pub, we created a wildlife occupation - reinterpreting pub paraphernalia with an animal twist. As a role reversal of humans intruding on the habitats of animals, here visitors experienced depictions of animals encroaching on their own turf. Footage of wildlife, taken in the adjacent garden, was broadcast on the pub's TV (Fig.59). Above the bar, a diorama of birds, squirrels and foxes sat amongst DIY MN Cameras (Fig.60), whilst beer mats and leaflets provided information on how to build your own camera.

In the White Post Gallery, we displayed a Coco-Cam, a Gourd Shelter, and a series of prop animals - a snapshot of the larger installation (Fig.61). The composition and associated wayfinding aimed to encourage passers-by to move from the bustling high street, to the quieter and leafier destination a few blocks away.

Both the pub and the White Post Gallery highlight some of the measures that we took towards encouraging humans, in territory familiar to them, to be more mindful of the adjacent wildlife and the lives they live. Furthermore, the initiation of Nature Scenes was human-centric, where time, location and justification for the project were dictated by a human-centred design festival. Whilst non-human animals were content with food and shelter, the human audience requirements included, but were not limited to, a festival, a district, a programme, a venue, a design team, a social media campaign and a private view.

## DISCUSSION

The design of Nature Scenes had to walk a delicate interspecies line between the need to fit in and yet the

need to stand out. Had they been designed to be highly camouflaged they would be difficult for human visitors to spot. However, if they were too distinctive and noticeable, they would feel unwelcoming and incongruous to non-human animals, as well as their human ambassadors. In designing from a post-human perspective, we had to consider diverse notions of familiarity. Considering the fat ball as an example our design encapsulates hybrid functions - both as a familiar food source for non-humans and simultaneously an eye-catching indicator for humans.

The project has reiterated some of the complexities of urban wildlife co-habitation [3], particularly how human and non-human beings experience the city in parallel yet differing rhythms. The human-centric duration of the design festival of nine days in mid-September provided a short timeframe for the wildlife that frequented the garden to get used to the Nature Scenes. Despite our efforts to mitigate this with an early pre-emptive deployment, the number of non-human visitors was moderately successful, less so than other previous My Naturewatch sites, where longer deployments, in spring and mid-summer season, gave the inhabiting species more time to become acquainted with our designs.

Nature Scenes highlighted how expectations of technology to perform seamlessly need to be redefined in contexts that involve more-than-human interactions. The MN Camera takes – depending on position and focus – false positives of leaves moving or movement of light. An encouraging aspect of the false positive is the appreciation that animals are not performing for human benefit. The patience and element of serendipity required to catch a good image of an animal visitor is an exercise in contemplating the complex relationship of us and them. Of the hundreds of images taken over the course of the deployment, due to day-to-day false positives, faulty equipment, and maintenance demands, only approximately 20% of the imagery was of non-human animals. This seamfulness [18] is something we have come to embrace. Like fishing, it makes a 'catch' more worthwhile due to the patience and effort required.



Animals were expected to interact with the scenes in conventional ways such as perching, sheltering or eating. They were not expected to interact in conscious or human like ways such as pressing buttons or interacting with screens. We identify three points of non-humans and human interaction 1. Animals directly engaging with the scenes, yet deliberately unaware of the presence of cameras or humans. 2. Humans directly interacting with the technology by tuning into the camera footage of animals via the pub TV and the project webpage 3. Animals indirectly interacting with a pub environment by disrupting and augmenting TV footage. Significantly the technologies we deployed in the garden as well as the web interface were effective PHCI mediators within all of these interactions. As a group we have been further exploring PHCI issues with our academic peers in the 2021 'More-Than- Human Data Interactions in Smart Cities' (MoTH Cities) [3] project as well as current work in progress focused on Digital Farming.

## CONCLUSION

As discussions about the importance of decentring the human in design gain more ground both in academia and industry, researchers have highlighted the need to share experiences of what it means to put into practice a more-than-human approach [6, 17]. Through the retrospective analysis of Nature Scenes, we aim to illustrate the negotiations and paradoxes encountered in the various stages of this exploratory project, from responding to a brief, exploring materials to finally deploying our designs.

As more collaborative opportunities will arise for designers to work with institutions and stakeholders on projects that address more-than-human concerns, it will be important to acknowledge how the framing of the projects shape or limit our responses. In the case of Nature Scenes, the context of Brompton Design District had an impact on how wildlife engaged with our interventions. Rethinking the Festival for a deeper engagement with nature presents an opportunity to imagine more holistic and speculative approaches, such as establishing a post-human LDF design district (in Hyde Park for instance), extending the duration of the

Festival, or rescheduling it to be more accommodating to non-human animals (e.g., during springtime).

The nature of the brief, designing both for humans and urban wildlife in different capacities, required us to consider the implications of each of the design decisions from both perspectives. While the human appeal of the installations was something we could easily relate to as human designers, designing settings to attract wildlife required speculation, trial and error. Rolighed et al. [17] have pointed to the paradox of post-human design, and how anthropocentric design decisions make any non-human unable to escape from a humanistic light. As HCI research expands its centre of attention beyond the human, practice-based projects can provide insights into how to create bridges with other species – and in doing so begin to explore Post-Human Computer Interactions in practice.

In this sense, it may be useful to reflect on the installations we built for Nature Scenes as boundary objects [20]. The concept of boundary object was first introduced by Star [1989] to explain objects inhabiting multiple contexts at the same time whilst having both local and shared meaning. In the area of HCI for development, the notion of boundary objects has been applied to examine artifacts that create trans-disciplinary and trans-cultural bridges within a research project [8]. When creating these bridges, different groups inscribe different meanings on the information represented in a specific artefact or process. Similarly, it seems clear that our designs offered different meanings and grounds for appreciation to nonhumans and humans. In future research, it will be interesting to speculate about other kinds of bridges we might propose and the parallels that could emerge from them..

In their hybrid roles and configurations, each of the settings designed for Nature Scenes stood as an open invitation to the surrounding wildlife and humans around Alexander Square garden. While we might be far from understanding the meanings our animal visitors made of our designs, the installations and associated camera

footage emphasize a sense of connection between a squirrel sheltering under a gourd enjoying a pink fat ball (Fig.62) and a human in a nearby pub, sheltering under an awning enjoying a beer (Fig.63).

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Fig.62 Grey squirrel in the Gourd Shelter



Fig.63 Humans outside the Hour Glass pub ©Studio Stag

## IMAGE CREDITS

Fig. 1-6, 8-33, 36-60, 62, 64 Interaction Research Studio

Fig 7. Stefan Marks. Satin bowerbird showground. December 4, 2018. Retrieved August 5, 2022 from [https://www.flickr.com/photos/stefan\\_marks/32487196918](https://www.flickr.com/photos/stefan_marks/32487196918)

Fig 34. Studio Stagg. InteractionResearchStudio-BromptonBiotopia06. September 20, 2019

Fig 35. Studio Stagg. InteractionResearchStudio-BromptonBiotopia01. September 20, 2019

Fig 61. Studio Stagg. WhitePostGallery02. September 20, 2019

Fig 63. Studio Stagg. NatureScenesIntervention01. September 20, 2019

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Fig.64 Grey squirrel making an exit