# Zoikòn: The Fence and the Den. Typological-Spatial Proposal for Animal Care Places Design

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Abstract-In the last years, the private expenditure on animals has grown increasingly; in Italy, the average number of pets recorded since the advent of Covid-19, was one per citizen. In addition, the Assalco-Zoomark 2021 report declares an increasing awareness of ecological aspects by operators in the veterinary sector. All these data show that the community is ready to live in balance with the animal world; however, one of the most important responsibilities of men, such as taking care of the other species, continues to be obsolete: for example, in Italy, which is the cradle of biodiversity, there are only 13 veterinary (academic) hospitals. Most of the clinics and ambulatory were not designed as a new structure to accommodate such services, but rather, as an interstitial space obtained from existing buildings suitable for the occasion. Does not exist centralized systems that regulate veterinary health care, there is no architectural language that makes these structures recognizable. Great advances have been made in recent years in the direction of ethology; specifically, relational ethology seems to be one of the disciplines that come closest to the behavioral and cognitive dynamics of animals, insisting on the power of the relationship that exists (and can exist) between man and animal. So, why not imagine that architecture and design could interface with relational ethology, to generate a conscious and appropriate way to rethink the spaces of animal care? This could be a way not only for preserving health but also for the psychoemotional well-being of the species that surround us.

*Index Terms*—relational ethology, veterinary hospital, design for animals, animal health, architecture for animals, places of care

## I. INTRODUCTION

"Animal (noun). An organism that requires many other animals for its own sustenance; this demonstrates, in an unquestionable way, how are generous, the designs of Providence, in preserving the lives of its creatures" (A. Bierce, 1906).

In the relationship between man and animal, "Preserve" is a keyword that in recent times has taken on a growing value. The man has the awareness of being able to operate in the interest not only of his own species, and this has pushed him beyond domestication, exploitation, or nourishment, but towards a renewed sense of belonging to ecosystems and responsibility for the future of the planet.

According to this, many professions are getting sensitive to this matter. Among these, there is the role of the designer who, shaping the space, has the responsibility of thinking about meso- and micro-habitats appropriate to the development of human-animal actions and interactions. Specifically, about the places of everyday life and care.

Among the places of everyday life undoubtedly appears the house, with its house-home dichotomy: this subtle but essential aspect is fundamental for every spatial thought. In fact, the den or nest for animals, takes on connotations often very close to the concept of home or house.

These connotations concern the sphere of safety, wellbeing, protection, and care. The feelings and emotions that derive from the relationship between this type of spatiality and the inhabitant, can be summarized in "feeling at home" and are essential in the conception of the place of care.

The place of care, interdependent from the moment of care, is similar both for animals and children: which child loves to go to the pediatrician? Likewise, the encounter between animal and veterinary is often not pleasant.

This paper aims to intercept the designer's mission to think or, better, rethink the spaces for animals, according to a different point of view: the exogenous one. The objective is to address us towards the design of the veterinary hospital, which should be recognizable and appropriate from a technical, technological, and architectural language point of view.

Analyzing the background and the studies conducted on ethology, relational ethology, and veterinary medicine, we can notice that the community is ready enough to imagine a world where the places of everyday life and care, ensure psycho-emotional well-being to the animals that must live there. This can be done by rethinking the design of care in an appropriate manner and being respectful of the perceptions, feelings, and emotions of our non-human companions. This paper wants to do this by taking into consideration the Italian context, central in the field of biodiversity.

# II. METHOD

As Nidhi Kankaria says in its work *The other Being* – *an architectural thesis*, "the design is based on the concept of redefining the relationship between humans

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and animals using environment and architecture as a resource" (2019), and is based o three factors: form, accessibility, and interaction. If the form (which is different from the shape) represents the search for an architectural language, and the accessibility is a fundamental *way* to transform the idea into a physical reality, the third element is the real engine: the *interaction*, the *dialogue* among people and space [1] or animals and space, corresponds to A. Campo Baeza suspension of time, presence of space.

The choice to deal with the problem related to the space of care, derives not only from the absence of a language and of a single way of dealing with the project; but also, from the observation that the existing projects rarely arise from new buildings, and are rather derived from existing buildings certainly not appropriate for animals.

After a synthesis among ethology, relational ethology, veterinary medicine, and architecture and design normative and technical, the methodology followed a process that has carried out surveys aimed at:

- Identify, on the Italian territory, the presence and distribution of veterinary structures defined as "hospitals"
- Focus on the most fragile region
- Survey the species
- Study ethology, physiology, and anatomy
- Establish principles of ergonomics
- Define design principles from a material, temperature, spatial point of view
- Organize the space concerning usability and compatibility between animals of different species.

Finally, packaging a "type" project that would be recognizable by people - using formal archetypes - and by the animals themselves - adopting material solutions like those used by animals in nature or acquired during evolution.

# III. RESULTS

The expected results are summarised in the definition of *good practices* and a *pilot project*. This aims, among the objectives, to create appropriate future scenarios of the *space of care and interaction between man and animals*. The veterinary hospital of the future must be easily recognizable by the community, aware of the ecosystem (for this reason is proposed a "regional" scale), respectful of the needs of patients, and transmit safety. The goal is to demonstrate that there is a *feeling of home*, strongly linked to the *sense of protection*, and that it is parameterizable, designable and interdisciplinary between ethology and design.

# IV. DISCUSSION

The problem of the lack of a legislation which regulates the veterinary care building [2], appears to be an emergency in a community where the presence of animals is so widespread. A demonstration is that, in Italy [3], it was estimated that in 2019 there were 60.27 million pets and, according to ISTAT, 60.32 million people

(confirming a ratio of 1 to 1 between pets and the population resident in Italy).

In addition, there are two fundamental data: there is an increasing attention to the welfare of the pet animal, and Assalco notes that in 2019 a strong sense of social and environmental responsibility emerged among companies in the sector aimed at creating *shared value* for the entire Italian community system.

Moreover, to do so would ensure adequate and not costly health care for individuals, breeders, associations and kennels, sportsmen, hunters etc.

# A. Home, Hole, House, Haunt...Nest: Human and Nonhuman Architects

Any animal species or race, whether human or nonhuman, instinctively tends to seek or build a shelter. Whether it is on earth, underground, in the air or in water, *to dwell* is an innate process and comes from the dawn of time studied by man. When human architects began to investigate the works of non-human architects [4], they did so by imitating techniques, imitating forms, extracting materials and components, but mainly to use them for human benefit.

Only the design is interested, in part, to deal with the problem from the inside.

Considering the variety of animal living contexts, we can briefly list the following typologies [5], in relation to *space* and *time*:

- *Fixed dens and colonial nests dug underground* such as hares, carnivorous mammals (foxes, badgers, rodents), colonial nests such as those of African sparrows (up to 100 individuals) and insects and social animals (bees, wasps, ants, termites, marmots, prairie dogs), underground mammals (moles) who dig shelters attached to tunnels
- Own "mobile" shelters or ephemeral nests snails, turtles, mollusks shells, spider webs
- *Temporary or seasonal nests* recognized as own migratory birds and fish
- Temporary refuges and "mobile" refuges do not own – for hibernation or hatching, not recognized as a fixed dwelling but "makeshift" refuge, shells and shelters of hermit crabs or octopuses, which leave the previous refuge if you find a subsequent, better, or larger \_
- *Den-less* ungulates (horses, zebras, cows, goats, ibex, gazelles, wildebeest, deer) and other animals such as ducks and hares that have developed skills in running and movement.

# B. The Relationship between Man and Animal: Relational Ethology

Knowing the types of "home" that exist in nature for the various animal species, is only the first step to understand *how to design* "for" them. The fundamental question, in fact, is "why does this animal live *in this type* of den?". The answer will lie in many aspects: one concerns the evolutionary relationship with the habitat, one concerns the relationship with other species [6], one the relationship with the other members of the same species; besides, concerns the self-perceptive system and the surrounding world, the predisposition for certain modes of adaptation, the type of nutrition. The evolutionary past of each species, with due exceptions, generates attention for some material, of color, temperature, sound, odor.

The role of the human being who wants to approach the design of spaces for animals (and for human-animal interaction) cannot disregard the knowledge of these aspects, as upstream must be guaranteed the welfare of the animal itself.

An approach that lays the foundations for a deep understanding of the animal world from a cognitiveemotional point of view, is *relational ethology* [7]. According to it, the fundamental key is, in fact, the *relationship* that is nothing more than "a virtual space comprised between the two subjects, which materializes just when they enter into relationship and interact".

Therefore, the correct knowledge of the ethograms, the listening and active observation, and the attention to the "design aspects" of the various species, can lead to an *appropriate design approach* to ensure that *everyday spaces* and *care spaces* protect not only health, but also animal welfare.

## C. The Healing Space

In Italy, the current regulations on animals are expressed mainly in Law 281/1991, in the European Convention for the Protection of Pet Animals (Strasbourg, 13 November 1987), in the Universal Declaration of Animal Rights of 15 October 1978, as well as in the guidelines issued by the Ministry of Health in favor of the assisted persons (Legislative Decree no. 281 of 28 August 1997, "National guidelines for assisted interventions with animals – IAA"; L.R. Emilia-Romagna 17 February 2005, n. 5). However, there is no specific attention *to the project of the veterinary space* and, consequently, the only realities defined as "veterinary hospital" [8] are attributable to the Universities and Schools of Veterinary Medicine.

In the represented diagram (Fig. 1), we indicated the places of the veterinary hospitals Didactic University, and the regions in which such service is absent. Given the autonomy and the lack of a national or supranational guideline, the space used to carry out veterinary activities does not consider the needs of patients.

## D. An Academic Experimentation: Zoikòn

The proven need to have a unique reference that coordinates the design choices related to veterinary spaces, leads to the formulation of this paper. This makes use of the academic experimentation that, in the form of a degree thesis (Master's degree in Architecture -University of Studies "Mediterranean" of Reggio Calabria), addresses the problem from multiple points of view. Following a substantial period of research, this thesis finds a synthesis between ethological and design aspects.

"Zoikòn" aims to be a *pilot project*, born from an experimental approach that aims to ensure an adequate veterinary service in quantitative and qualitative terms,

through the proposal of a *regional public hospital*, under national coordination not only in terms of management but also of design.



Figure 1. Veterinary hospitals in Italy and underserved regions.

The process begins with a *mapping* of the veterinary hospitals (we distinguish clinics, ambulatory, and hospitals according to the type of service and the period of hospitalization offered); then, a *survey* is conducted on the territory about the not served areas, led to the identification of the first region: Calabria.

The next step saw an *analysis of the data* collected by regional observers on the quantity and type of animal species present in the territory, therefore to the most frequent veterinary kind of care and to the selection of those species whose treatments are usually administered in surgery and not on the spot.

The circumscription of the species concerned, allowed a more in-depth study of the *ethological, anatomical, and physiological aspects*; therefore, the definition of the material, formal and dimensional aspects of the project.

The project has been conceived in an *exogenous way*, therefore from the inside towards the outside, in full respect of the fixed values (materials, colors, temperature, surfaces, sounds and noises, presence of vegetables, etc.).

The typology of clinics, areas, and hospitalizations, guarantees a quality of service such as to make us talk about "hospital", also contemplating the morgue, and outside the incinerator and a cemetery area.

The starting cell, located in the room of anesthesia and awakening of the equines, represented the architectural module for the development of the whole project, which is divided into one/two floors above ground, and one underground.

The preferred spatial development was the horizontal one, to allow a walking as naturally as possible for the animals.

The circulation spaces have been designed to allow the simultaneous passage of two open stretchers for large animals.

The vertical development was based on "the principle of the tree", where the trunk represents the level of intervention, the roots the morgue, the branches the hospitalization (Fig. 2).

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Figure 2. Partial sketches of the ground floor.

The used materials to cover the surfaces were chosen according to the perceptual capacities of the animals to be housed, as well as the shapes. For example, where the species were equines and cattle, the prevalence was of wood and sand; for rodents and birds, straw and twigs; for animals of affection, earth and stone [11]-[13].

Another fundamental element was the recognizability for users: the experimental project conceived three splints, each of which would have hosted several species compatible with each other. Each stick was matched by a typical architectural element for the interaction between man and that animal. For example, if the stay of the cue for birds and small rodents was a *large aviary*, that for domestic animals was the *archetype of the house* and that for cattle and horses a *large oval wooden den*.

The project was part of a larger area, served by the main links and easily accessible from the whole region.

The surrounding area, thought of as a park, has used the presentation of typical plants of the region and familiar to the animals housed, as well as prepared for socialization and for the relationship with men (Fig. 3).



Figure 3. Façade with the aviary and the archetype of the house.

## V. CONCLUSION

The experimentation presented here, aims to launch the proposal relating to the *design of spaces for interaction and care of animals*. The sector, as illustrated in the paper, lacks an overall vision and coordination actions, which have repercussions on various fronts; for example, the well-being of animals, the proper conduct of care activities, the ability of users to recognize the type of building/place of service.

The adoption of a correct way of doing would lead to improving the veterinary health service both in quantitative and qualitative terms, using the design arts in terms of performance and language, and reducing the cases of "bad health" veterinary and bad information.

All this would lead to encouraging people to correct behavior, which starts from the adoption or discovery of an animal, up to their *exitus*.

#### CONFLICT OF INTEREST

The authors declare no conflict of interest.

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