Stray Animals - City Entanglements: Exploring the Potentials for Equitable Coexistence in Urban Türkiye

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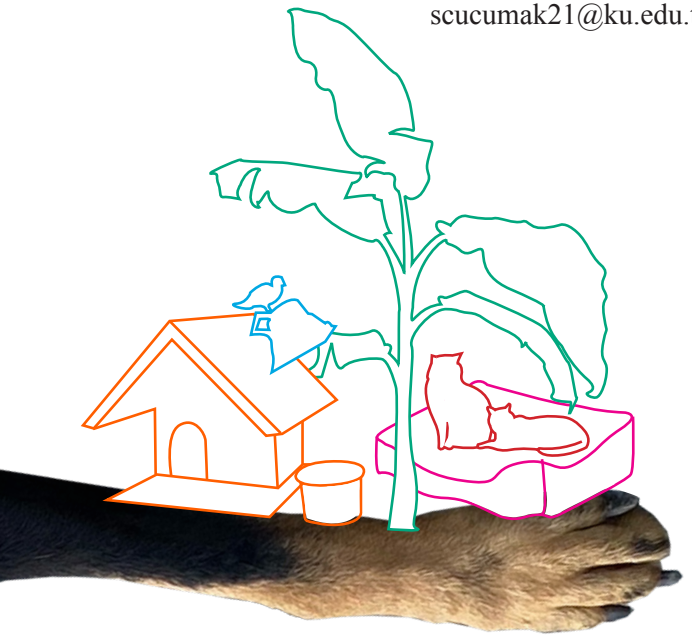


Figure 1: A collage outlines representative illustrations of some of the most visited materialities within emerging themes.

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ABSTRACT

This pictorial invites designers to recognise the city from the animals' perspective. We conduct a photo-visual exploration of the tangible and embodied interactions between animals and urban actors in selected urban and peri-urban environments in Türkiye. We observe and cluster the existing interactions to discuss how human-centred urban spaces can be redesigned for/with stray animals in order to build equitable cohabitation for stray animals. With the resulting five themes from photographic documentation, we specify how stray animals build relationships with the city and its actors. We conclude with the potential roles of technology and design in equitable city-making with stray animals.

Authors Keywords

Animal interaction; nonhuman; global south; multispecies justice; cat

CSS Concepts

•Human-centered computing~Interaction design ~Interaction design theory, concepts and paradigms

INTRODUCTION

City regions (cities and their surrounding areas) are considered human-centred places [31], often designed with little concern for multiple species. However, as historian William Cronon points out, 'the dualism that sees the tree in the garden as artificial—completely fallen and unnatural—and the tree in the wilderness as natural—completely pristine and wild' is a binary approach. 'Both trees, in some ultimate sense, are wild; both, in a practical sense, now depend on our management and care. We are responsible for both, even though we can claim credit for neither." [8, as cited in 34]. Similarly, Donna J. Haraway introduces the theoretical concept of "natureculture" and emphasises that notions of universal nature and man-made culture are intertwined and inseparable from each other [3,16].

Previous work from the fields such as urban interaction design [7], Human-Computer Interaction (HCI) [35,28], Animal-Computer Interaction (ACI) [34] and urban informatics [34] concentrate on decentring the human and reuniting nature and culture in the city by integrating technology. Related discussions from Science and Technology Studies (STS) [40] and multispecies justice (MSJ) [14] indicate the importance of justice orientation in such interactions.

There is a call for decentering the human in design to understand the cohabitation of humans and nonhumans in urban places. [32] expressed that scholars and practitioners who study in urban contexts must find ways to recognise the worth of othered residents. Inspiring examples are: [36] lived and designed with plants through cohabitation to experience the hybridity in our natureculture. [20] explored collaborative survival within the context of designing tools for mushroom foraging. [1] offered ways to enrich their understanding while working with more-than-humans by considering

plants, animals, rocks, rivers, and spirits. [4] investigated "noticing" as a design research method for decentring the human in design through bird watching.

Stray animals, which are unowned and naturally existing animals in Türkiye, are defined as "pets that have no shelter or that are outside the boundaries of the owner's or guardian's home or land and that are not under the control or direct supervision of any owner or guardian" by Resmi Gazete [9]. The closest definition of the stray animal in the literature is "liminal animals", which refers to animals that are "betwixt and between", meaning not fully domesticated nor fully wild, but in between those two categories [38]. Stray animal species might include birds, cats, dogs, hedgehogs, etc. However, there is a lack of in-depth understanding of the everyday life of stray animals and how they spend time in urban neighbourhoods to construct equity-oriented urban cities. For example, contrary to the definitions above, various ownership statuses might be encountered in neighbourhood practices, such as collaborative care practices of stray animals in Turkiye.

In this pictorial, we aim to understand, categorise and make inferences for designing the daily life of stray animals and the physical environments they are associated with to understand the design potentials for making equitable urban cities for/with animals. We define "equitable city-making" by drawing on the works of [6,12] as recognising the intrinsic choices of stray animals, acknowledging local knowledge, and applying the learnings to tangible interactions. Our study illustrates the potential for contribution to constructing an egalitarian and just cohabitation for/with stray animals in urban neighbourhoods (used to define the city scale where we focus on in this pictorial). Our study is an early example of taking the choices of stray animals -an estimated 10 million- in Türkiye into consideration for designing interactions in the city. We situate our work to possibly contribute to HCI, interaction design, urban informatics and ACI domains. This work is inspired by fields and intersections such as STS and MSJ to contribute to the fields where it is positioned.

METHODOLOGY

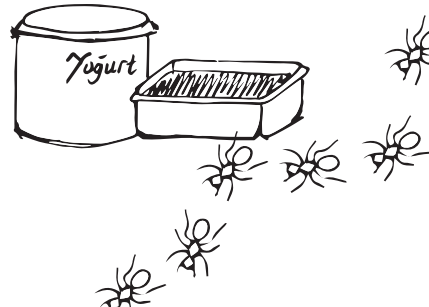
This pictorial adopts photography as a research method [similar to 21]. To envision the future of egalitarian cohabitation with stray animals in cities through the tangibility of interactions, this pictorial introduces a photo-visual study. It is contextualised within the early mentioned kinds of literature to contribute to animals, researchers and designers. Photographs are the materials of design research in this study [5]. Illustrations and insights throughout the pages use these materials as design knowledge. Thinking about the meanings of photographs in and of themselves and their placement next to each other in clusters is used as a form of meaning-making [5]. In order to present the photographs collected, we conducted a "pattern analysis" similar to what Desjardins et al. performed in their study [11]. Two hundred fifty-two photographs are captured in two large cities in Turkiye during the fieldwork phase of the first author in the first 18 months of her PhD. This period covers four seasons, different times of the day, and different days of the week. On regular walks at different times of the day, we took photos every time we noticed a stray animal was available. We tried to take photographs of any dialogues with a tangible object with species or humans. The following questions guided the photography study:

- What do stray animals do in the city?
- How and with whom (or what) do they interact?

Since the repertoire of meaningful communication needs to be extended beyond words and included verbal and non-verbal exchanges [27], we focus on tangible and embodied interactions between stray animals and the city. In research fields like social sciences and animal geography, non-anthropocentrism is closely connected to the materiality and spatial forms of practices involving nonhuman animals that seek to avoid anthropocentric perspectives [22,33]. This can be seen in the case of interdependencies between humans and nonhuman animals in urban spaces are analysed through concrete intermediaries such as leash [29,2], speculative prototypes and non-verbal communication tools [18,19].

We inserted all photographs on a Miroboard monthly and started to cluster the photographs regarding what type of interaction was presented on the photograph (e.g., Is it a human-made object? For whom was it made? What kind of tangible objects is it? etc.). Each photo was defined with keywords about what activity is visible and anything significant about the space interactions or interactants. Whenever a new affinity emerged, we revisited the photographs and checked the availability of the pattern. The analysing process was iterative, and themes solely occurred after spending enough time defining and emphasising the details of photographs. The majority of photographs are constituted by the presence of at least a stray animal interacting with an urban actor (used to define animate and inanimate tangible nonhuman components of the urban context). In the end, selected photographs are clustered into five affinity themes.

In the pictorial, we add viewfinders (two L-shaped frame corners) into the photographs. Instead of interpreting the photographs by further annotations, scaling and cropping, we let the stray animals speak for themselves in their natural humility and environment. We keep the number of photographs included as many as possible because the photographs are the research materials and visual meaning-makers of this pictorial. In the following section, we share 51 exemplary photographs categorised into five themes.



experiencing surfaces and materials

The home of a stray animal is its ‘surfaces’. This theme introduces the diverse surfaces and materials built for humans that stray animals were observed to be in contact with. These surfaces consist of various human-made materials in the form of cushions, blankets, upholstery, automobiles’ hood, wheels, styrofoam sheets, scooters and the seatings of motorbikes.

The comfortable and soft surfaces appeal to some animals when they sleep or feel relaxed. It seems that people have observed stray animals interacting with soft surfaces and materials. Accordingly, people designed and arranged the environment. They made installations in some private/public spaces with materials stray animals prefer to interact with. This is exemplified in the position of blankets and extra cushions for window stills or wooden shelters.









It seems that people who understand that stray cats choose soft surfaces to sleep on place soft textures and surfaces in public spaces like streets; private spaces like behind the store window and window bars of a house.







Various materials are not used for stray animals; however, animals interact with them actively for several reasons.



The interaction of stray animals with one of the most encountered actors in urban life, cars, depends on spending time on them by sleeping and preening.

Stray animals sometimes also seem to prefer hard surfaces, such as the automobile hood or a tiled floor. As we tagged photos, most hard surface photos were tagged with conditions like ‘under the sun’, ‘away from traffic’ etc. Especially in extreme weather conditions, stray animals tend to approach the spaces, materials and surfaces made for humans, such as materials at stores and cafes, blankets, and heaters to cool off or warm up. For example, while the top of the rectangular air conditioners, fans or heating units outside the buildings are unobtrusive structural elements for humans, they create opportunities for warmth or cooling for stray cats.

Overall, throughout the observations of experiences with such materials and surfaces, we see following:

- human interactants practised appropriation and adjusted the environment after observing the stray animals’ interactions and preferences,
- stray animals change their preferences about materials and surfaces in the city, for instance, under extreme weather conditions.

Thus, material and surface agencies as a communication medium for stray animals might tell stray animals’ choices and interactions. This indicator aligns with the previous study that works for the intuitive and bodily understanding between humans and animals through interactive toys with variables like material changes [39].



Different types of fabrics in private and public spaces are used by animals regardless of the interacted actors.



Indirect communications with materials and surfaces was simultaneously observed such as between infrared heaters, pavement stones, scooter and lamppost.

Implementations of human-made objects

Human-made objects such as shelters and water/food containers are frequently found in the neighbourhoods as an embodied outcome of care-related practices. Except for indispensable practices like housing and nutrition, diverse experiential structures like walking platforms between windows made by people were also visible.

DIY shelters are made from various materials and in various forms. Additive shelters have proofs of engagement over time, such as visible blankets or extra plastic layers in winter or window shades in summer. Collected and waste materials add layers to the core material. Consequently, the shelters become more protected and durable in urban conditions or for more challenging seasonal weather conditions. Digital fabrication, DIY, appropriation, fixing and repairing aesthetics are frequently visible on human-made objects for stray animals. This indicates a connection to alternative design approaches as well as the observation of the choices of the animals closely. Additive shelters do not tend to look similar to archetypal human houses. They seem to be created over time with an attention to protecting stray animals. These additive units do not have form concerns nor unity in size. Additive-type shelters are strengthened by adding multilayers on the main frame. People do not only add to the other surface of the shelter but also make various additions inside with materials such as cushions and blankets, probably in correlation with weather conditions. Whereas one-piece examples of manufactured shelters, frequently built by municipalities or companies, resemble human houses with gable roofs, people seemingly make additions to them to make them more comfortable.

Food and water suppliers appear more often than shelters. Diverse types of containers and delivery operations are performed by people and institutions and supplied with water and food. Besides using containers, putting food on the ground is also an ordinary act.



The additive shelters that are created from waste and collected materials are placed in private and public spaces with food and water containers throughout the urban spaces.





Structures that are made with diverse aims like housing and walking platform are placed between private spaces and actors for stray animals.

Upcycling and product appropriation, such as yoghurt cups, sausage pockets, and foam meat packages, are common for community-level caregivers to deliver food and water to stray animals. Durability is necessary for caregivers, as understood from immobilising lightweight water containers (and shelters, too) with heavy objects like stones. While designing for stray cats and dogs, more species benefit from food and water containers in reality, such as birds, ants, snails and hedgehogs.

The positions of the objects placed for animals in the neighbourhood are variable. While food and water containers can be put separately from shelters, there are examples of both practices being performed together in the same place. Regarding private and public spaces in the city, the placement of shelters and containers close to the caretakers' property (e.g., placing cat houses through window bars) may correlate with the semi-ownership practices that they care for unowned animals in an owned area. It is possible to see various shelters and containers in the green areas among the public areas.

In addition to community-based bottom-up care towards stray animals, institutions also regularly take care of stray animals by building shelters, containers, and food dispensers. Institutional-level care uses more diverse tangible objects than community-level care, which have different journeys for the food/water-giving



A stray cat eats dry food from the floor of the flat-roofed shelter, not from the anthropomorphic shelter.

practices. The vending machines, food stations in subways, and self-filled water fountains are placed by institutions. The objects of institutional care practices give more importance to visuality, form, and the human-based language of communication (e.g., illustrations on the vending machine). Whereas the DIY shelters, water and nutrition units made of whatever available materials, with a strict dedication to the needs of the stray animals, seem to have a more stray animal-centric approach. Overall, we learn the following by capturing diverse human-made objects made for stray animals:

- the humans put activist efforts to reflect the choices of nonhumans in the neighbourhood,
- diverse types of nonhumans benefit from the efforts,
- although the institutional effort is a promising sign, its design and service need further research to be more inclusive,

In this regard, looking at the choices and interactions with the actors designed for stray animals might contribute to the question of [15], which is "how designers may take more-than human rights into consideration and connect with more than human interests and agencies for participation?". In accordance, care practices evolved around human-made objects in the city shows the applicability of the proposal of [17], which aims to prioritise the co-existence of all beings through adopting a care-focused concept.



Various types of containers are placed by institutions and individuals in public spaces such as parks, green areas and subways.



The pavement stones play a role in these relationships through people's intervention by placing food within the area of a stone as separators and making light containers heavier.

acting collectively

Stray animals do not only interact with different materialities, but also they interact with other living beings. Such interactions might happen synchronously and asynchronously. While observing the stray animals, we discovered that some animals interact with others of their species and others who live in the same space. They sleep, pry around, and stand together. Stray cats get closer to each other's bodies, especially in cold weather, and birds land in higher places together. Understanding these relationships, hierarchies, and preferences can enhance our understanding and communications with stray animals.

Previous studies working in urban multispecies communications and collaborations, such as "wild" urban animals like magpies and gulls [18] and a dog [29], point to the importance of human-animal interactions to rearticulate the dominant anthropocentricity of design research. Similarly, the concept of MSJ is advocated for leaving individualist primacy and recognising the communications among all actors of ecological reality [6]. Our observations reveal the existence of animal-animal communication and coexistence in these communications besides human-animal interactions.







Stray cats and dogs sleep together on areas, like cushions of a seating structure displayed in a store's backyard, on the sidewalk, and cardboard boxes in front of a store.





Birds land on traffic or highway lights together.

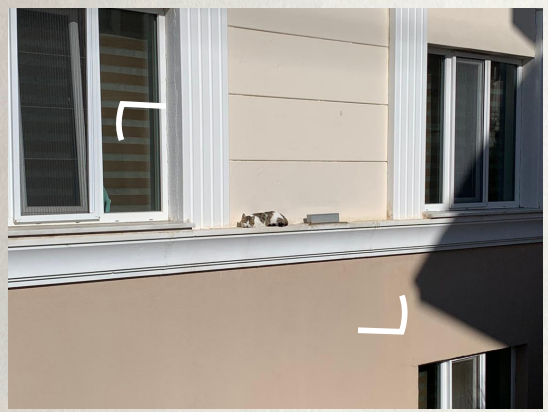
stray animals' ergonomics

This theme illustrates the inert and more functionally designed human-made spaces in the urban neighbourhoods that stray animals interact with. These are fences, meshes, rails, pipes and poles, infrastructural boxes, etc. Such actors and spaces are mostly avoided by human interactants and seemingly preferred and assigned new meanings by stray animals.

Stray animals' ergonomics and physical capacities seem to be important determinants for using inert spaces and actors. For example, fences and meshes are encountered for various purposes and areas. Some stray animals prefer interacting with such actors and staying behind/between the rails. The distance between rails determines who could use the area behind the rails. It seems that smaller species discover various spaces to feel less the effect of external factors by using the advantage of body scales. A bird may nest in a hidden place, and a cat may climb a building, crawl through wires and sleep on a mattress. In this case, might stray animals with smaller bodies feel less the effect of human-centric urban spaces and actors due to their accessibility to areas and tools not primarily considered and designed by humans? If we put the question in reverse, could it be that, for example, stray dogs whose proportions are closer to humans spend more time in areas designed for humans by humans, causing them to be exposed to more anthropocentrism?

Stray cats discover the inert areas on buildings, ceilings, and garden walls that are designed for no one in order to spend time in the city.













Stray animals interact with spaces created by human-made objects like a shadow of an automobile, an area to build a bird nest between a wall and a spotlight.



Meshes, bars, and wire fences include inert areas that host many urban actors as well as stray animals.

Consequently, we found that stray animals interact with tangible actors and the spaces around/within them. Previous works aim to provide new and broadly useable methods that can improve the design of habitat structures for cavity-dependent animals in the city [24]. Moreover, stray animals choose their interaction types in such spaces according to their bodies and abilities. Accordingly, [26] emphasise interaction types for the canine input modality by investigating button types. Our observations confirm the autonomy of the stray animals' bodies and the choices to respect their abilities to design more equitable and inclusive cities beyond human centrism.

contacting nature in the culture

Trees, grasses, and soil from nonhuman actors are active participants that act independently in their rhythm in urban life. Nature in neighbourhoods is inseparable from human-made elements. Through the development of cultures, people carried soil, tree, and flower and shaped nature in the urban environment according to their culture. The placement, form, species, and scale of each nonhuman actor in urban environments are controlled mainly by humans. The size of artificial paving stones decides how much of the soil of a tree will be visible in the city while stray animals strive to interact. However, there are other examples, such as pavement plants, that challenge human control and grow in the tiny gaps between such stones. Accordingly, the power relationship between nature and humans affects the interactions to a certain extent between stray animals and the city through decisions made by human beings. For example, a stray cat may prefer to stand under medium-sized plants instead of paving stones to protect it from rain. In other cases, stray animals interact with human-made actors, too, while interacting directly with natural elements. Natural elements perform similar functions to such actors, such as sleeping under short plants that create a shelter-like space.

Overall, we recognised that while stray animals interact with natural elements, nature answers back stray animals and the city, either. Instead of turning the dialogues between nature and culture into power relationships, humans might try to build equal cohabitation with nature harmoniously. Previous studies [10,30,35] work with birds to foster human-nature interaction and raise awareness through observing its various actor. Studies also analyse the entanglements between human infrastructures and nonhumans by positioning nonhumans in an active role [37,13]. By looking at the relationship of stray animals with nature in the city, humans can be inspired by animals to establish urban interactions in harmony with nature.



Stray cats choose to stand orsleep under trees for several reasons, for example, protecting from the rain/sun.



Stray animals who interact with nature are bordered by human-made actors and structures in the city, like ripped cardboard bags, traffic islands and building sand.

CONCLUSION

This pictorial mainly focuses on stray animals and city entanglements on a tangible level to build equitable coexistence in neighbourhoods by showing a part of the intrinsic choices of animals and pointing out the potential contribution areas for design and technology. According to the semiotic mechanisms in Peirce's representational system, direct and physically grounded signs are contextually established associations; therefore, material and contextualised associations are readily accessible to nonhuman species for bi-directional communication [25, as cited in 23]. For this reason, we observed and categorised how stray animals relate to urban neighbourhoods and the actors around them. Understanding the patterns of how and with what type of objects and environments they spend time can help us design for an equitable coexistence through symmetrical interaction mediums like the materiality of tangible urban actors.

To our knowledge, this is one of the earliest studies about the design preferences of the estimated 10 million stray animals living in Türkiye. While examining the active presence of stray animals with urban actors inherently designed by people, we wanted to focus on what they do organically in their dialogues with physical environments. Observing the stray animals in a built environment showed the footprints and efforts of mutual life (between humans-stray animals and between stray animals-other actors) and indicated possible mismatches and design opportunities.

We see the five themes of experiencing surfaces and materials, implementations of human-made objects, acting collectively, stray animals' ergonomics and contacting nature in the culture not as fixed but as a departure point to enhance our relationship with stray animals through more profound observations. While the categories represent our observations of the preferences of stray animals, it does not mean that each animal always behaves in the same pattern we present in this study.

Our aim is to inspire designers to explore alternative probabilities for equitable multispecies coexistence in the city. Emerged themes focusing on various embodied interactions of stray animals introduce the contexts to plan equal cohabitation with stray animals in the city. The choices and attitudes of stray animals towards materials, objects, peers, spaces and nature create some patterns yet to be acknowledged in the previous studies for designing with/for stray animals in the city. The representation of the inseparable concept of "natureculture" [16] has been captured in the urban interactions that stray animals establish using all kinds of actors.

The discussed interactions are captured through a human gaze. Further studies might concentrate on capturing such interactions through the animal's vantage point. How might technology mediate a role to recognise the ways of seeing the city through an animal's gaze? Recognition of other perspectives' intrinsic decision-making processes and results with the contributions of design, technology and justice lenses from multiple disciplines might be further researched to build equitable coexistence in cities. Finally, we realised stray animals' choices and decisions made with existing actors in this study. Further studies might research the question, "How do such preferences and decisions incorporate into the making processes?", "How might we design with stray animals?" in light of the deliverables of the current study. How might technology and justice discourses take charge in making the city with stray animals?

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