ABSTRACT

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| Title of Thesis: | REDEFINING SHELTER: FOSTERING HUMAN/CANINE RELATIONSHIPS THROUGH A NEW TYPOLOGY |
| | Sabrina Nagel, Master of Architecture 2018 |
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This thesis explores how design settings foster rehabilitation in humans and canines through mutual interaction. A synergy must be created between the 3.3 million dogs put into shelters in the U.S. every year (ASPCA) and the 11-20% of children in the U.S. who have a mental disorder (CDC). An interactive facility can make this connection between abandoned animals and troubled children who are in need of therapeutic solutions. The thesis methodology includes literature review, precedent study, development of design principles, and application of these principles to the design for dog adoption and child/dog therapy. The approach will result in a building design on a selected site where the impact of spatial strategies of interaction can be examined and evaluated. These principles can inform architects who design facilities that will further the mental and physical well being of humans and animals.

REDEFINING SHELTER: FOSTERING HUMAN/CANINE RELATIONSHIPS
THROUGH A NEW TYPOLOGY


by


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# List of Abbreviations

AAT          Animal Assisted Therapy

SAD          Seasonal Affected Disorder

PAT          Pet Assisted Therapy

HSTT         Humane Society of Truckee-Tahoe

# Introduction

  The nature of human and companion animal interaction has been researched heavily throughout the past few decades, and we may only begin to understand the powerful effects that one has on the other. This thesis underscores the significance of this interaction as well as mutual healing and aims to improve the mental and physical well being of both parties through architecture and accommodating environments. Architecture has the potential to facilitate rehabilitation, and in conjunction with the bond formed between human and animal can expedite the healing process whether it is an abandoned animal or a troubled child.

  This thesis employs therapeutic solutions through the research of environments that foster a calm and rehabilitative atmosphere and formulates a set of design principles to further enforce the quality of space. Through the study of existing typologies as well as spatial typologies that foster healing environments, it is possible to gather conclusions from both the successful and unsuccessful spatial elements in each precedent. In a facility that accommodates both children ages six to eighteen and canines, we must design with each typology as well as the health and wellbeing of both demographics in mind. These children and animals have experienced some form of isolation, neglect, or abandonment, and a new typology of human and animal facility will provide the opportunity for healing, and for the animals, adoption. The design aims to better the lives of both troubled children and abandoned animals and act as a precedent for future rehabilitative and adoptive facilities.

# Chapter 1: Theories of Human/Animal Interaction: Human/Animal Interaction and Environmental Behavior

This chapter assesses environmental behavior and the qualities of specific environments that promote both human-canine interactions as well as child-canine interactions and healing. Both humans and canines act as "companions" and can have a positive impact on the lives of one another; whether that impact is manifested through the care a human provides for a dog or simply the company and loyalty either provides the other. This beneficial interaction can be observed through the trust built through the process of training canines or even in the psychological effects of animal therapy so long as the spatial and architectural qualities of these environments foster this type of activity.

### *Interactive Benefits*

Animals as our companions are proven to have a positive impact on our lives, and we reciprocate these benefits through our close interactions. Specifically in a domestic setting, the bonds we share with pets parallel those of human family relationships. These bonds and the benefits experienced are not exclusively for pet-owners, for it only takes a few minutes of positive interaction between a dog and a human for chemical reactions to take place within the body (Figure 1). Levels of oxytocin, endorphins, and dopamine significantly rise in both parties.[1] Oxytocin activates the parasympathetic nervous system linked to growth and restoration, and

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[1] Cynthia K. Chandler, *Animal-Assisted Therapy in Counseling*, 3rd ed. (Routledge, 2017): 9.

for animals, the chemical increases the pain threshold, lowers blood pressure, lowers cortisol levels, increases healing, facilitates learning, and reduces anxiety. For humans it increases social interaction, increases the ability to interpret social cues, reduces anxiety, increases trust and a sense of well being, and decreases sensitivity to pain. Dopamine affords the brain rewards and pleasure, while endorphins relieve pain and induce feelings of pleasure or euphoria.[2] One of the simplest ways to increase levels of these various chemicals is through positive physical touch.
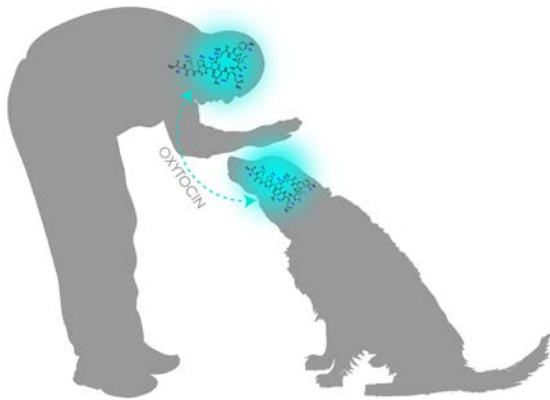


**Figure 1: Oxytocin levels increase with positive physical interaction**
Source: Author

Simply co-existing in the same room as an animal can reduce stress levels in humans. Here at the University of Maryland, the Student Government Association hosts "Puppy Palooza," an event where students can de-stress during finals week by interacting with dogs from rescue groups as well as therapy dogs. Interacting with these dogs truly allows a person to forget about his or her looming finals and due dates and focus on the excitement and affection that exudes from these animals. The event is occasionally held on McKeldin Mall, a large outdoor space that allows for

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[2] Cynthia K. Chandler, *Animal-Assisted Therapy in Counseling*, 3rd ed. (Routledge, 2017): 10.

freedom of activity and relaxation among students and dogs. The event also takes

place within Stamp Student Union in an artificially lit gymnasium. The dogs are

seemingly more overwhelmed as students crowd around in an indoor space as

opposed to an outdoor area, even though workers attempt to allow only a few students

at a time. It can be deduced from these experiences that animals will respond

behaviorally to the spatial quality of their environment, both built and natural.

*Environment and Behavior*

Our bodies and minds are sensitive to the environments in which we perform

activities and live, and therefore affect, constrain, and serve as determinants of our

behavior.[3] Environmental design is giving people, and in this case animals as well,

the tools and spaces with which they may execute these appropriate interactions and

activities. Animals and humans maintain varying reactions to different environmental

stimuli based on certain innate characteristics. Most mammals inherit adaptive

behavioral patterns and coordinated movements from developed neuronal structures,

so some behaviors are simply inborn.[4] These innate behavioral patterns mature as the

animal grows depending on its environment and levels of isolation or interaction with

other living things.

Animals are said to be in perfect harmony with their environment, while

humans have strayed slightly from this notion in relation to the natural environment

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[3] Aristide H. Esser, *Behavior and Environment: The Use of Space by Animals and Men* (New York-London: Plenum Press, 1971): 291.
[4] Aristide H. Esser, *Behavior and Environment: The Use of Space by Animals and Men* (New York-London: Plenum Press, 1971): 238-239.

due to the process of evolution.[5] We move through spaces differently based on our primal instincts and inclinations, whether evolved significantly or not. In an animal's case, its initial desire to move from one space to another stems from the need for a change of location usually due to hunger, thirst, a threat, climate change, instinctive compulsions, or the simple need to explore.[6] Another reason to move would be to either establish or avoid contact, so providing this choice is imperative in maintaining positive mental wellbeing. We must also keep in mind that an unfamiliar new space elicits a certain level of caution and uncertainty, so processions from one location to another must minimize stress and maximize comfort. For example, if a corridor becomes too linear, a dog or cat may turn back to the more familiar space out of suspicion of the unknown (Figure 2).[7]



**Figure 2: Visibility to and appeal of destination as it relates to willingness to move to another location**
Source: Author

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[5] Aristide H. Esser, *Behavior and Environment: The Use of Space by Animals and Men* (New York-London: Plenum Press, 1971): 2.
[6] Aristide H. Esser, *Behavior and Environment: The Use of Space by Animals and Men* (New York-London: Plenum Press, 1971): 10-11.
[7] Aristide H. Esser, *Behavior and Environment: The Use of Space by Animals and Men* (New York-London: Plenum Press, 1971): 14.

Humans have also developed over the years with specific social and environmental needs. There has arisen a need for privacy in our everyday lives, and it has been proven that this sense of solitude in living situations in particular results in improvements in concentration and discipline. Architecture influences how we alternately interact with one another, sometimes needing these moments of separation as well. However, we require both types of spaces in our daily lives in order to accommodate different activities, whether self-reflective or social. Human interaction studies also show that people prefer to have flexible interactive spaces in which they may sit or stand without feeling trapped or pressured by specific arrangements and configurations.[8] A social and collaborative area must include domains that come together to offer stimulation as well as a sense of acceptance that result in a feeling of well being. With a preliminary understanding of how humans and animals react in certain environments, we may begin to evaluate an added complexity in which architecture promotes rehabilitation.

*Healing Spaces*

Health is "related to the encompassing environment in which the entire cycle of human life unfolds."[9] However, we must evaluate human and companion animal life cycles. A few healing theories promote and encourage health as it pertains to mental as well as physical well being: the psychobiology of space, teleology of space, and salutogenesis in space (Figure 3).

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[8] Aristide H. Esser, *Behavior and Environment: The Use of Space by Animals and Men* (New York-London: Plenum Press, 1971): 284.
[9] Christine Nickl-Weller and Hand Nickl, *Healing Architecture* (Munich: Braun, 2013): 254.

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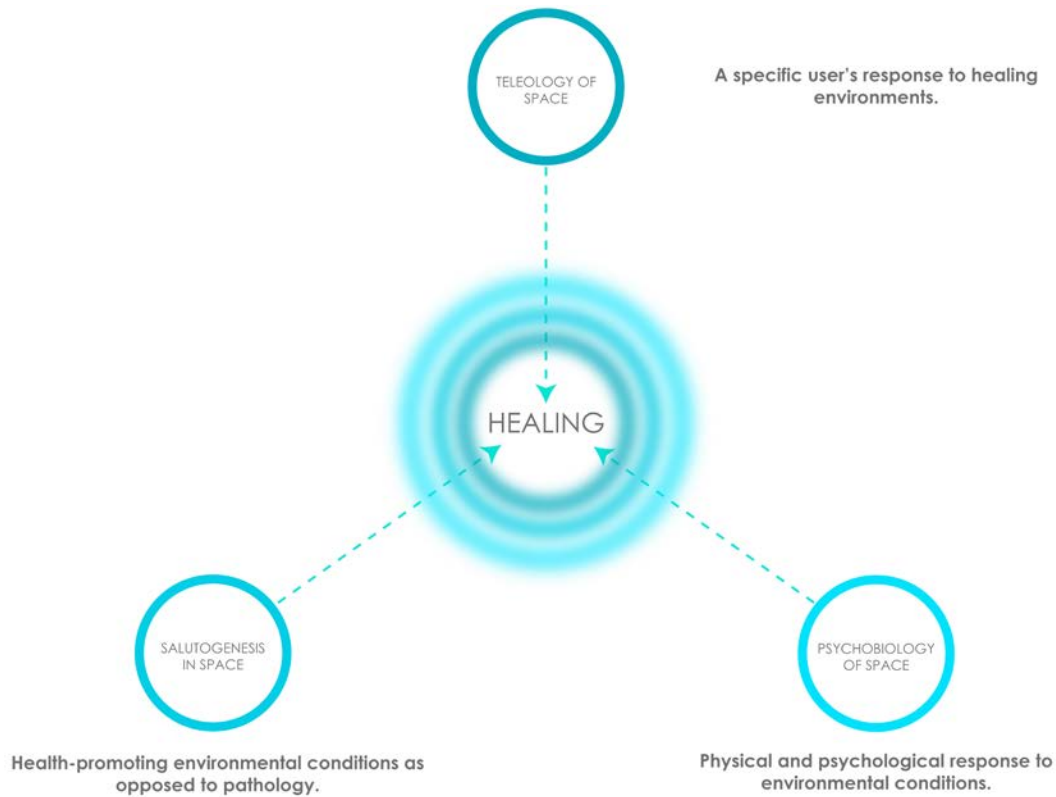
**Figure 3: Healing theories that foster and create healing environments**
Source: Author

The various architectural principles derived from these theories aid in creating spaces that promote rehabilitation and increase levels of interaction, therefore encouraging mutual mental and physical healing. Each of the principles can then inform specific spatial elements that are necessary to foster this type of environment and the programs and interactive and healing spaces (Figure 4).
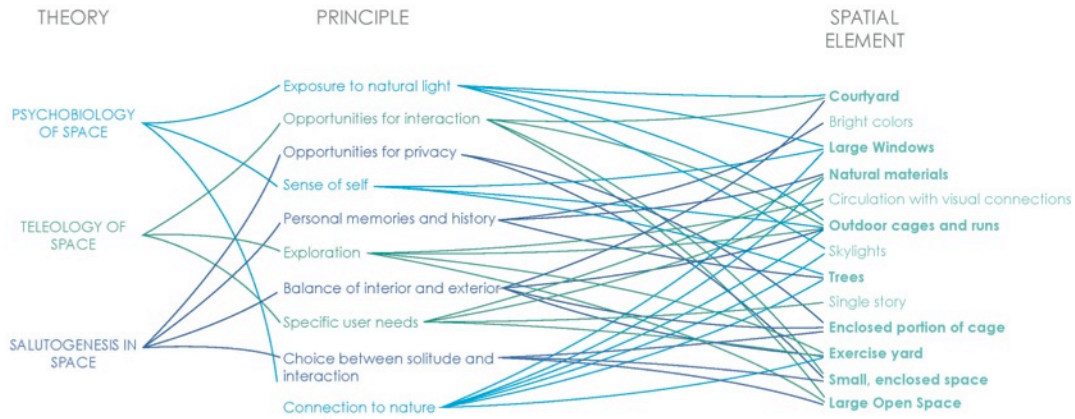
**Figure 4: Theories, principles, and spatial elements of healing**
Source: Author

The psychobiology of space, meaning the evaluation of one's self in space and the interaction of the psyche, must also be addressed as we create a sense of self through the references to our environments.[10] Without relationships among humans and other living beings in conjunction with the environment and external influences, one cannot create a sense of self. We, like animals, exhibit explorative behavior: the search for the new.[11] Humans are often drawn to some type of change or curiosity that compels us to investigate space as it reflects on our own being.

This change can also be seen in exposure and access to natural light and outdoor connections. Large windows and openings bring with them a sense of openness as well as this connection to the exterior. Maintaining a visual connection to the outside is important for human and animal health, for it provides us with the information we need to experience changes in the time of day, weather, sunlight, and

[10] Christine Nickl-Weller and Hand Nickl, *Healing Architecture* (Munich: Braun, 2013): 238.
[11] Christine Nickl-Weller and Hand Nickl, *Healing Architecture* (Munich: Braun, 2013): 240.

seasons. Nature is known to be a calming and healing agent, and light specifically

may have an emotional effect on both animals and humans. For example, reflected

light from water can create a relaxing and warm atmosphere as it interacts with

interior surfaces.[12] Nature answers the need for fulfillment in an ideal way to

stimulate primitive, balanced experiences of self

Patients in a hospital even recover more quickly with a window and views to

the outside. GRAFT, an architecture firm in Berlin, links design and healthcare and

evaluates how an environment, space, and light can promote self-healing. They

worked on a research project to look at the atmospheric quality of intensive care

units, and discovered that improved lighting conditions allow people to be more

awake during the day and sleep easier at night.[13] Berthold Hofling, Chief Physician

for Internal Medicine and Cardiology at the Agatharied Hospital in Germany, agreed

that this type of exposure not only has a positive impact on patients, but also on the

workers, who remain resilient as a result. Every passage has access to natural

daylight, including the stairwells, which are also well lit. After going through an

unpleasant experience, one does not want to then be moved to a dismal room void of

any exterior linkages.[14] The experience also provides a "visual rest center" in which

our eyes can adjust and readjust to different distances.[15] Light, in a way, gives life in

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[12] Karen A. Franck and Bianca R. Lepori, *Architecture Inside Out*, 1st ed. (University of Michigan: Wiley, 2000): 49.

[13] Christine Nickl-Weller and Hand Nickl, *Healing Architecture* (Munich: Braun, 2013): 155-159.

[14] Christine Nickl-Weller and Hand Nickl, *Healing Architecture* (Munich: Braun, 2013): 225.

[15] Derek Phillips, *Daylighting: Natural Light in Architecture*, 1st ed. (Architectural Press, 2004): 15.

that it makes us feel exhilarated and full of energy (Figure 5).[16] Humans and various

mammals are naturally drawn to light; for our emotions become affected with the

specific atmosphere it conveys whether it is soft and dream-like or sparkling and

invigorated. On the contrary, a lack of exposure to daylight can result in "Seasonal

Affected Disorder" (SAD) and poor lighting can even affect our stress levels and

cause eye discomfort.[17] Due to this effect, it is imperative to design for both humans

and animals, taking into account the site lines of both an animal and a human (Figure

6).
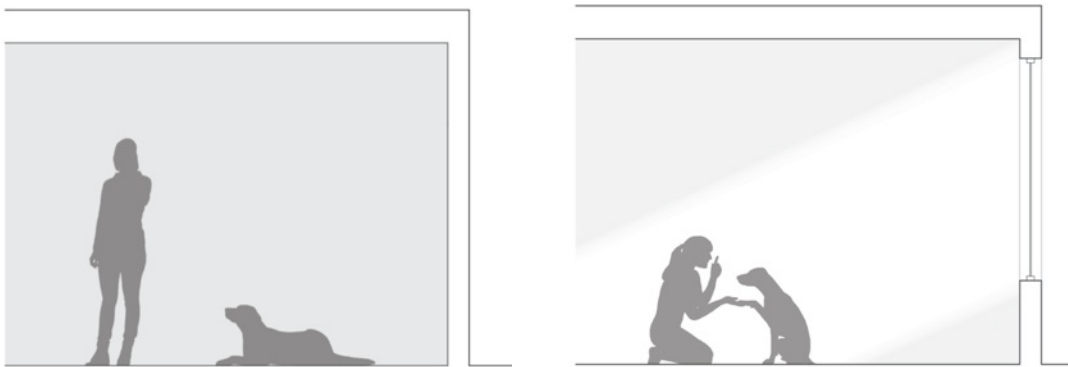


**Figure 5: The correlation between natural light exposure and an increase in energy levels and interaction**
Source: Author

[16] Henry Plummer, *Poetics of Light*, Architecture & Urbanism Extra Edition Series (A & U, 1993): 15.
[17] Derek Phillips, *Daylighting: Natural Light in Architecture*, 1st ed. (Architectural Press, 2004): 18.
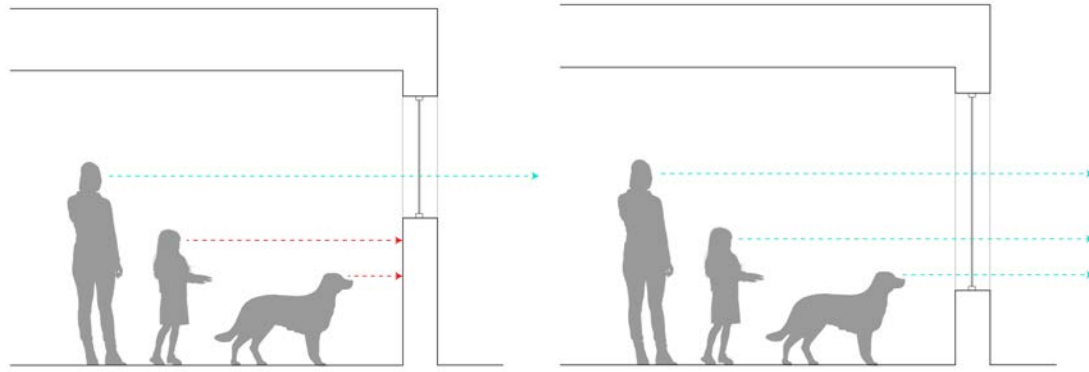
**Figure 6: Window opening accommodation for both humans and animals**
Source: Author

The teleology of space refers to the significance of space for specific needs to foster the healing power of that arrangement based on the many demands of the self together with the surrounding environment. A space must achieve a sense of being, and will provide basic needs and achievable offers. It may also become more complex in its provision of needs based on the user demographic, for example, age, gender, social endowment, time of use, and special wishes. The concept of exploration comes into play to satisfy the basic need of mental life, for we need this type of space in order to stimulate meaningful brain activity. On the other hand, we do need a sense of life, meaning recognizable elements and habitual activity, as we also interact in these spaces and must account for human as well as animal encounters. However, public spaces with public encounters must still protect in some way without limitations or restrictions. [18] It is possible to foster social interaction in a safe and enclosed environment while allowing for a certain level of freedom.

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[18] Christine Nickl-Weller and Hand Nickl, *Healing Architecture* (Munich: Braun, 2013): 243.

Salutogenesis is another theory that refers to the healing power of space, for it relates to the preserving of health by drawing on general internal resources rooted in coherence and resilience. In regards to the manageability of outer and inner environments, private space requires this balance more than others but usually it is not achieved.[19] The space must include the choice to be away from others or the breaking up of spatial components to allow occasional proximity to others. This factor holds true for most humans, though children must be considered as well. The needs of the self change with age, for a child's needs are different from the needs of an adult or an elderly person. Children have yet to acquire the ability to adjust quickly to new conditions, so their spatial accommodations must be sensitive to a child's mindset. A space that is enticing to a child may contain diverting activity, fantasy, and a sense of liveliness; children often look for something special that they may make their own and understand.[20] The nature of the environment in conjunction with the interactions that take place within will add a level of comfort and improvement of mental health. With a preliminary understanding of how humans and animals react in certain environments through these healing theories, we may begin to evaluate an added complexity in which architecture promotes rehabilitation.

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[19] Christine Nickl-Weller and Hand Nickl, *Healing Architecture* (Munich: Braun, 2013): 245.

[20] Christine Nickl-Weller and Hand Nickl, *Healing Architecture* (Munich: Braun, 2013): 249.

*Canine Behavior and Psychology*

      The ways in which dogs interact with humans can rely on external circumstances and place, but they will react accordingly given their innate characteristics and ancestry. Dogs maintain a social nature, which can be traced back to the wolf and pack hierarchy. Due to this trait, dogs work in terms of dominance, whether it is among their species or including humans as well. Since canines are such social beings, they will generally not hesitate to use olfactory exploration to gather information on the identity, previous location, and emotional state of a human being (Figure 7). Dogs can anticipate weather conditions, know if one is sick, and gage one's emotions all through their nose.[21] They have much more use for their sense of smell than humans do, as canine nostrils are even shaped like an apostrophe in order to allow more scent to be received. In a human, the eye and the ear are the main receivers of social stimuli, however it is argued that our main tool is our eye since our ears do not change positions and orientation.[22] Humans have around 5 million olfactory cells in their noses, while dogs typically have 200-300 million depending on the breed.[23]

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[21] Alexandra Horowitz, *Being a Dog: Following the Dog into a World of Smell* (Great Britain: Simon & Schuster, 2016): 2.
[22] Aristide H. Esser, *Behavior and Environment: The Use of Space by Animals and Men* (New York-London: Plenum Press, 1971): 217.
[23] Cynthia K. Chandler, *Animal-Assisted Therapy in Counseling*, 3rd ed. (Routledge, 2017): 13-14.

**Figure 7: Olfactory environmental information**
Source: Author

The social characteristics of a dog in conjunction with their reliance on the senses also contribute to some behavioral issues. In the context of an animal shelter, it is not uncommon to come across an animal that has been abused, neglected, or stray, and therefore lack human interaction or simply have not experienced positive interaction. This is the reason as to why many troubled animals will not find a home; people choose which animal they will adopt based on compatible behaviors. Some of these factors from a dog's past and the conditions and spaces they were kept in may have led to behavioral issues or aggression later in their lives. Aggression can stem from a number of previous circumstances such as abuse, dog fighting, lack of socialization, or simply sensing that someone is particularly unfamiliar. Competitive aggression takes place when one dog is dominant over the other, and with our

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understanding of the "pack" hierarchy we are able to better comprehend the problem.

Fear-related aggression occurs when the dog would rather escape if he or she could,

but that is not an option. If the human backs away the dog's fear is reduced, so it is

common to resort to growling and snapping. Pain-induced aggression stems from dog

fighting, for the human will enforce pain so that the dog bites back in self-defense and

therefore continues to fight.[24] We can attempt to combat these behavioral issues with

this initial understanding of the animal's past and take the appropriate steps to aid in

rehabilitation. It is not impossible for these animals to improve mentally and

physically, and they need environmental accommodation as well as the proper

training and socialization in order to heal.

*Training Benefits*

Training, whether for behavioral issues or simply to start fresh, is a positive

way for humans and animals to learn from one another. Methods such as "behavioral

animal therapy" do not require expertise and professional status; there are many

attainable and effective levels.[25] When dealing with and understanding behavioral

issues such as aggression that are not just simple commands, it may be useful to use

the method of "systematic desensitization." The method is used in cases where

punishment is not the solution to the problem, but rather exposure and reward.[26] As

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[24] Benjamin L. Hart and Lynette A. Hart, *Canine and Feline Behavioral Therapy* (Philadelphia: Lea & Febiger, 1985): 30-32.

[25] Benjamin L. Hart and Lynette A. Hart, *Canine and Feline Behavioral Therapy* (Philadelphia: Lea & Febiger, 1985): 3-4.

[26] Benjamin L. Hart and Lynette A. Hart, *Canine and Feline Behavioral Therapy* (Philadelphia: Lea & Febiger, 1985): 42.

fear-related aggression may be towards certain groups or types of individuals, the use of gradual exposure to the fear-inducing entity will allow the animal to become more comfortable every session. Treats can be given as the dog remains calm or shows improvement with closer proximity to the individual. The conditioning seen in this method can also be used with multiple other forms of aggression, and if done in a space that fosters comfort and positive relationships it will prove to be beneficial in the healing process. Humans can begin to develop a level of empathy for the animal as they collectively experience this journey to emotional recovery and trust building.

Socialization in dogs is also quite common and from an early age will determine their behavior later in life. Some dogs are receptive to human socialization up to 16 weeks of age with the full sensitive period of socialization ranging from 2.5-13 weeks, but a study done by Freedman, King, and Elliot in 1961 proved that dogs who were not socialized by 14 weeks were fearful of humans and a 3-month attempt at re-socializing them was slow.[27] A comparison can be made between young dogs and humans, as children who experience animals from a young age build a bond with the animal, learn responsibility, and learn to be compassionate as they begin to understand the thoughts and feelings of another living thing (Figure 8).[28] However, we do not have as small of a window and as severe as a response as a dog would to lack of human-canine socialization.

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[27] Peggy McCardle et al., *How Animals Affect Us: Examining the Influence of Human-Animal Interaction on Child Development and Human Health* (Washington D.C.: American Psychological Association, 2011): 105.
[28] Peggy McCardle et al., *How Animals Affect Us: Examining the Influence of Human-Animal Interaction on Child Development and Human Health* (Washington D.C.: American Psychological Association, 2011): 4.
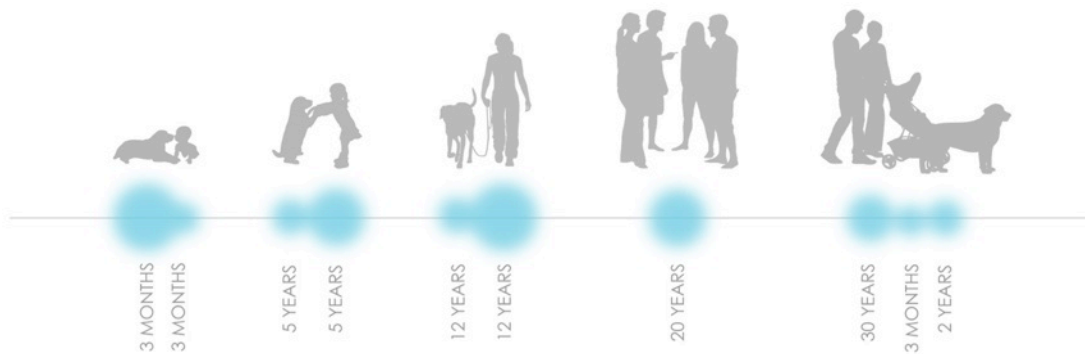
**Figure 8: Child-canine socialization impact and significance at various age groups**
Source: Author

This socialization can also be seen in various programs that are meant to benefit both the dog and the human. Green Chimneys, a 165-acre school 65 miles north of NYC with 200 farm animals, incorporates assistance-dog training classes for children with behavioral, social, and learning disabilities. It is a full-scale residential treatment facility where children from the ages of 6 to 18 interact with animals to lessen the effects of these disabilities as well as mental illnesses such as anxiety, depression, ADHD, and bipolar disorder. They teach the dogs 90 commands over the course of two years, thus forming a special bond with the dogs they have interacted with since they were puppies. They become caretakers and see the value and responsibility in their own work as they learn as well, for the children must work through frustration and stress to find confidence. The kids even understand that their own anger will affect the dog negatively, and they make a visible effort to improve their behavior.[29] While the dog learns from the human, the human also learns a great deal from the dog.

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[29] *Animal Healers*, Video, Special Education, 2006.

This bond formed during the training of an animal can also be observed in animal or pet therapy, which is a method used to reduce patient stress and increase motivation. Animal Assisted Therapy (AAT) either includes a therapist working with his or her own pet, or a trained animal handler who supervises the interactions between the therapy pet and the client. The pets in this setting are generally thoroughly evaluated and trained to deal with this type of human interaction. These interactions have been proven to improve human health whether it is through physical therapy where patients can walk dogs down a hallway or brush a cat's fur to increase muscle strength and control, or through mental therapy where a child who is a victim of abuse can experience gentle relationships with another living being.[30]

Many people are more likely to attend therapy sessions if there is an animal waiting for them, as it creates some excitement and a different way to interact in a situation that could have otherwise been less enjoyable. Interacting with an animal can provide a temporary escape from both physical and emotional pain and expedites the mental healing process. Patients experience a sense of comfort and nurturing with the positive physical interaction of a companion animal. Additionally, children are more likely to trust the animal participant over the human therapist.[31] Animals are more willing to enforce a sense of acceptance, for example, a dog will not judge a person based on past experiences or his or her troubled history.

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[30] Cynthia K. Chandler, *Animal-Assisted Therapy in Counseling*, 3rd ed. (Routledge, 2017): 2.

[31] Cynthia K. Chandler, *Animal-Assisted Therapy in Counseling*, 3rd ed. (Routledge, 2017): 3-5.

In order to properly assess the needs of and accommodations for animals and humans in an interactive environment, we must first comprehend the interactions that take place within an animal shelter. Many of the individuals who work in a shelter, especially volunteers, choose to be in that environment to help and care for animals; the value is not in making money but in helping another living thing. For many shelter workers, one of the most engaging experiences is finding a home for the animals. This could be seen in the typical animal shelter that would fall under the category of a larger, more structured organization that would tend to be a registered charity. Additionally, these may process 600-1500 animals each year and employ 10-30 staff members.[32] The shared desire to care for these animals forms an additional bond among workers, which is another branch of interaction that can be encouraged through design and environmental decision.

Many of these concepts, theories, and methods have begun to appear in contemporary environments, but generally have been underutilized or neglected in the spatial configurations observed throughout the animal shelter typology. Current facilities tend to focus on the essential template of programmatic elements without much additional attention to the healing that must take place within their walls. We must establish a means of integrating these aspects into the existing typology in order to generate an entirely new category of an animal and child welfare facility that integrates principles and characteristics of a healing and interactive space.

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[32] Lindsay Hamilton and Nik Taylor, *Animals at Work: Identity, Politics, and Culture in Work with Animals*, vol. 16, Human-Animal Studies (Boston: Leiden, 2013): 93-95.

# Chapter 2: Learning from Precedents: Animal Shelters and Healing Spaces of Today

Today's animal and human/animal interactive facilities are slowly becoming more accommodating for the companion animals they house, though there is much progress to be made regarding interactive environments and healing. However, many child therapy facilities are taking the appropriate steps towards accommodating a healing environment. Through the exploration of some present-day precedents, we are able to evaluate the successful as well as the unsuccessful architectural qualities of the environments in which animals are kept and interact with humans as well as the environments in which adults interact with children. In order to comprehend the environments that most effectively foster human/animal and child interaction and rehabilitation, we must gain an initial understanding of the spaces in which these interactions occur on an everyday basis.

## *Common and Conducive Environments for Human/Animal Interaction*

Daily life provides many opportunities for seemingly commonplace and undocumented animal interaction, whether one is a pet-owner or not. These interactions take place in both indoor and outdoor environments, and each maintains spatial elements that result in respective benefits for humans and animals alike.

Based on a survey conducted among twelve architecture students of both graduate and undergraduate levels as well as workers in the animal shelter industry, a few conclusions can be made about the potential of environments for different types of interactions between humans and companion animals (Figure 9). Architecture

students are more likely to be observant of the specific spatial qualities and elements of their surroundings, and shelter workers have observed first-hand which environments are successful or unsuccessful for human and animal well being. According to the majority of students and professionals, outdoor spaces are more conducive to canine-human playful interaction including athletic activity, roughhousing, and exploring. The spatial elements observed that foster this activity include open-air, green space, tree cover, natural light, different textures, and larger spaces in general. However, indoor spaces in a home are occasionally preferred in terms of building a special bond with the animal, as there are no distractions and sensory-stimulating activity beyond the immediate interaction. This one-on-one time is beneficial in the trust built between human and animal in a more intimate setting that requires a certain level of comfort. These environments are enclosed and involve petting, cuddling, and oftentimes training.[33] Customer Service Supervisor and Pet Licensing Program Manager Debbie Norris of the Department of Police (Animal Services Division) at the Montgomery County Animal Services & Adoption Center asserts that outdoor interaction is imperative for an animal's mental and physical well being as well. While this can be a time of mutual activity between human and animals, it is also a time for independent exploration:

> "Some people look at a shelter worker outside with a dog on their phone thinking they aren't interacting, but this is actually essential for the dog. They need to be able to sniff." - Debbie Norris

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[33] Sabrina Nagel, "Common Environments that Foster Human/Animal Interaction," (Survey. November 2017).

Two volunteer workers were in agreement that time outside, whether interactive or

not, is where a dog seems to thrive and be most at peace. An outdoor environment is

not only thought of as an ideal place for active interaction, but also an ideal place for

the fostering of an animal's need to explore, returning to the theory of the teleology of

space.



**Figure 9: Conclusions from the survey, "Common Environments that Foster Human/Animal Interaction"**
Source: Author

Specific case studies can be more accurately assessed with a comprehension

of some of these basic and usual interactions in conjunction with aforementioned

spatial healing theories such as psychobiology, teleology, and salutogenesis. These

theories may be enforced or ignored depending on the building typology of an animal

shelter or a typology meant specifically for healing such as a veterinary hospital and

therapy center.

*Animal Shelters*

The animal shelter typology aims to house animals until adoption by

providing them with basic care and interaction. The chosen precedents provide a

comprehension of these basic programmatic elements necessary for a successful

animal shelter as well as additional spaces for human and animal interaction. The comparison between old and new facilities further enforces how our understanding of companion animals and our accommodations for them has evolved over time. Existing shelters tend to respond to the mental and physical needs and health of both animals and humans to varying degrees.

*Little Shelter*

Little Shelter, located in Huntington, NY, is an example of an older non-profit facility, as it has existed since 1927 and is one of Long Island's oldest no-kill animal shelters. Their animals are rescued from kill facilities to be rehabilitated and socialized with approximately 400 animals housed at any given time on 6 acres of land, and over 2,000 animals adopted and saved every year.[34]

The shelter also incorporates significant programs that better the wellbeing of the youth of the surrounding community as well as the animals. One of the programs is the Human Education Program, which allows staff members to visit elementary, middle, and high schools to teach children and young adults about caring for animals, therefore giving children the skills and knowledge needed to be compassionate and respectful towards all living things. Little Shelter's Reading Program similarly brings trained dogs to local elementary schools to work with students who may suffer from anxiety and stress towards reading in a classroom setting. Students sit on blankets and read to the dogs, as these animals provide a judge-free zone. The children are more likely to trust and be comfortable with the dogs, and therefore are able to build

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[34] Little Shelter, "About Us."

confidence and self-esteem. These programs assist the surrounding community outside of the shelter; however, the shelter itself does not provide the spatial accommodations for these interactions.

The three healing theories and their associated principles are present in some areas and absent in others. The teleology of the spaces is applied to a certain extent, as many of the users' basic needs are catered to and met. The cat rooms are open and simply consist of many climbing surfaces and scratching posts without cages, the dogs have large plots of land to run and explore outside of the kennels, and there are both quarantine rooms and a small veterinary facility (Figure 10). Salutogenesis of space can be seen in these outdoor spaces and connections from interior to exterior, as the animals have a balance of freedom and some level of restriction in a relatively uncontained environment.



**Figure 10: Site photos from Little Shelter (from left: cat room, outdoor space for canine exercise, quarantine)**
Source: Author

The psychobiology of space is addressed with natural light and a connection to the

outdoors. The principles and their associated spatial elements are enforced most in the

cat rooms, as they include large windows that overlap with the perches and shelves

the animals inhabit, thus forming a smooth visual connection (Figure 11). The

interaction between humans and felines is strongly enforced due to these spatial

elements in the cat rooms (Figure 12), as many visitors can be seen playing with cats

and kittens freely and petting them at eye level. The kennels also include some

connection to the exterior with outdoor cages linked directly to the indoor cages,

though the door permitting this passage is not always open.
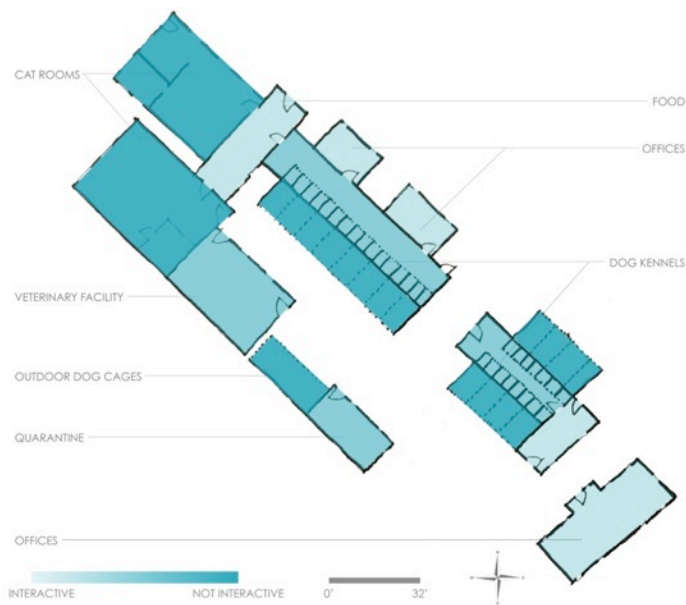


**Figure 11: Levels of human-animal interaction in accordance with program**
Source: Author
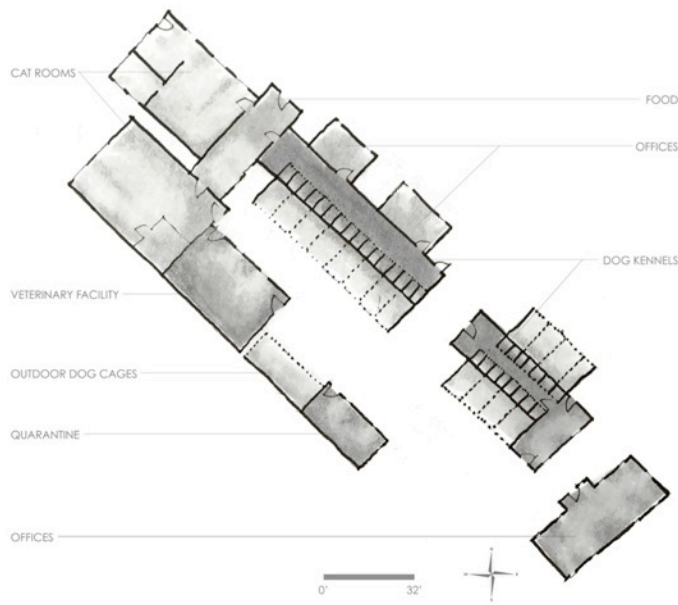
**Figure 12: Correlation and contradiction of natural light and spaces that require natural light**
Source: Author

Although some of the architectural elements of the shelter are beneficial, there are some areas that could be improved. In terms of the building arrangement, there are no visible connections among the structures located on the site, which results in an isolation of the various programmatic elements. The only spaces on the site that allow for adequate human/animal interaction aside from the cat rooms and basic care are the forested areas and fenced-in spaces. Each piece of program located indoors is purely to house or treat the animals being cared for at the facility. Additionally, the kennel conditions are not accommodating the mental wellbeing of the dogs housed within. The dogs seem to lack energy and are constantly looking at a blank wall with artificial lighting and an extremely narrow corridor (Figure 13, 14).

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**Figure 13: Kennel conditions at Little Shelter**
Source: Author



**Figure 14: Visual connection and disconnect to exterior spaces**
Source: Author

These conditions may lead to a lack of improvement in behavioral issues, as can be

observed in the case of a young Doberman mix named Boomer (Figure 15). He had

been returned to the shelter twice by two different families who were unable to train

him, as he is high energy and extremely excitable. The outdoor spaces aid in a release

of this energy, though the majority of time is spent in the kennel itself. Had the shelter

perhaps incorporated a training aspect on site in conjunction with improved

architectural and spatial qualities, Boomer may have had a better chance at staying in a home.



**Figure 15: Boomer- Doberman Mix**
Source: Author

*Truckee-Tahoe*

The Humane Society of Truckee-Tahoe is a quaint animal shelter in Truckee, California that opened its doors in 2013 and was designed by the architects at Animal Arts in Boulder, Colorado. The floor plan is compact occupying 10,000 square feet with animal control offices, a veterinary facility, training space, and animal shelter housing for cats and dogs.[35]

Similar to Little shelter, the organization aims to better the surrounding community and youth through beneficial interaction between human and animal. Their Pet-Assisted Therapy (PAT) Program allows certified volunteers to bring their companion animals to Tahoe Forest Hospital, local schools, and Tahoe Safe Alliance

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[35] Animal Arts, "Town of Truckee Public Service Center Animal Shelter."

to improve the health and wellbeing of these individuals.[36] Once again, this does not

occur within the shelter itself though it does further enforce the positive impacts of

human and animal interaction and healing. The shelter incorporates an education and

training room where trainers hold classes, which is an improvement to the basic

animal shelter typology. The dogs housed in the shelter do not participate in the

classes, however the dogs adopted from the facility are encouraged to come back to

take part in classes. According to the organization, dogs adopted from HSTT that

participate in the training class are 94% more likely to stay in their adoptive home.[37]

     The activity that takes place within the shelter's walls combined with the

spatial healing theories aids in the likeliness of the animals finding a home. The

teleology of space is more successfully fostered in that the animals are provided with

veterinary care and have access to exercise yards for their mental and physical

wellbeing in addition to spaces such as the adoption and training rooms that better

facilitate positive interaction between human and animal (Figure 16). Basic

interactions such as evaluation, feeding, and caring for the animals take place in the

evaluation room and stray animal rooms. This type of interaction also occurs in the

spaces where adoptable animals are housed, though at a higher level, as visitors are

able to interact with these animals as well. The human animal bond is enforced even

further in the training room, where current pet-owners and their dogs are able to learn

from one another in an open environment with plenty of visual connections to the

outside.

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[36] Humane Society of Truckee-Tahoe, "Pet Assisted Therapy: Bringing Smiles to Patients and Children with HSTT Certified Therapy Pets."
[37] Humane Society of Truckee-Tahoe, "Dog Training."
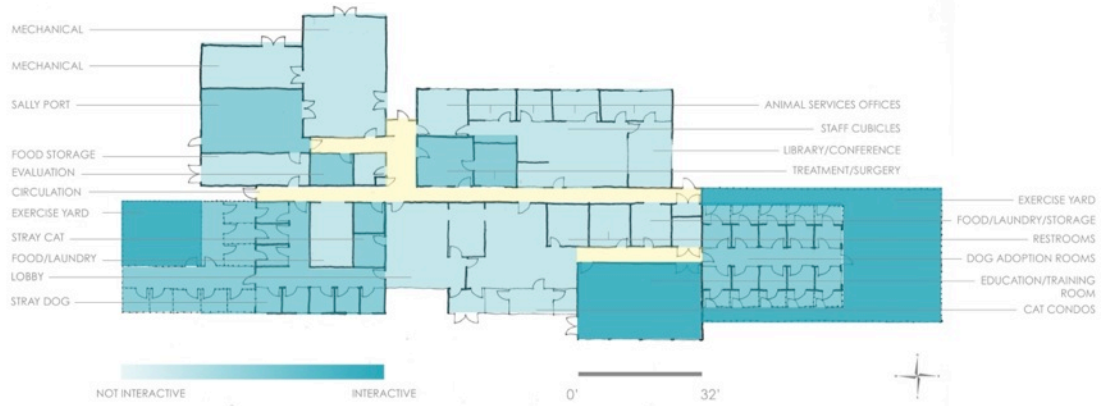
**Figure 16: Levels of human/animal interaction in accordance with program**
Source: Author

This visual connection brings with it the introduction of natural light into spaces that foster a decent amount of human and animal interaction and fosters the psychobiology of space (Figure 17). Spaces such as the exercise areas, animal housing, the lobby, and the training room allow for the most natural light facing south, as specific types of interactions occur in each. The lobby includes a large clerestory as well as expansive windows, which can also be seen in the training room. Whether those include caring for the animals or playing and bonding with the animals, the exposure to natural light improves the quality of the space and the energy levels within.



**Figure 17: Correlation between natural light and spaces that require natural light**
Source: Author

Salutogenesis is encouraged as well with outdoor connections to kennels and the

breaking up of program for strays or new arrivals and adoptable animals. New

arrivals are brought in through the sally port towards the back of the building and

immediately evaluated to determine their mental and physical state. Strays are kept on

the west end of the building while adoptable animals are brought to the east side to

the adoption rooms. Visitors enter through the public south-facing entry into the

lobby then may proceed to interact with animals in the cat or dog rooms, or they may

take their companion animal directly into the training room (Figure 18).
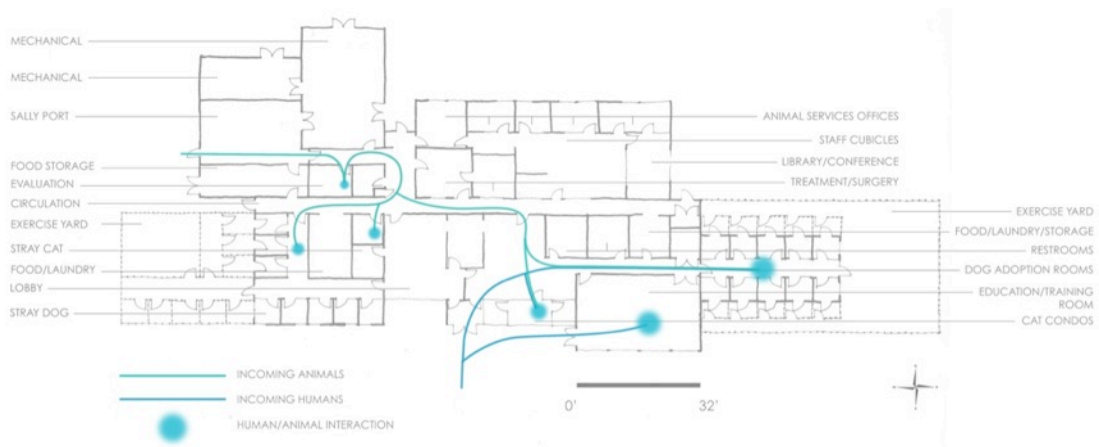


**Figure 18: Sequence of circulation and interaction for incoming animals and humans**
Source: Author

The configuration of the program and spatial qualities is strategic and begins to take

the next step in enforcing a beneficially interactive and healing environment for both

animals and humans.

Montgomery County Animal Services & Adoption Center is another relatively
new and innovative animal shelter designed by Proffitt & Associates Architects in
2014 in Gaithersburg, Maryland. The facility is located on a seven-acre site with
49,160 gross square feet and a 15,737 square foot footprint.[38] User needs, both human
and animal, are accommodated with a building program that consists of public
adoption areas, animal holding rooms, animal treatment rooms, veterinary and
medical facility spaces, offices, a euthanasia facility, a surgery room, and recovery
rooms. According to Debbie Norris, the facility is home to around 350 animals at any
given time and though it is a larger animal shelter, "it is never big enough."

With such a large shelter, there are more opportunities for human and animal
interactions at different scales and n a variety of circumstances (Figure 19). The
public adoption rooms that house the animals provide secondary, more enclosed
rooms within that act as a more intimate space for families and potential pet-owners
to meet and interact with the animals. A high level of human and animal interaction
also occurs among workers and canines in the dog runs adjacent to the cages, which
are elements of both teleology as well as salutogenesis. From here, the dogs may be
walked outside towards the exercise yards where they may explore and relieve stress.
The shelter also utilizes outdoor spaces for purely canine interactions called "dog
meets." This is done when a potential adopter already owns a dog and they must
become accustomed to one another, or when two dogs may be living in close

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[38] Pet Wise Communities, "Phasing- A Way to Move a Dream Project Forward."

proximity to one another in the shelter itself. They are naturally most comfortable

outdoors, and feel less threatened in a more open and less confined space.

Additional behavioral assessments are given in a dedicated room located near

the animal holding kennels for stray or quarantined animals. These spaces are more

enclosed to provide a safe environment for the building of trust between an animal

behaviorist and an animal that may not be accustomed to certain types of interactions.



**Figure 19: Levels of human/animal interaction in accordance with program**
Source: Author

Due to the levels of stress and behavioral issues that some of these animals face, the

psychobiology of space is addressed through the allowance of natural light in

appropriate rooms (Figure 20). Each room that houses animals includes large clouded

windows and skylights that invite a diffuse and calm light into the spaces (Figure 21).
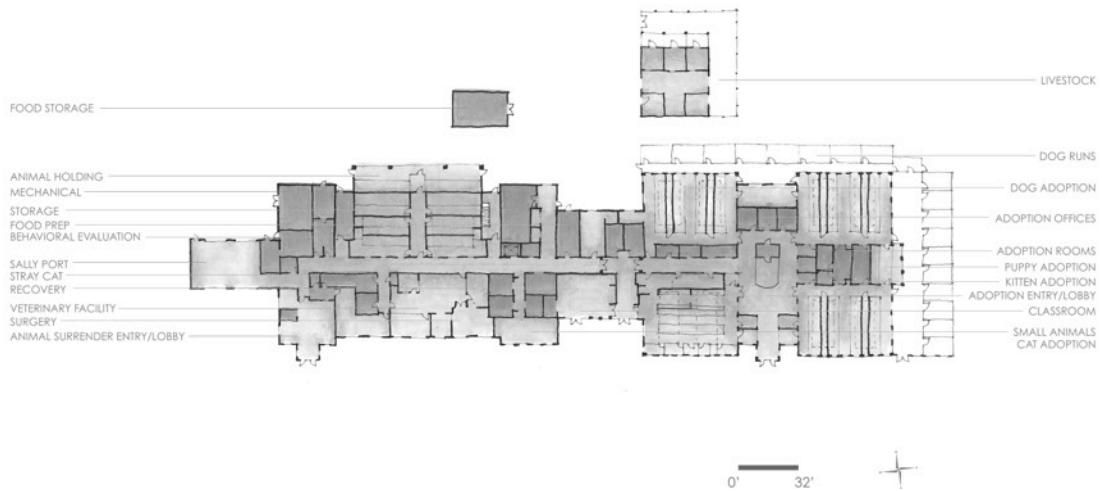


**Figure 20: Correlation between natural light and spaces that require natural light**
Source: Author
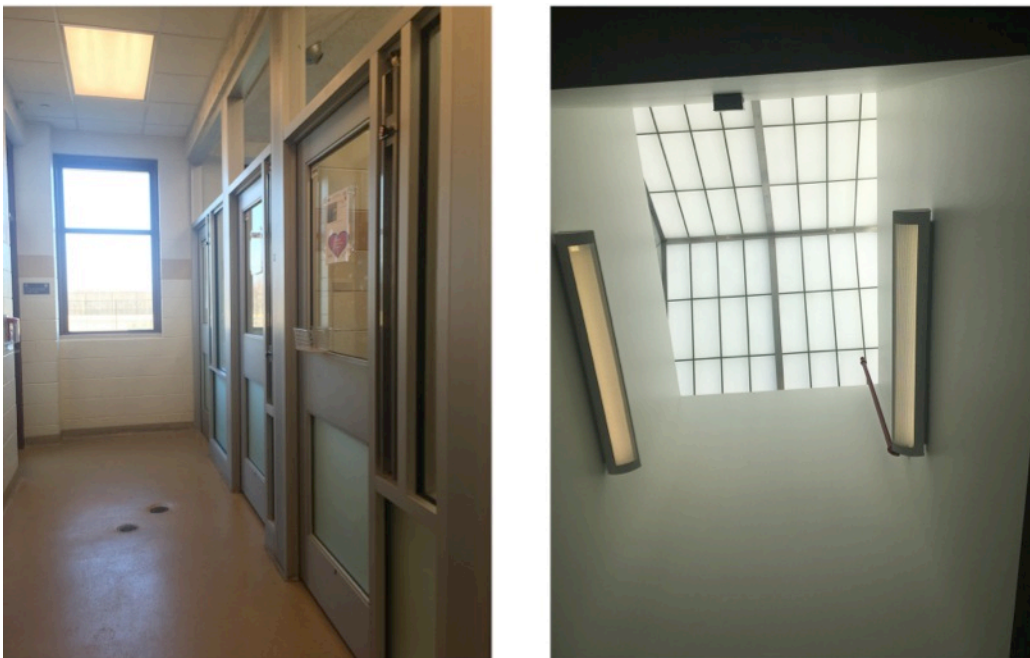


**Figure 21: Natural light in dog adoption rooms (left) and cat adoption rooms (right)**
Source: Author

The light tile and concrete complement this effect by reflecting it back into the center

of the rooms. However, depending on the direction of the sun and configuration of

rooms, some spaces are more successful in their allowance of natural light than others. For example, the larger glazed cat adoption rooms on the south side of the building receive a great deal of direct sunlight, resulting in a problem of over-heating (Figure 22). The shelter is working on these issues and intends to employ shading, as it is still relatively new and improving on a daily basis.



**Figure 22: Natural light in the cat rooms on the south side of the building**
Source: Author

The sequence throughout these spaces for both incoming animals as well as incoming people is crucial to facilitate the appropriate levels of interaction and contact between both parties (Figure 23). Surrendered animals enter through the sally port on the west end of the building where the public is not permitted to access and are brought to the animal holding rooms in order to be evaluated, sometimes requiring medical care. Their temperament is assessed in the behavioral evaluation rooms, and it is determined whether or not the animal will be taken to the adoption rooms depending upon their behavioral and medical wellness. If adoptable, the animal is taken along the hall and directly into the nearest entrance to adoption rooms, as they must become accustomed to their new living space without additional stress. People may enter

through the adoption center entry on the east end of the building, or through the

animal services entry on the west side of the building if they are surrendering an

animal or inquiring about related issues. From the adoption center lobby, one may

enter any of the four adoption areas in which they will have basic interactions, then in

the more enclosed meeting rooms where they will have more physical interactions.

These rooms are where an initial bond may be formed between owner and pet in a

safe and protected environment.
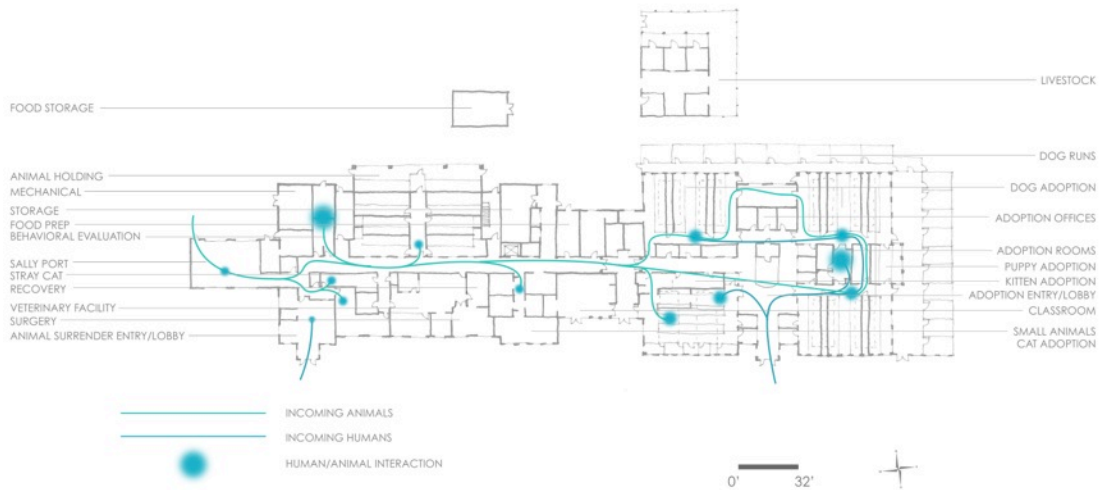


**Figure 23: Sequence of circulation and interaction for incoming animals and humans**
Source: Author

The various spaces within this expansive building begin to further address the

benefits of each of the healing theories with tangible architectural and spatial

elements such as large windows and skylights, both enclosed and open spaces,

increased height of spaces, and acoustical ceiling tile and materiality. Though the

building may have a couple of flaws, these flaws are acknowledged and can be used

as further precedent for a new typology.

*Veterinary Facilities*

A typical healing environment for animals must also be observed in order to enforce the mental and physical healing that must take place during the process of rehabilitation. Veterinary facilities lie on a spectrum of simply providing basic medical care and typical spaces to providing unique spaces as well as interactive spaces to expedite the healing process. These precedents convey the difference among international and national typologies of veterinary facilities and the significance placed on open and closed spaces as well as interactive spaces for both humans and animals in relation to recovery.

*Jeevashram Shelter*

As an international precedent from New Delhi, India, Jeevashram Shelter provides a unique perspective to human/animal interaction and healing as a veterinary facility that incorporates some of the shelter typology. It was designed by Kamath Design Studio in 1990 and is located at the edge of the urban village of Rajokri. The site creates its own oasis in order to promote a beneficial environment for mental and physical healing. The firm's objective with this project was to create this healing space for animals based on an understanding of animal psychology in regards to territory and space.[39]

The concept relates strongly to the salutogenesis of space, with both private and public spaces for the animals not only to interact with one another, but with people as well. The multiple courtyards centrally located on the site further enforce

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[39] Kamath Design, "Jeevashram Shelter."

this activity, as they are surrounded by circulation paths, various pens and cages that

house the animals, and the veterinary facility (Figure 24). The spaces accommodate a

seamless linkage between outdoor and indoor environments in conjunction with

ample exposure to natural light, which is common and encouraged with the natural

climate of New Delhi (Figure 25). Rhythmic compositions of arches and corbels of

brick and stone allow for this openness of plan and provision of natural connections.
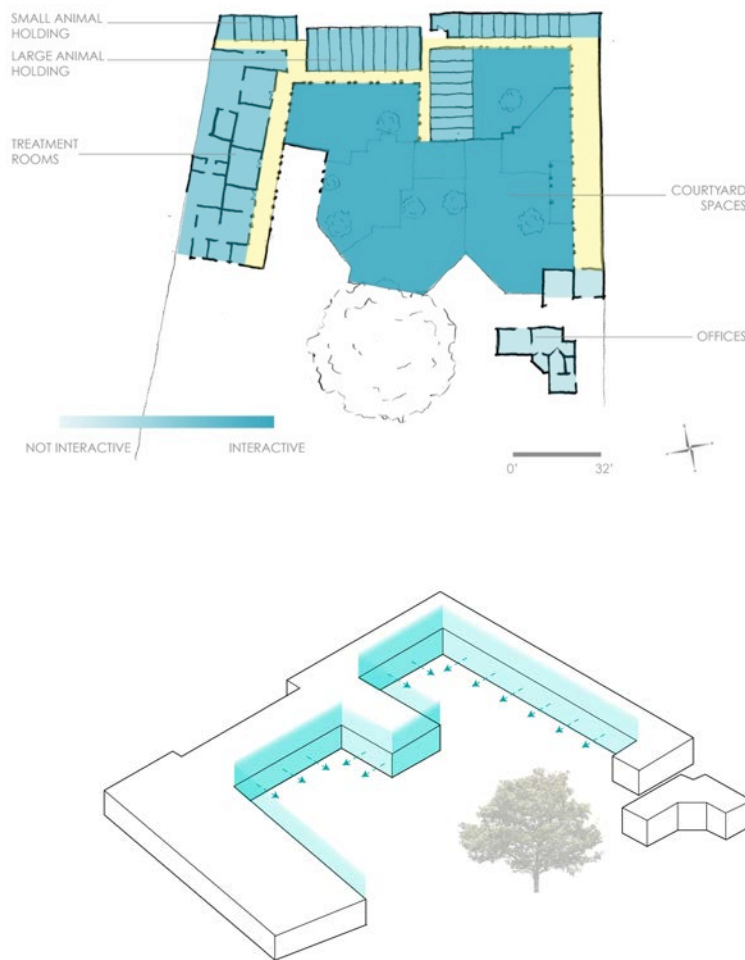


**Figure 24: Levels of human-animal interaction in accordance with program and connection to the outdoors**
Source: Author

SMALL ANIMAL
HOLDING

LARGE ANIMAL
HOLDING

TREATMENT
ROOMS

COURTYARD
SPACES

OFFICES

0'        32'
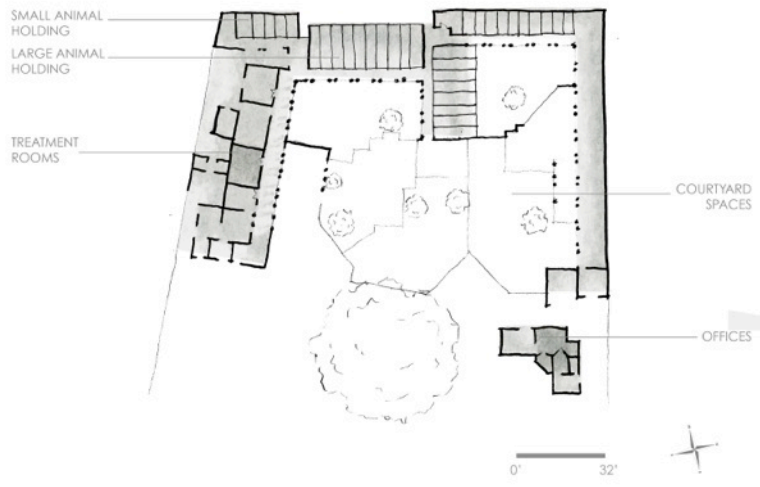
**Figure 25: Correlation between natural light and spaces that require natural light**
Source: Author

The configuration then leads to the satisfying of the teleology of space in that these spaces provide the opportunities for this natural interaction to occur. The programmatic elements are arranged in such a way that employee and animal circulate together in harmony, for there is no specific delegated entry for either human or animal (Figure 26). Human and animal circulate along the rhythm of arches and corbels whether it is towards the veterinary facility, pens and cages, or to the central courtyards. With the introduction of the courtyard typology in order to facilitate the benefits of these spatial healing theories, we may deduce that centrally focused and natural spaces can more effectively accommodate the mutual interaction between humans and animals.

39

**Figure 26: Sequence of circulation and human/animal interaction for employees and animals**
Source: Author

### *Palm City Animal Medical Center*

BDA Architects designed Palm City Animal Medical Center in Florida in order to enforce a more comfortable healing environment for the animals cared for within the facility. It occupies 14,347 square feet and contains multiple courtyards, two outdoor play areas, and greenery and park features throughout the design.[40]

The teleology of space is enforced as the facility has ten exam rooms that accommodate users with a cushioned bench with window perches for animals to maintain outdoor views and the salutogenesis of the space is enforced as the lobby area even includes elements of a park with bench seating, a waterfall, additional greenery, and plenty of natural light. The animal users' needs are taken into account with the attempt at increasing their comfort levels through natural elements. Each room in which a higher level of human/animal interaction takes place is located towards the perimeter of the facility in order to introduce maximum exposure to

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[40] dvm360, "A family-friendly veterinary facility."

natural light and psychobiological effect (Figure 27). The animal housing rooms and

examination rooms require this exposure in order to calm the animals with

connections to the outdoors and the fostering of positive interactive behaviors

between human and animal (Figure 28).



**Figure 27: Levels of human/animal interaction in accordance with program**
Source: Author
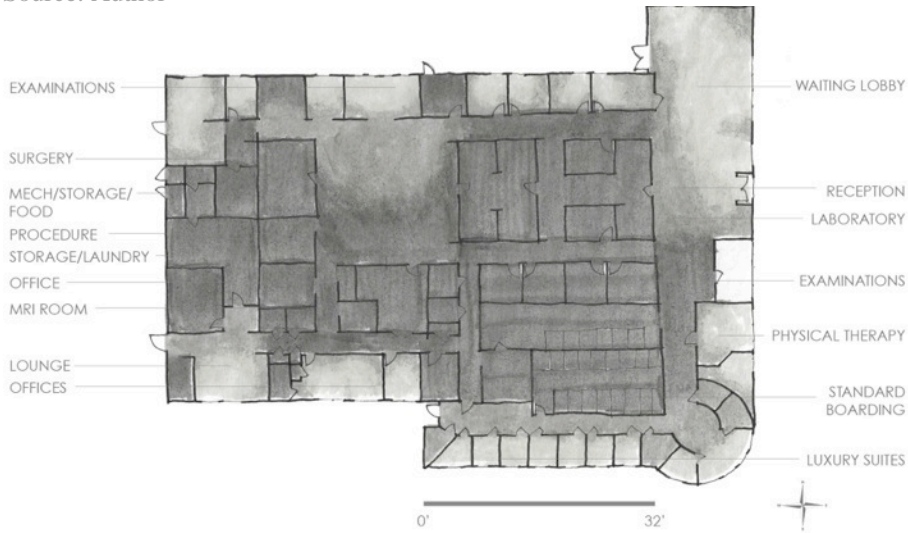


**Figure 28: Correlation between natural light and spaces that require natural light**
Source: Author

The salutogenesis of the space is also apparent with the provision of private

spaces for healing animals, which includes both standard boarding rooms as well as

"luxury dog suites."[41] The spaces are also connected to the outdoors with an enclosed exercise yard that contains both synthetic and legitimate grass areas. The natural qualities of the indoor and outdoor spaces encourages the explorative behavior of the animals, as the environments are not typical medical environments, but rather masked in these natural features.

Though the facility still may require additional spaces that further facilitate human/animal interaction and healing, the spatial qualities begin to enforce some level of rehabilitation. The provision of public and private spaces as well as the connections to exterior spaces is what creates a more successful veterinary establishment.

*Veterinary Clinic Masans*

Veterinary Clinic Masans, designed by domenig architekten in 2014 in Chur, Switzerland, maintains the standard program of a veterinary facility but with a unique relationship to topography. The building occupies 12,325 square feet and is partially underground in a unique wedge shape. The roof of the facility provides green space and recreational space for the families in the housing complexes located above.[42]

Due to the unusual placement of a veterinary clinic, the program had to be arranged to cater to the teleology of space in relation to the comfort of the users, who are pets and pet-owners. The locations where humans and animals as well as humans and other humans would interact most are located on the outer edge so that they may receive the only natural light within the building (Figure 29). This includes

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[41] dvm360, "A family-friendly veterinary facility."
[42] ArchDaily, "Veterinary Clinic Masans / domenig architekten."

examination rooms, conference rooms, and the waiting room by the entry of the

facility. A long circulation path separates the remainder of the program, and this also

happens to be where the natural light does not penetrate, so it was imperative that the

psychobiology of the interactive spaces was addressed (Figure 30). The program

behind this hall requires artificial light, such as surgery rooms, storage, and

laboratories.



**Figure 29: Levels of human/animal interaction in accordance with program**
Source: ArchDaily, Author
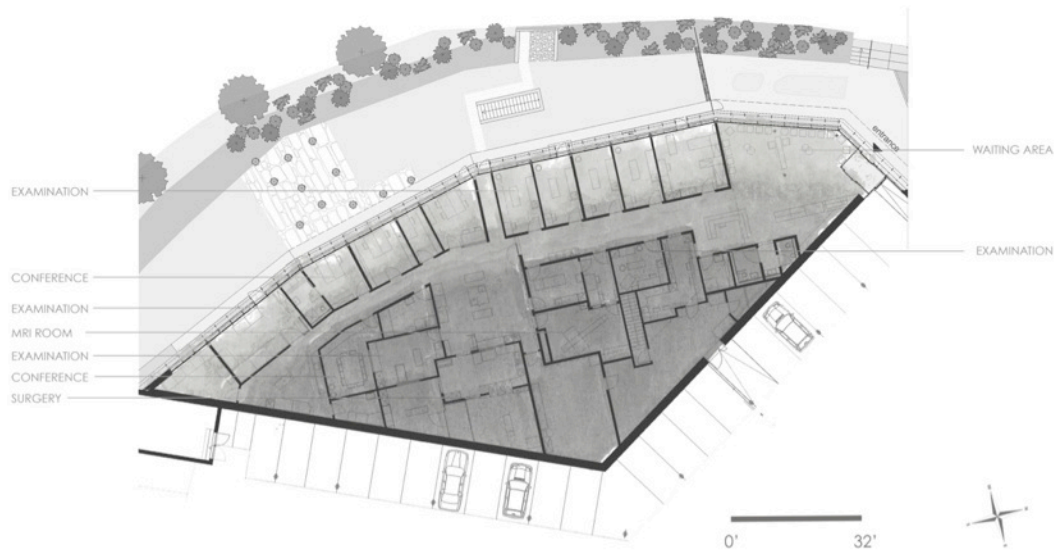
**Figure 30: Correlation between natural light and spaces that require natural light**
Source: ArchDaily, Author

The configuration is thoughtful, as animals would need to be comforted during

examinations with a connection to the outdoors and a positive impact on energy and

mood, whereas the animals are not awake in order to interact within spaces such as

surgery rooms.

A structure such as this mainly aims to be functional and efficient in order to

give the animals the care they need rather than facilitate significant human/animal

interaction, but are still able to incorporate a separation of program and the

introduction of natural light in order to further expedite the healing process.

*Child Therapy Facilities*

The healing process is also thoroughly addressed in child therapy facilities,

which address the mental and physical needs of a troubled child. These precedents are

telling of the basic program needed for a child therapy facility as well as how an

international site incorporates specific connections to nature and natural lighting in order to encourage the rehabilitation process in children.

*One Kids Place*

Mitchell Architects designed One Kids Pace in Ontario, Canada in order to provide rehabilitation and support services to children with communication, developmental, and physical needs. The non-profit facility encompasses 41,290 square feet on 5.9 acres of land. Within the building are spaces for occupational therapy, physiotherapy, speech language pathology, therapeutic recreation, and specialized medical clinics.[43]

The entire configuration of the spaces within the building as well as the architectural qualities of those spaces caters to the accommodation of children and their comfort levels in a therapeutic environment. The teleology of space is addressed with the provision of multiple opportunities for positive interactions between therapists and children throughout the design. One of the main features of the building is the interior courtyard, which facilitates therapeutic interactions, a place of respite, as well as an occasional celebratory event (Figure 31). Adjacent to the courtyard and the circulation that surrounds it is a recreational gymnasium where children may play games and participate in athletic activity, further enforcing interaction with other children and adults in an informal environment where they have the opportunity to relieve stress as well.

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[43] ArchDaily, "One Kids Place / Mitchell Architects."

Legend:
1. Lobby/Waiting Area
2. Pediatric Clinic
3. Day Clinic
4. Therapists Workstations
5. Therapy Room
6. Family Resource Room
7. Administration
8. Staff Lounge
9. Gymnasium
10. Classroom
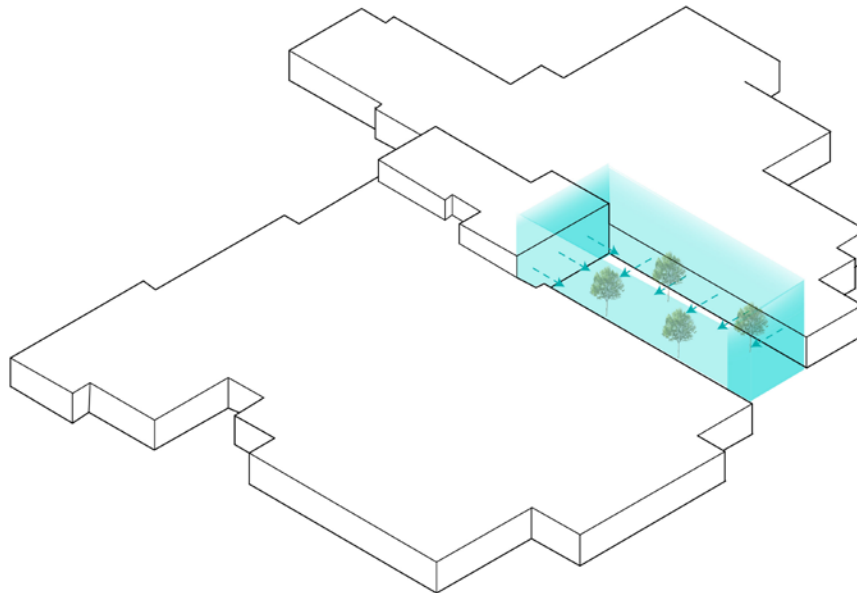11. Courtyard
12. Services

NOT INTERACTIVE — INTERACTIVE

0'        32'

**Figure 31: Levels of adult/child interaction in accordance with program and connection to the outdoors**

The connection to the outdoors and a balance of interior and exterior spaces is enforced through salutogenesis and the psychobiology of space, as the circulation space visually connects to the courtyard in the center and most therapy rooms provide exterior views and a large amount of diffuse natural lighting. This visual connection to the courtyard is additionally maintained in the child's first impression of walking into the space through the lobby, reducing the stress of an otherwise confined waiting room and the unknown (Figure 32). The lobby, courtyard, therapy spaces, and gymnasium provide the most natural light with the incorporation of skylights as well as clerestory windows to taller spaces (Figure 33). These elements of program are where providing a level of comfort for the children is most significant, and natural light and these outdoor connections feed positive energy as well as a calming agent to the spaces. Alcoves that open to the courtyard also contain stained glass, which cast colored beams of light into the space in the afternoon hours.[44] This also serves a dual purpose of designating certain colors to certain therapy rooms so that the children can easily identify and become accustomed to the various rooms. The building also creates a more comfortable environment for children through the selection of natural materials. It is reminiscent of its context of Ontario with limestone, clay brick, glue laminated timbers, cedar, maple, and slate, which are local materials that can all be found in the immediate environments.

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[44] ArchDaily, "One Kids Place / Mitchell Architects."

1. Lobby/Waiting Area    7. Administration
2. Pediatric Clinic      8. Staff Lounge
3. Day Clinic            9. Gymnasium
4. Therapists Workstations  10. Classroom
5. Therapy Room          11. Courtyard
6. Family Resource Room  12. Services

**Figure 32: Visual connection to exterior spaces**
Source: ArchDaily, Author
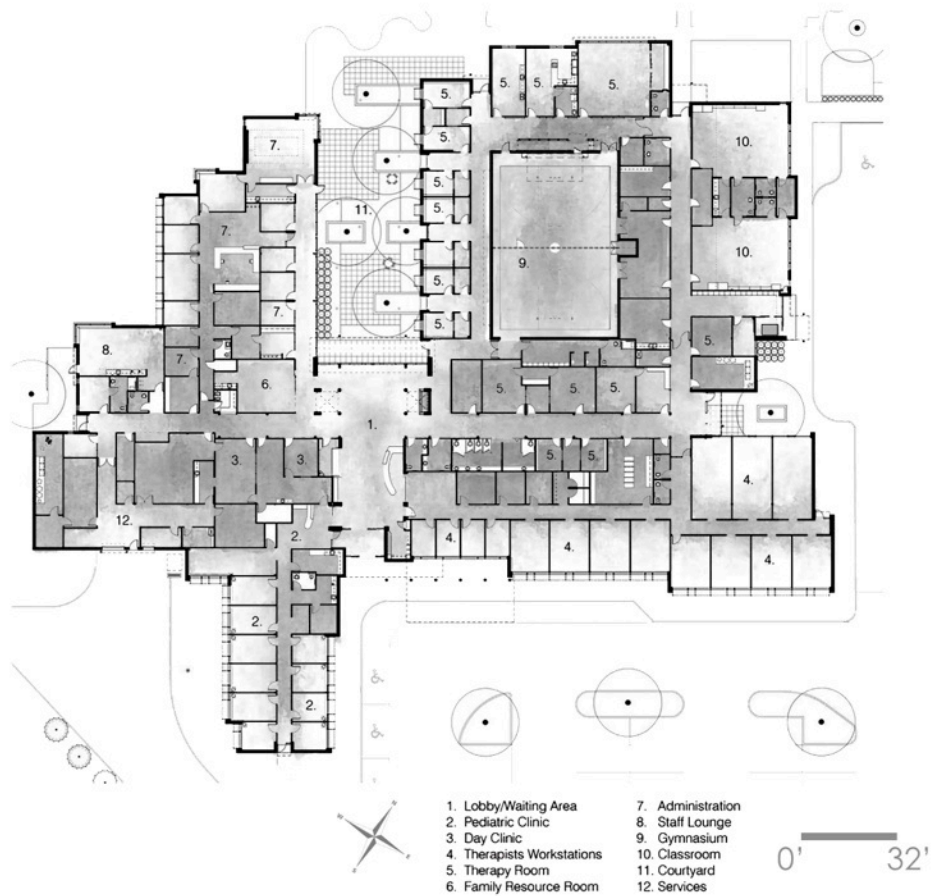
**Figure 33: Correlation between natural light and spaces that require natural light**
Source: ArchDaily, Author

From these facilities and their utilization of spatial elements that promote

comfort and healing, we may begin to understand how a space and its architectural

expression accommodates and facilitates mutual interaction between both children

and animals. The two demographics maintain certain similarities in that the hesitance

and personality of a child in a new environment is similar to that of an animal in a

new environment. Both children and animals lack the understanding of a new

environment and its intentions in comparison to the understanding that an adult may

have in the analysis of a new space.

*West Limerick Children's Centre*

West Limerick Children's Centre was designed by SATA in 2014 and is located in Limerick, Ireland. The facility occupies 8,234 square feet within an existing Ability Resource Complex and provides rehabilitation for children with intellectual, physical, or sensory disabilities.[45] The building contains therapy rooms, office space, and storage with the therapy, consultation, and offices on an outer ring with a core of ancillary functions in the center of the plan.

Similar to One Kids Place, the teleology and salutogenesis of space is enforced as the program provides the rooms necessary for the building's function and the children's needs and the therapy rooms are located towards the perimeter of the building with visual connections to the outdoors. The majority of the program in which therapists and children interact most are a part of this outer-loop of spaces, while some staff areas and offices are located at the core (Figure 34). A couple of therapy rooms are also located within the core in order to provide a sense of both public and private spaces, which in the case of a sensitive or more troubled child may provide more of an enclosed and protected space that would suit them more appropriately.

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[45] ArchDaily, "West Limerick Children's Centre / SATA."
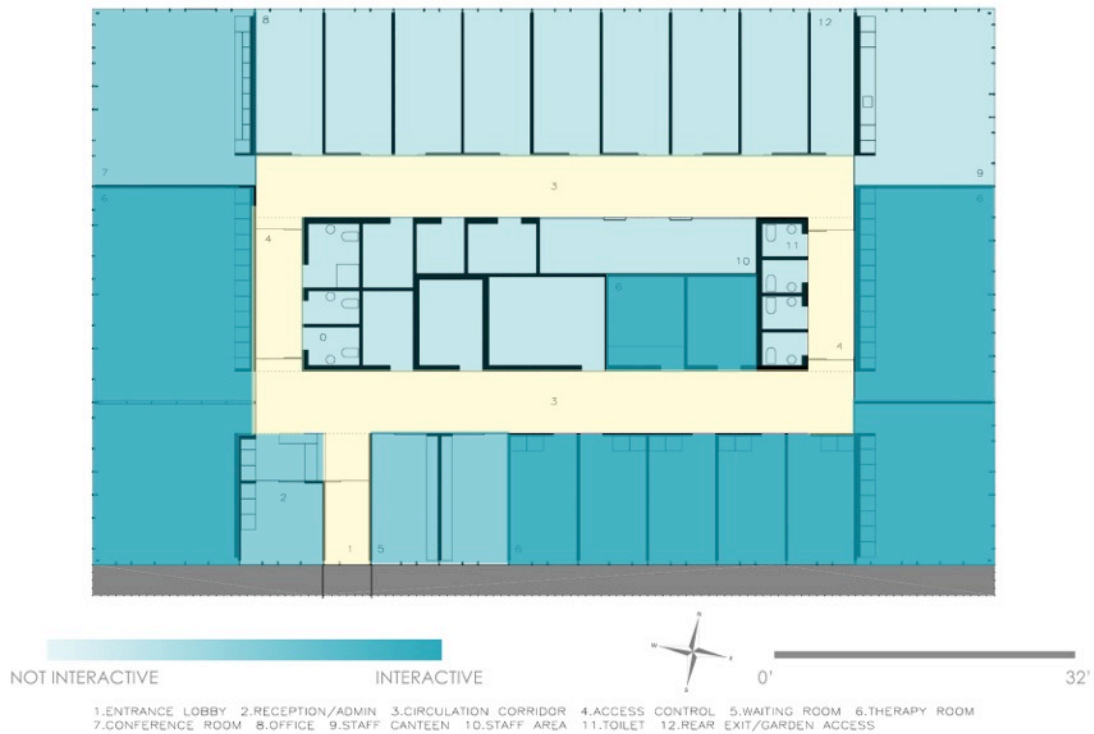
**Figure 34: Levels of adult/child interaction in accordance with program**
Source: ArchDaily, Author

The location of these exterior rooms also supports the psychobiology of space in that

these spaces have the most access and exposure to natural light (Figure 35). This

building's core does not have any access to natural light, whereas in One Kids Place a

void, or courtyard, is created in the center to provide another layer of exposure for the

appropriate program of therapy rooms and circulation. The interior spaces of the

Children's Center also incorporate a restricted color palette in order to enforce the

focus on the allowance of light into the spaces.

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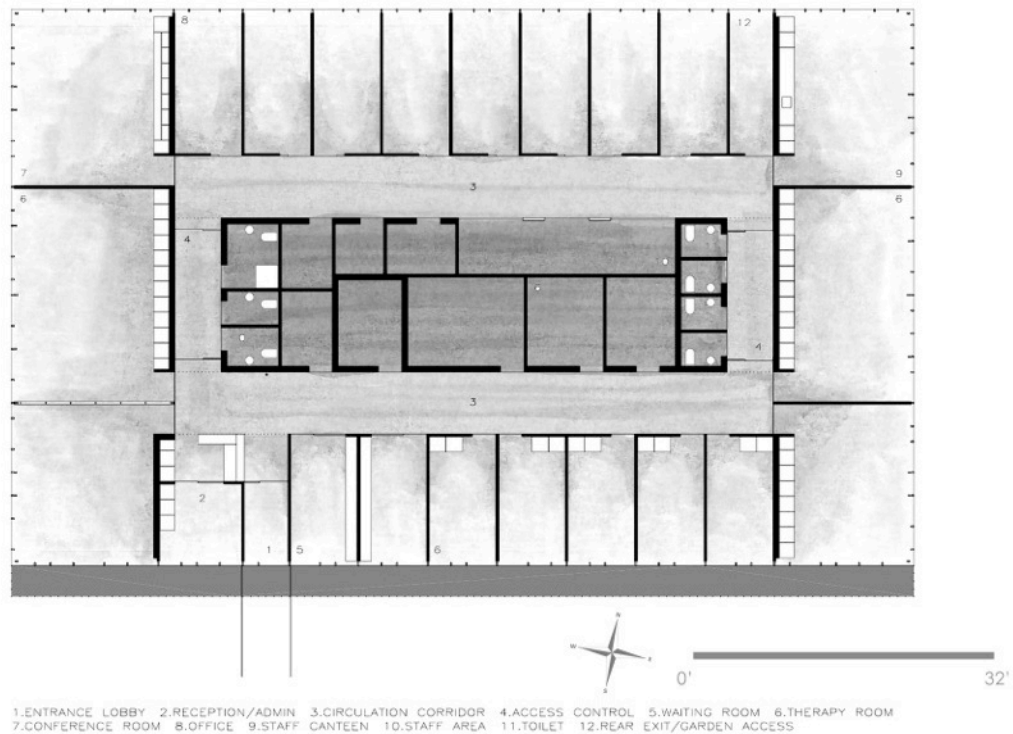
**Figure 35: Correlation between natural light and spaces that require natural light**
Source: ArchDaily, Author

West Limerick's Children Center employs a different configuration than One Kids

Place with a protected core rather than an interior courtyard, but is also a smaller

scale facility. These two spatial types provide benefits for the user in their own way,

mainly supplying natural light and exterior connections in order to accomplish this

along with a diversity of room types. The mental healing that must take place in a

therapy facility requires the inclusion and consideration of the three healing theories,

minimizing the stress that a child may feel when he or she enters this type of space.

Based on an understanding of these precedent studies as well as a review of literature and healing theories, it is possible to evaluate and record the specific spatial elements that enforce them (Figure 36).



## HEALING SPATIAL ELEMENTS

**QUALITY OF LIGHT**
- LARGE WINDOWS
- SKYLIGHTS AND CLERESTORY WINDOWS
- COLORED LIGHT

**QUALITY OF SPACE**
- LIGHT-COLORED MATERIALS
- GLASS DOORS ON CAGES
- UNOBSTRUCTED LINE OF SITE
- NATURAL MATERIALS
- DOUBLE-HEIGHT SPACE
- ACOUSTICAL TILE

**TYPES OF SPACE**
- LARGE, OPEN ROOMS
- SMALL, PROTECTED ROOMS
- DOG RUNS
- EXERCISE YARDS
- COURTYARD
- SEPARATE ENTRY FOR ANIMALS AND HUMANS
- PRIVATE CIRCULATION FOR ANIMALS

**Figure 36: List of spatial elements that support healing theories and interaction**
Source: Author

In addition to these spatial elements, we may form a set of principles for both healing design as well as human/animal interaction and evaluate their inclusion or remission in the precedent studies. The principles are derived from these theories of the psychobiology, teleology, and salutogenesis of space in conjunction with how each is addressed within the study (Figure 37).

|  |  | PSYCHOBIOLOGY OF SPACE | | TELEOLOGY OF SPACE | | | SALUTOGENESIS IN SPACE | | |
|---|---|---|---|---|---|---|---|---|---|
|  |  | NATURAL LIGHT | CONNECTION TO NATURE | OPPORTUNITIES FOR INTERACTION | EXPLORATION | SPECIFIC USER NEEDS | OPPORTUNITIES FOR PRIVACY | BALANCE BETWEEN INTERIOR AND EXTERIOR | CHOICE BETWEEN SOLITUDE AND INTERACTION |
| ANIMAL SHELTER | LITTLE SHELTER | ● | ● | ● | ● | ● | ● | ● | ● |
| ANIMAL SHELTER | HUMAN SOCIETY OF TRUCKEE-TAHOE | ● | ● | ● | ● | ● | ● | ● | ● |
| ANIMAL SHELTER | MONTGOMERY COUNTY ANIMAL SERVICES AND ADOPTION CENTER | ● | ● | ● | ● | ● | ● | ● | ● |
| VETERINARY FACILITY | JEEVASHRAM SHELTER | ● | ● | ● | ● | ● | ● | ● | ● |
| VETERINARY FACILITY | PALM CITY ANIMAL MEDICAL CENTER | ● | ● | ● | ● | ● | ● | ● | ● |
| VETERINARY FACILITY | VETERINARY CLINIC MASANS | ● | ● | ● | ● | ● | ● | ● | ● |
| CHILD THERAPY | ONE KIDS PLACE | ● | ● | ● | ● | ● | ● | ● | ● |
| CHILD THERAPY | WEST LIMERICK CHILDREN'S CENTRE | ● | ● | ● | ● | ● | ● | ● | ● |

**Figure 37: Principles for healing design and human/animal interaction based on precedent study**
Source: Author

Jeevashram Shelter and One Kids Place most effectively achieve these spatial

principles, as they generously incorporate these elements to promote human and

animal interaction as well as human and animal rehabilitation. However, the healing

that takes place in Jeevashram primarily affects the animals rather than the humans

since the facility focuses on veterinary treatment. The courtyard typology has proven

to be beneficial in providing an encouraging environment for both a connection to

nature as well as interaction within the space in a centrally focused plan. The concept

of animal as well as human rehabilitation can be more effectively introduced in a new

program that fosters these beneficial principles and adds another layer to the notion of

healing and rehabilitation through mutual interaction and an architectural

environment that promotes these activities.

# Chapter 3: Program and User Needs: A New Typology for Animal Adoption and AAT

The animal shelter, veterinary facility, and child therapy typologies maintain basic as well as unique programmatic elements that can be combined in order to create a new typology of an animal shelter and child/animal therapy center. The specific activity that occurs within each of these pieces of program can be taken a step further in order to fully engage mutual human/animal interaction and fully nurture the healing process through spatial elements (Figure 38, 39).
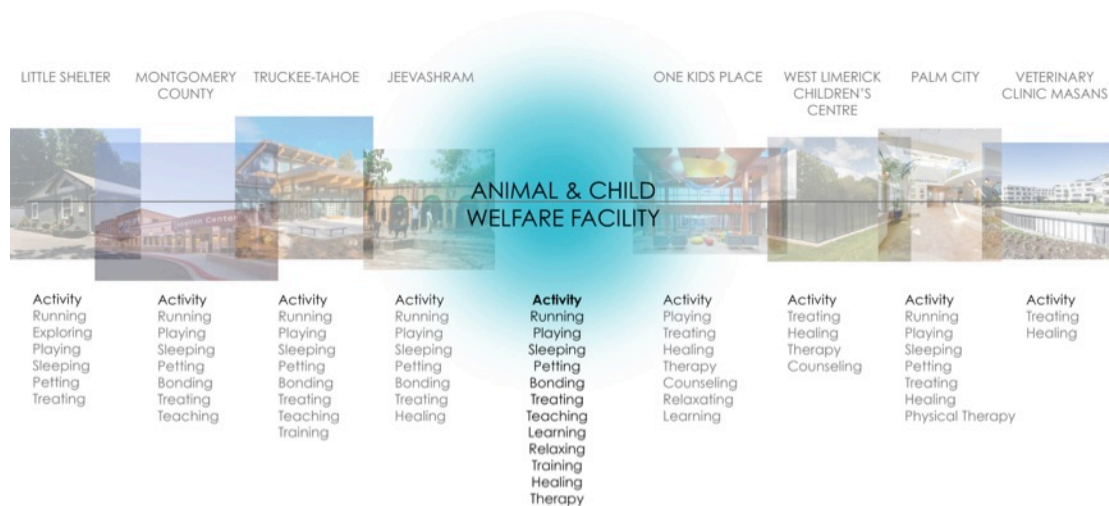


**Figure 38: Precedent programmatic activities and resulting animal and child welfare facility activities**
Image Sources: (from left) Author, Coakley Williams Construction, Animal Arts, Kamath Design, Mitchell Jensen Architects, ArchDaily, Team Parks Contractors, ArchDaily
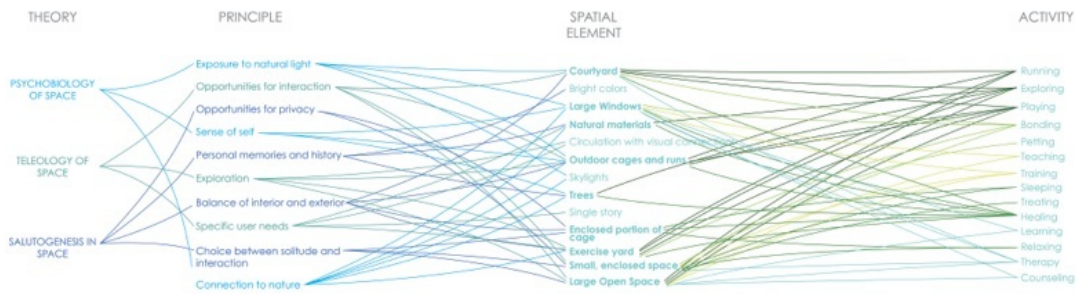
**Figure 39: Theories, principles, and spatial elements of healing as they relate to specific programmatic activities**
Source: Author

*Typical Programmatic Necessities*

Within the three existing typologies of an animal shelter, veterinary facility, and child therapy facility, there are specific components of program that must be addressed and incorporated in order to maintain a successful design. These basic requirements address the basic needs of animals and humans as well as employees who inhabit the facilities as can be deduced from the precedent research. In an animal shelter, housing and care are top priorities, while a veterinary clinic and therapy facility emphasize treatment and healing.

Oftentimes, animal shelters incorporate some aspects of a veterinary clinic in order to provide immediate care if an animal has a medical issue, so these typologies overlap to a certain extent. However, the animal shelter provides spaces in which the animals are expected to remain for a longer period of time until the ultimate goal of adoption. One of the most imperative elements in a shelter is the kennel and cage area in which the animals are housed. Kennels are generally linear in the older existing typologies, as seen in Little Shelter, and cages for both felines and canines can be restrictive and space-limited. The cat rooms in Little Shelter are precedents of how

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housing environments can maintain a level of freedom while still maintaining a level

of enclosure. In the case of dog kennels, it is possible for the configuration to remain

somewhat linear for space efficiency while being connected to outdoor space and

breaking up to form more of a courtyard typology as they are designed in the

Jeevashram Shelter even though it is primarily a veterinary facility. It is also

necessary to incorporate a quarantine area for animals whose history is uncertain,

whose health must be evaluated, or for animals whose social behavior has yet to be

improved. Lastly, most animal shelters include offices for administrative matters as

well as adoption consultations and information. With the many spaces that

accommodate these needs, there seems to lack a space to bring both humans and
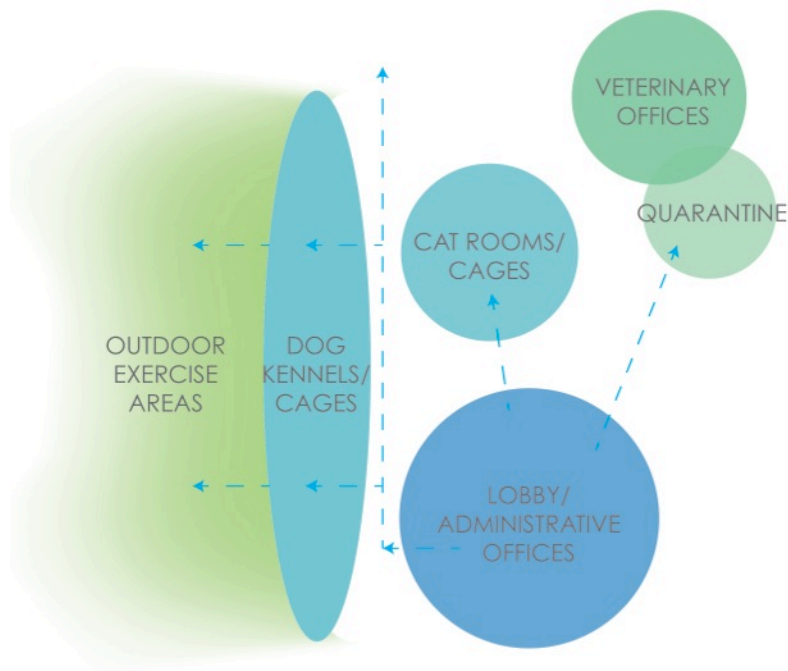
animals together (Figure 40).



**Figure 40: Bubble diagram showing adjacencies for basic animal shelter programmatic elements**
Source: Author

A veterinary clinic has many differing requirements from an animal shelter, as it needs to function as a place of examinations, procedures, and healing (Figure 41). Animals may be kept in the facility if they need a place of rehabilitation after a serious procedure, though they generally do not stay within the building for extended periods of time. The most necessary programmatic elements in a medical clinic are the examination, surgery, and treatment rooms. These spaces are where the majority of activity takes place in this typology, once again leaving out significant spaces for adequate human and animal interaction that promotes a further sense of bonding and healing past simply medicinal solutions. Both Veterinary Clinic Masans as well as Palm City Medical Center have configured these rooms towards the perimeter where they may receive the most natural light and connection to the outdoors. A veterinary clinic also requires offices and laboratories for doctors and lab technicians in order to test results as well as complete administrative tasks.
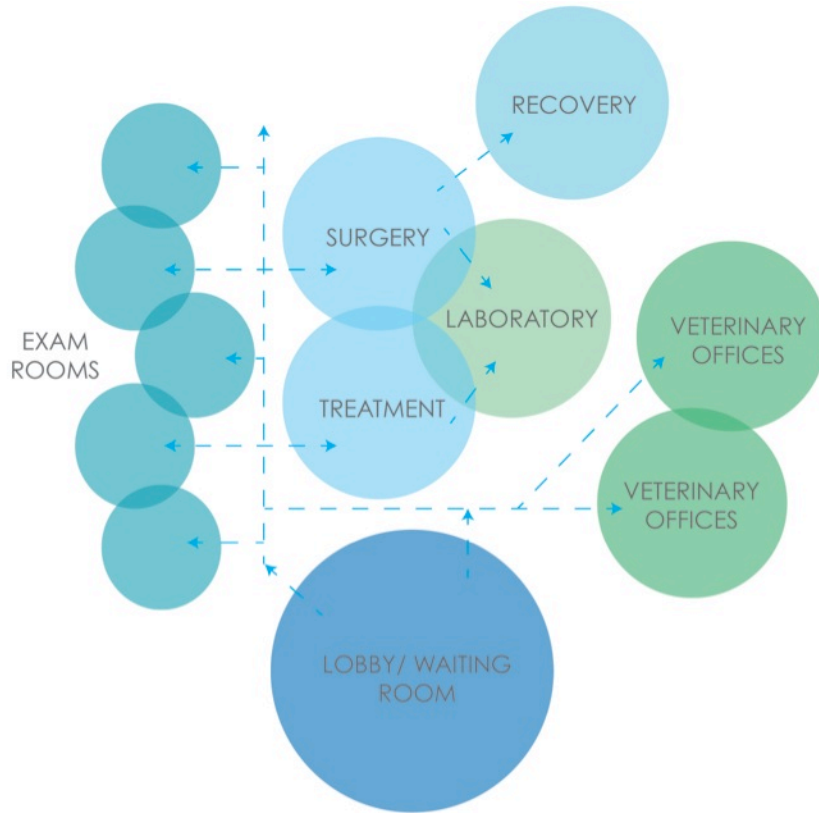
**Figure 41: Bubble diagram showing adjacencies for basic veterinary programmatic elements**
Source: Author

The child therapy typology generally does not include animal interaction

within its walls, though it enforces a strong sense of healing as any medical or

veterinary center would and perhaps at a more emotional level. From the two

precedents of One Kids Shelter and West Limerick Children's Centre, we understand

some of the basic programmatic elements necessary for a therapy center for children.

The building requires a waiting room, open as well as more enclosed therapy rooms,

counseling rooms, offices for therapists, and a potential space for larger or more

involved interactions (Figure 42). These larger, possibly group activity rooms can

either be indoor or outdoor as seen in the central courtyard of One Kids Place.

Relation to exterior views and outdoor spaces is key to providing a dynamic and

welcoming environment for children as well as animals as observed in the typologies
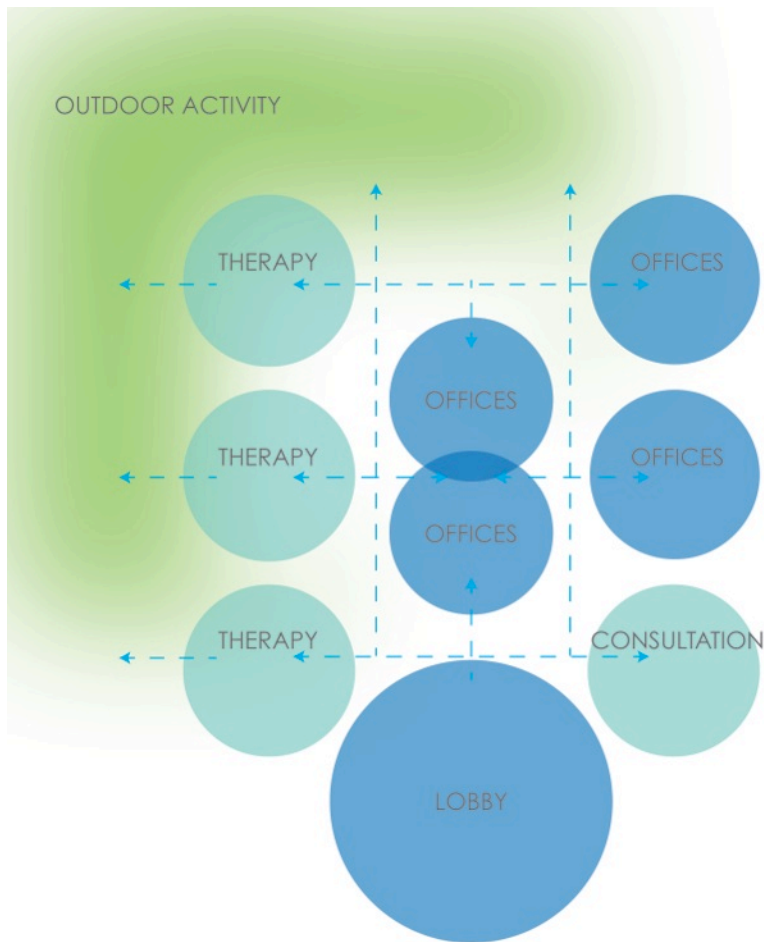
of an animal shelter and veterinary facility.



**Figure 42: Bubble diagram showing adjacencies for basic child therapy programmatic elements**
Source: Author

Though the basic programmatic requirements of each typology accommodate

spaces for both people and animals, there are rarely commonalities of interactive

spaces that foster the potential bonds formed between the two.

*Program for a New Typology*

With the basic programmatic elements of each typology in mind, a new typology can evolve the elements and create spaces of significant interaction and rehabilitation. The resulting typology will address and improve upon the basic principles and configuration of an animal shelter while combining healing elements observed in shelter, veterinary, and therapeutic typologies. This mutual healing will involve the program of child-animal therapy for children with behavioral or developmental issues to further underscore the potential for mutual rehabilitation.

The first piece of program needed in a facility such as this is the lobby and reception area. The sequence of these spaces and the visibility from one piece of program to another is essential for both child and animal comfort, so this area may have some form of visual access to a highly interactive space. These adjacent interactive spaces would be flexible and able to be broken up in order to accommodate both public and private spaces using the principle of salutogenesis to provide for both animal therapy and training with children around the ages of five to eighteen. Formal training is also necessary for animals that may need more behavioral assistance due to a troubled history. Additionally, shelter workers will need offices in order to accommodate administrative responsibilities and both therapeutic and adoption consultations.

The next significant programmatic element required for this typology is companion animal housing. The dog kennels and cages will allow for increased visibility and connection to the outdoors, completely abandoning the typical configuration of long and narrow corridors. The program will also include outdoor

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and indoor interactive areas for both visitors and workers to socialize with the animals. Larger outdoor spaces will provide the stress relief, exercise, and potential for additional training for canines as well.

Lastly, a small veterinary facility must the incorporated into the site for immediate care and emergencies as well as administrative offices. The area will include both treatment rooms and recovery and quarantine rooms for animals that are not currently capable of interacting with others. The offices will provide spaces for the workers themselves as well as for meetings and interviews with potential adopters and visitors.

The combination of these programmatic elements aims to create a sequence of comfortable healing and interactive spaces for both visitors and animals housed within while also providing conducive spaces for the workers, who are necessary for the facility's effectiveness and success (Figure 43).
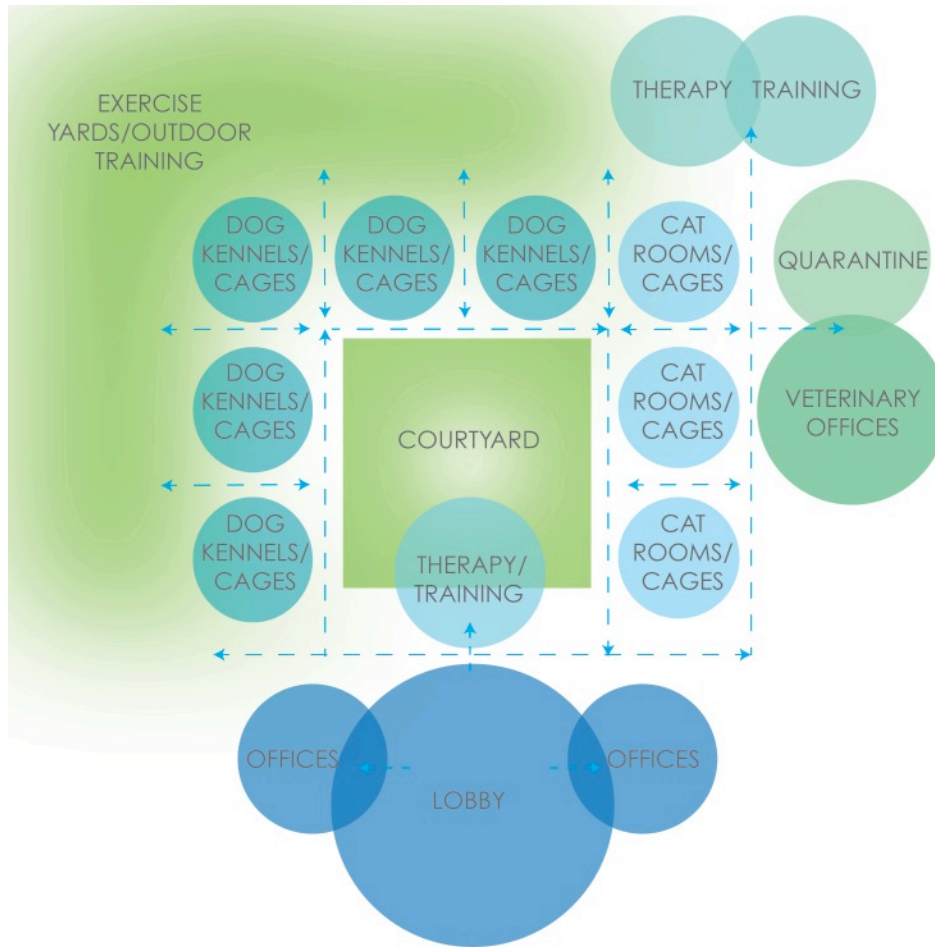
**Figure 43: Bubble diagram showing adjacencies of animal and child welfare facility programmatic elements**
Source: Author

Based on each precedent study, the average square footage of these essential

programmatic elements can be determined and further broken down and refined. The

bare minimum square footage of the facility is 13,650 square feet, including

mechanical, storage, and circulation spaces (Figure 44). This program excludes

exterior spaces, which will be a significant addition to the total area of program and

varies depending on available space on the chosen site.
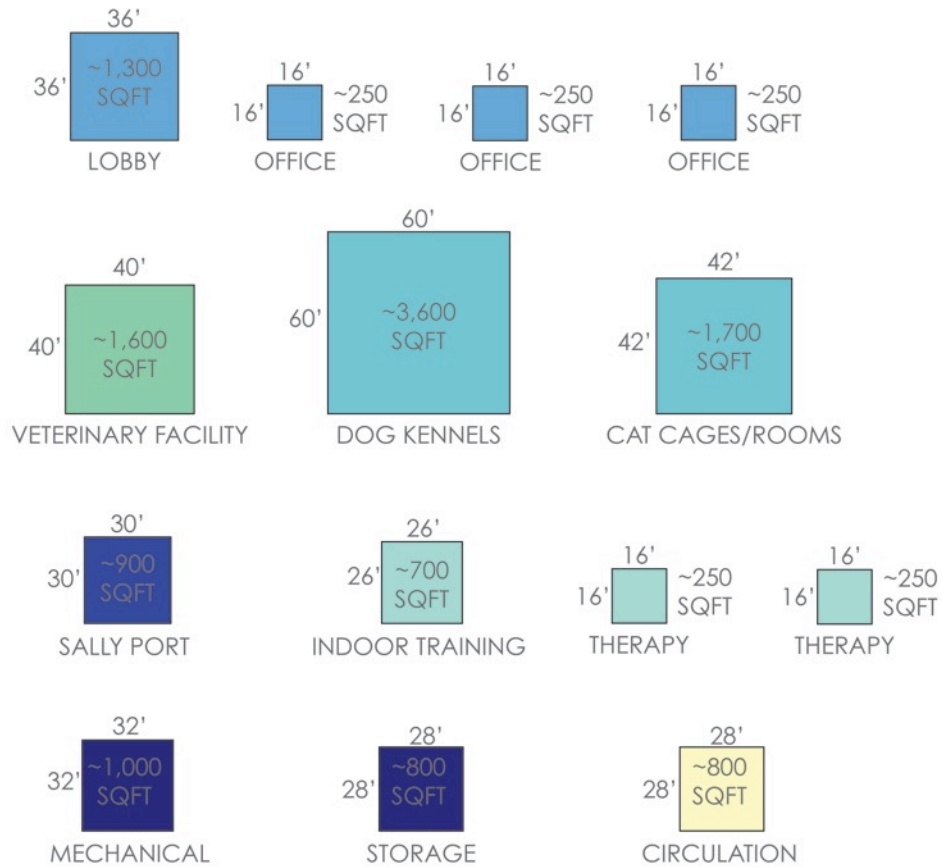
**Figure 44: Average square footage requirements for each programmatic element of the animal and child welfare facility based on precedent studies**
Source: Author

With an increased accuracy of programmatic elements, we must also understand the demographics of the inhabitants and users of the facility. This would include veterinary staff, therapists, shelter workers, dogs and cats of different sizes, troubled children, cleaning staff, and the adopters (Figure 45). Each of these groups maintains a unique entry sequence, for example, the children and animals would enter from a different location from the other staff members and visitors (Figure 46).
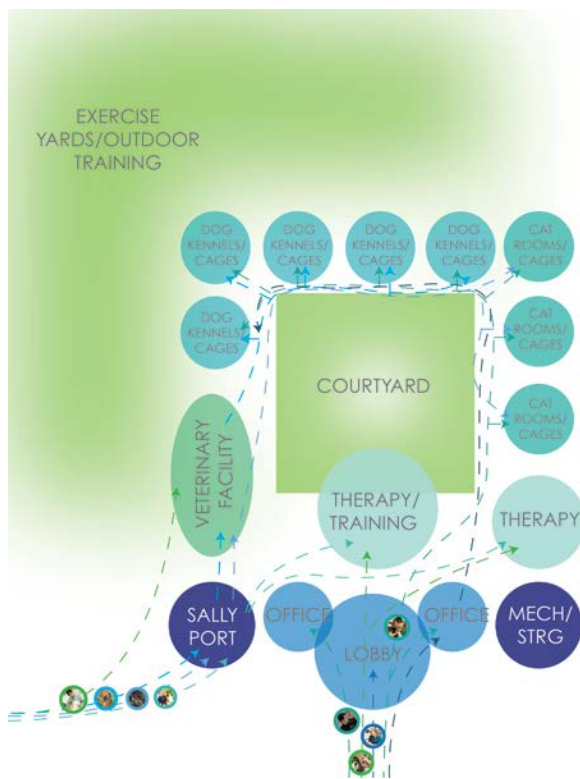
**Figure 45: User Profiles**
Source: Author



**Figure 46: User entry sequences**
Source: Author

An effective program requires an effective and appropriate site in order to further emphasize the goals and objectives. This program of an animal shelter that promotes human/animal interaction and rehabilitation requires a site that can provide the proximity to significant related programs, a connection to nature as well as open green space, and a space that can provide for the flexibility of program. Given these criteria can be achieved, the site will provide an added potential to the impact the facility has on both humans and animals within and beyond the shelter itself.

# Chapter 4: Site Selection: Testing Sites for Appropriate Program Accommodation

The chosen site is to form a linkage to the immediate youth programs of the surrounding communities and allow for the open space necessary to create internal connections to the outdoors as well as facilitate human/animal interaction. The design of the building aims to have a positive impact on its immediate environment, whether that impact is improving the lives of the children of these nearby organizations or increasing the sustainability of the area. Due to these criteria, ultimately the site will determine the success and impact of the building design itself.

## *Scope of the Site*

The appropriate site has the potential to fully engage the surrounding communities, and the area of Washington D.C. has the diversity of neighborhoods in order to accomplish this (Figure 47). The city houses both urban environments as well as increasingly suburban neighborhoods as one moves outwards from the center, which may contribute to and benefit from the facility.

**Figure 47: Washington D.C.**
Source: ArcGIS and Author

Sites along the Anacostia River prove to be underutilized in some areas, specifically those around sections of Anacostia Park (Figure 48). These waterfront sites hold the potential to further activate green space and promote the new interactive and rehabilitative program of the animal and child welfare facility.



**Figure 48: Relationship of underutilized sites to the Anacostia River**
Source: ArcGIS and Author

The two sites of Anacostia Park Section E and Hill East are instances of this

underutilization, as Hill East is currently being redeveloped and is home to a large

expanse of parking lots, while there is a lack of activity on the entire north east side of

Anacostia Park. Both areas encompass large plots of land, with around twelve

available acres in Anacostia Park and approximately eighteen acres in Hill East,

which provide opportunities for the connection to outdoor program (Figure 49). The

opportunity for views across the Anacostia River is also apparent in both locations,

adding to the visual connection that can be created and the facilitation of mental and

physical well being of the facility's inhabitants of both human and animals.



**Figure 49: Proximity of Hill East and Anacostia Park Section E to the Anacostia River and open views**
Source: ArcGIS and Author

The majority of the zones surrounding the two sites are residential, however the sites

themselves are unzoned, further supporting the notion that they lack use and activity

(Figure 50). This is also due to the fact that the Hill East site mainly lends itself to

parking for RFK Stadium, while Anacostia Park is owned by the National Park

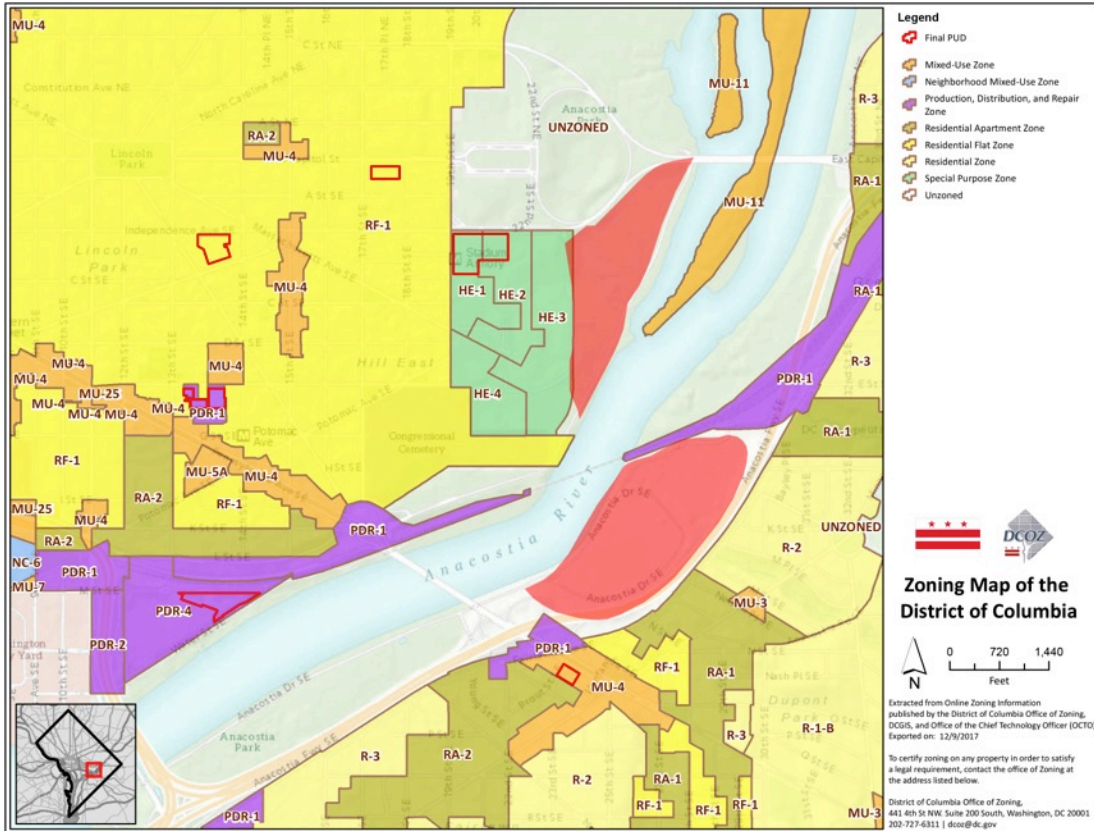Service and meant to be used as open green space (Figure 51).



**Figure 50: Correlation between unzoned areas and underutilized sites**
Source: DC Office of Zoning and Author



**Figure 51: Underutilization of parking lots at Hill East (left) and park space of Anacostia Park Section E (right)**
Source: Author

*Hill East and Anacostia Park Section E*

The most significant aspect of each site is its proximity to nearby youth

programs that would be able to participate in animal therapy in the animal and child

welfare facility (Figure 52). The Incarcerated Youth Program at Hill East as well as

Sasha Bruce Youthwork near Anacostia Park are located within half a mile of the

respective sites, providing the opportunity for these individuals to benefit from the

new program.



**Figure 52: Proximity to youth programs and schools that may benefit from the design**
Source: ArcGIS and Author

Additionally, nearby green space has the potential to accommodate outdoor program

of the new animal and child welfare facility (Figure 53). Humans and animals may

travel outside of the prescribed sites along riverside trails and adjacent park spaces.
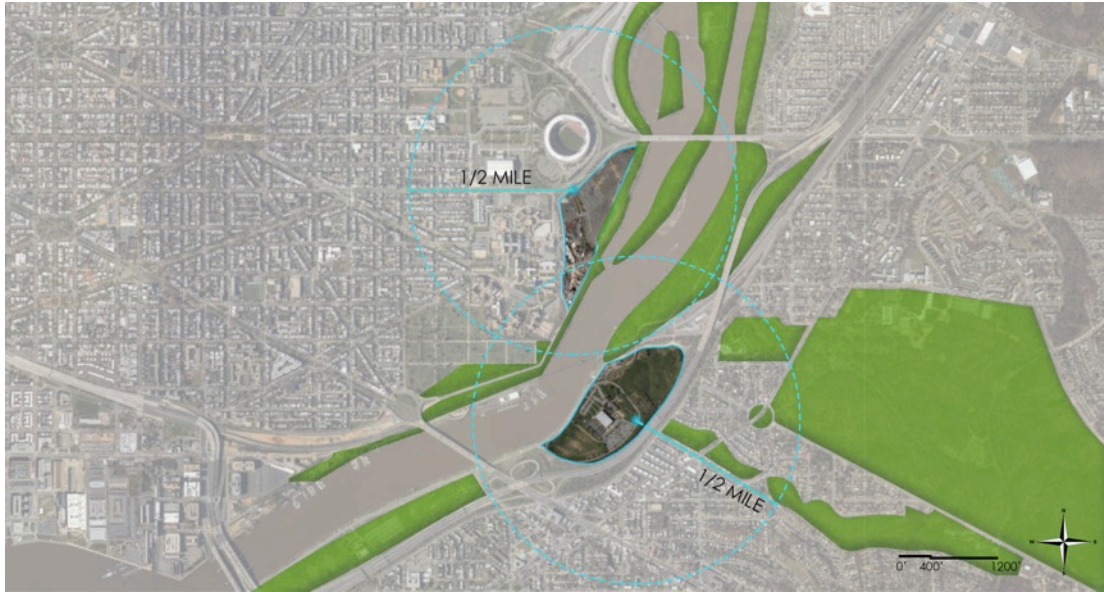
**Figure 53: Proximity to green space that could accommodate outdoor program**
Source: ArcGIS and Author

However, access to these sites via automobile, bike, or on foot proves to pose a

problem for Anacostia Park in that Anacostia Parkway SE (295) cuts the site off from

the remainder of inland communities (Figure 54). On the site of Hill East, streets such

as Pennsylvania Avenue and Independence Avenue may aid in bringing traffic

towards the site without isolating it from surrounding communities. Bus routes and

metro stops are also more accessible on the site of Hill East, for they service more of

the surrounding area than is services on the site of Anacostia Park (Figure 55).

Bicycle paths could also bring some of the population to the sites, though most are

incomplete aside from the trails directly along the Anacostia River (Figure 56, 57).

**Figure 54: Access to or isolation of sites by primary streets**
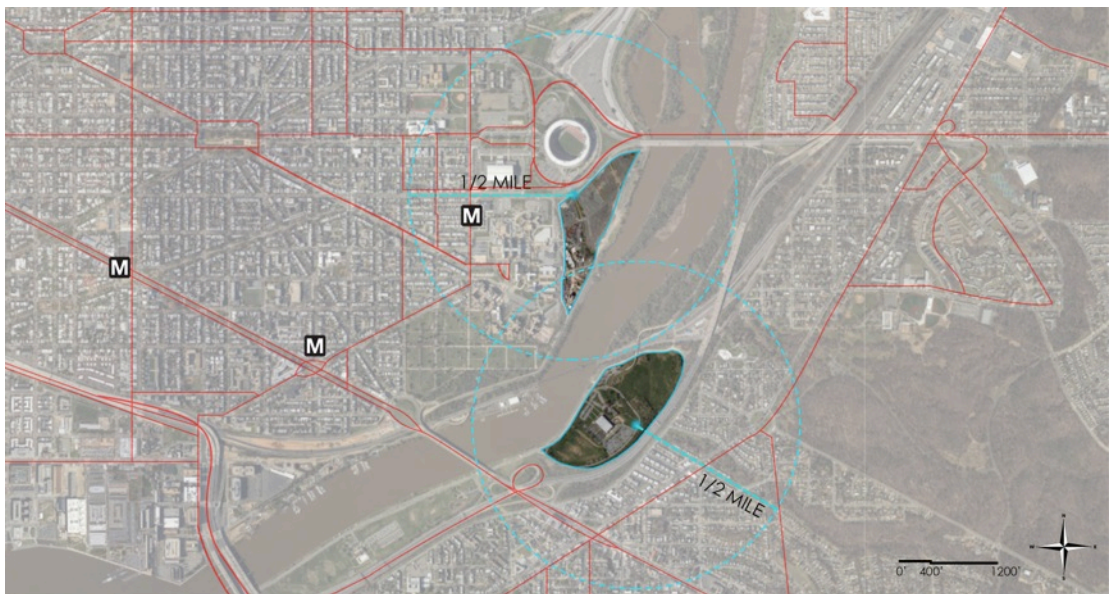Source: ArcGIS and Author



**Figure 55: Access to sites by public transit**
Source: ArcGIS and Author

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**Figure 56: Access to sites by bicycle lanes and paths**
Source: ArcGIS and Author



**Figure 57: Bicycle paths and pedestrian trails in Hill East (left) and Anacostia Park Section E (right)**
Source: Author

The sites of Hill East and Anacostia Park Section E can be evaluated based on

specific criteria, for example, their proximity to youth programs, green space, and site

accessibility in order to choose the most appropriate site for the animal and child

welfare facility (Figure 58). With these criteria scored out of a maximum rating of

ten, it is possible to quantify the effectiveness of each site in accordance with the

program. Ultimately, Hill East best accomplishes these various standards and

provides the better location for the design. Given the selection of the more

appropriate site of Hill East, various configurations of concept explorations can be

tested on site in conjunction with specific site analysis.



**Figure 58: Site selection of Hill East based on the accommodation of specific criteria**
Source: Author

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# Chapter 5:  Site Analysis: Exploration of Built and Natural Configurations

Hill East provides the opportunities for ample outdoor space, improved access to the site, and exposure to natural light as well as views across the Anacostia River. While relating to some of the surrounding urban context, the site can be tested to accommodate various building frontages and configurations. These massing studies place emphasis on the waterfront, open to the urban context, divide the site into a private oasis, and create an internal and external distinction. The studies are incorporated into the site based on either frontage towards the urban context to the west or frontage towards the river and the southeast portion of the site.

*Frontage Towards Urban Context*

The creation of a "backyard" that is completely open to or framing views to the river provides a variety of experiences both within and beyond the built environment as well as a more discreet entry towards the urban context adjacent to the site. The adjacent site houses Washington D.C. Mental Health, D.C. General Family Shelter, as well as CPEP Hospital, which maintain frontages towards the parking lots to the west. The site selection in addition to many spatial principles and elements from the precedent studies aided in informing the configuration of various forms on site. Each configuration aligns to the built form of the adjacent hospital, and access to the site may occur from Southeast Boulevard from the North or South (Figure 59,60,61).

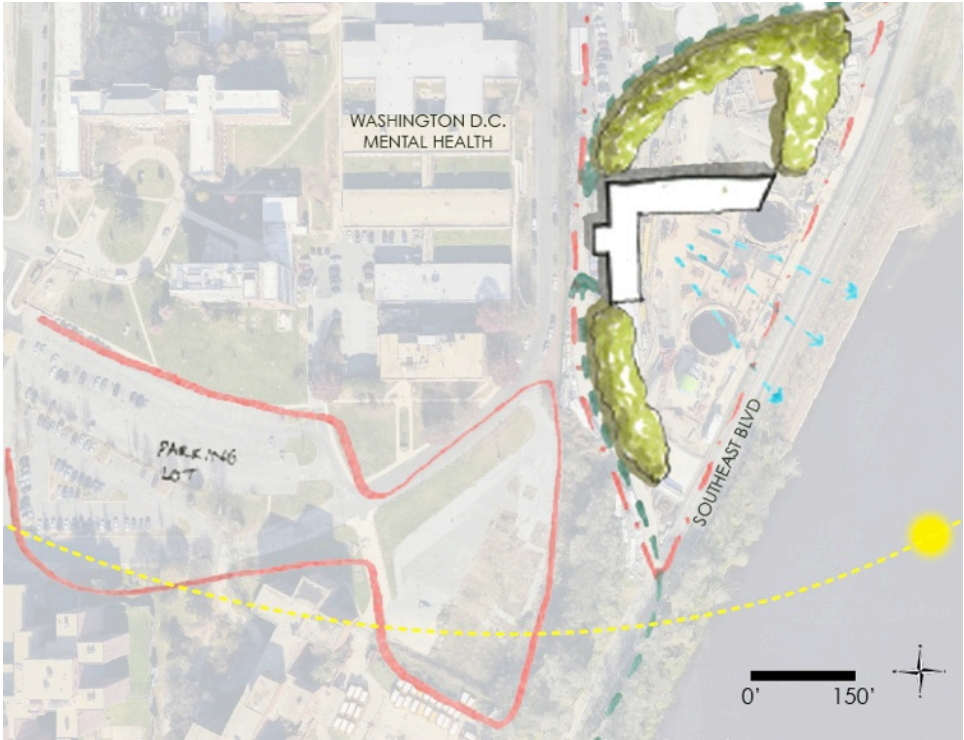**Figure 59: Framing the waterfront**
Source: ArcGIS and Author



**Figure 60: Opening to the waterfront**
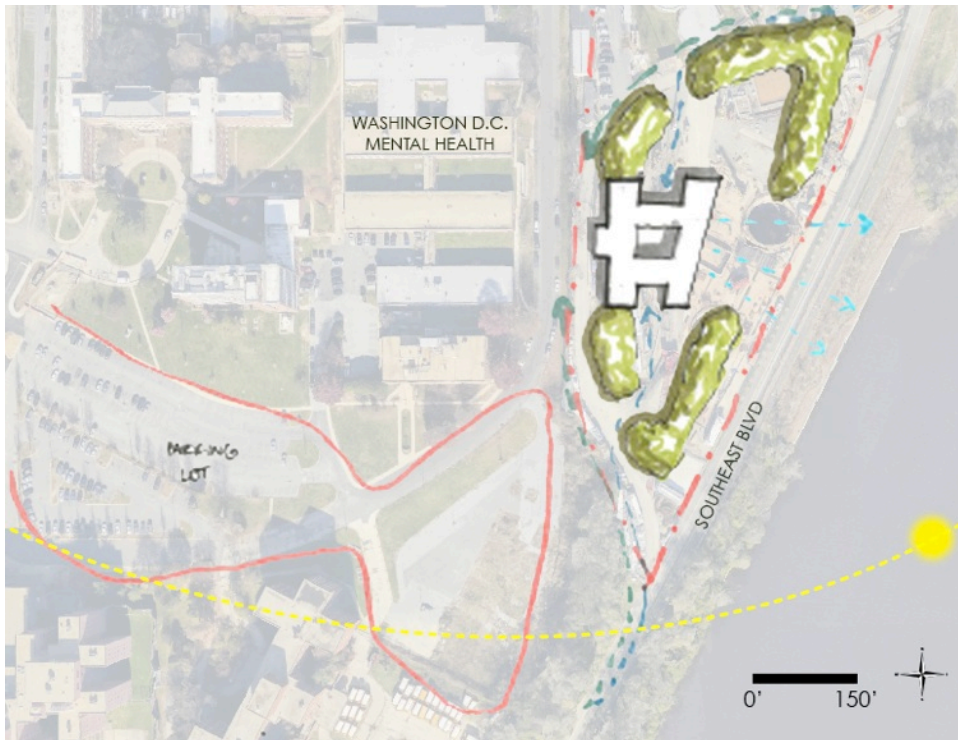Source: ArcGIS and Author

**Figure 61: Internal vs. External**
Source: ArcGIS and Author

*Frontage Towards the Anacostia River*

Another method of configuration on the site is to focus on the frontage of the built form oriented to the Anacostia River (Figure 62, 63, 64). Through this configuration, there is an emphasis on an exterior vestibule on the south end of the site and a buffer zone that may separate the program from the urban context to create private exterior space. Access to the site can be focused towards a destination to the south next to the existing parking lots, however additional pathways and streets may be connected from the exterior context.

**Figure 62: Internal and External Oasis**
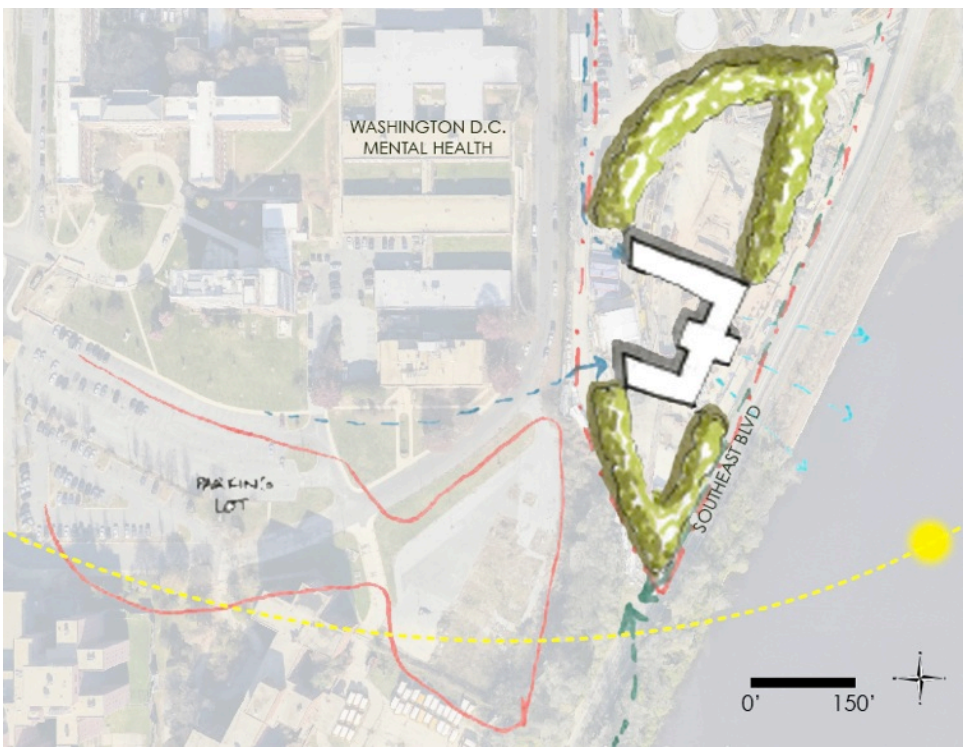Source: ArcGIS and Author



**Figure 63: Opening to Urban Context**
Source: ArcGIS and Author

**Figure 64: Division and Oasis**
Source: ArcGIS and Author

From these studies, the focus of these configurations can be further narrowed and

expanded upon in regard to the programmatic qualities and their relationship to the

outside.

# Chapter 6:  Concept Exploration: Built and Natural Configurations and Program

With the selection of three concept explorations, specific program and adjacencies can be tested for each. Based on the precedent studies and their respective programmatic configurations, different entries, specific rooms, and circulation patterns may begin to form around and in conjunction with the natural environment.

## *Scheme 1: Framing the Waterfront*

The framing of the waterfront is imperative for the connection that the built form and the site must have to the natural environment. This first scheme addresses this method in the formation of a courtyard space that opens up to the site, and the site, which opens up to the Anacostia River (Figure 65). The interior spaces around the courtyard would provide transparency to allow for a linkage of indoor and outdoor space as well as the exposure to natural light. The outdoor program can be further broken up and addressed through landscape design, and would also provide another layer of framing through tree cover.

Circulation forms the perimeter around the courtyard, which is directly connected to the kennels, cat rooms, and therapy rooms. Both children and animals enter through separate locations, which would provide a level of comfort unique to each demographic. Visitors would access the building from Southeast Boulevard and potentially be able to park in front of the building or access this frontage through improved pedestrian paths.

**Figure 65: Framing the waterfront- program configuration**
Source: ArcGIS and Author

## *Scheme 2: Internal vs. External*

A focus on a private courtyard within a layer of a secondary tree enclosure

provides opportunities for more secluded and secured activity and human-animal

interaction as opposed to a more open and exposed place of interaction (Figure 66).

This scheme, like the first, places emphasis on circulation around the perimeter o the

courtyard and maintains the level of transparency needed to form the balance between

outdoors and indoors. Animals may have direct visual access to the river, while the

therapy/training room may maintain characteristics of both an indoor and outdoor space.

The significance of separate entries is even more apparent in this scheme, as children may enter on the south façade while animals may enter on the north façade. The landscape and tree cover would further accommodate this entry by creating perforations throughout the perimeter of the site.
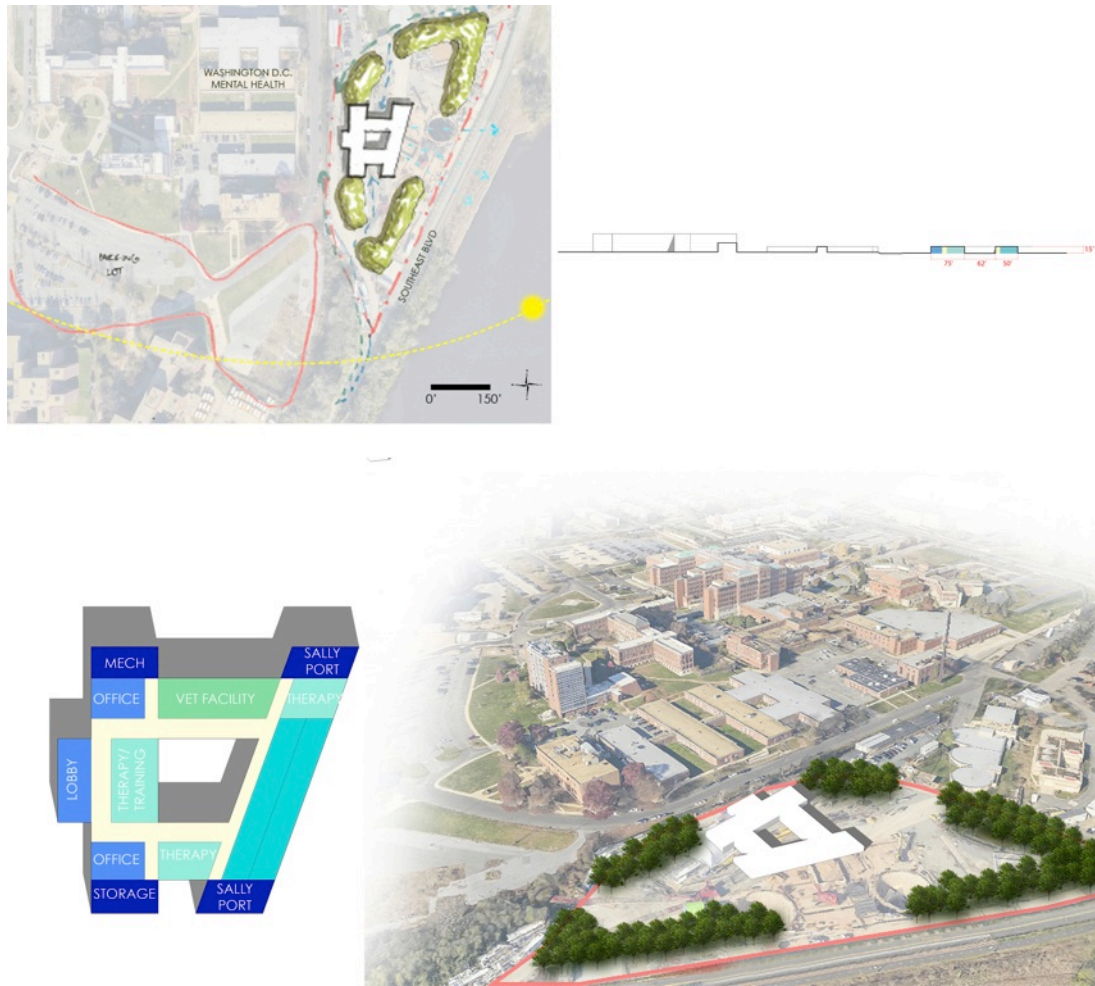


**Figure 66: Internal vs. External- program configuration**
Source: ArcGIS and Author

*Scheme 3: Division and Oasis*

  A third scheme includes the complete separation of the outdoor spaces from the surrounding urban context, creating an oasis for the inhabitants of the building (Figure 67). The program itself may also be separated in that outdoor circulation forms an interstitial space between administrative as well as therapy program and the kennels, cat rooms, veterinary spaces, and sally port. This scheme provides the opportunity for a moment of significant human/animal interaction to occur where this interstitial space connects the two built forms. Once again, interior circulation occurs along the edges of the building where kennels and cat rooms are configured.

  Pedestrian and vehicle access occurs towards the south end of the site, with the potential of a new parking lot and an exterior vestibule or public space in front of the main entrance of the facility.
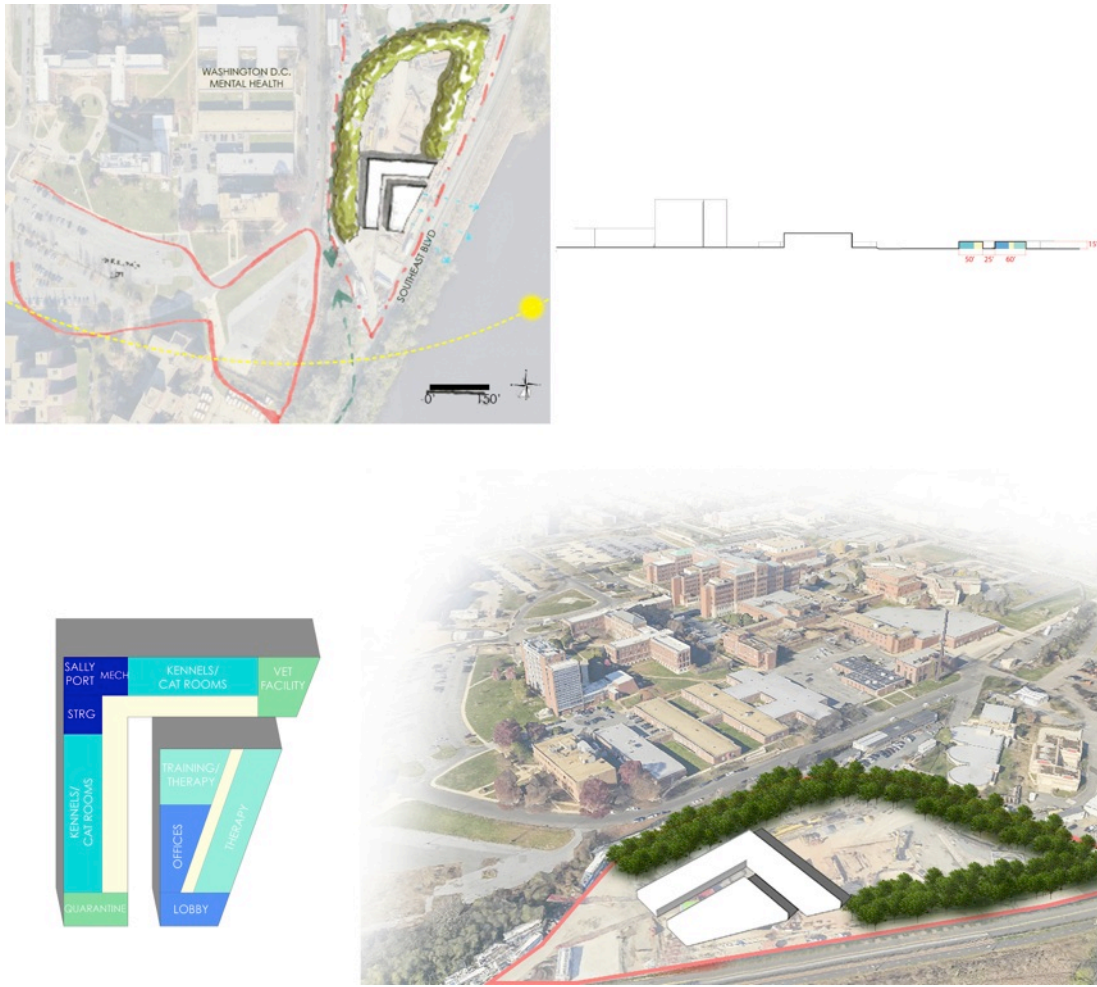
**Figure 67: Division and Oasis- program configuration**
Source: ArcGIS and Author

Each of these concept explorations provides a template for which the healing theories,

principles, and ultimately spatial elements may be applied and further tested in

addition to the configuration of outdoor program.

# Chapter 7:  Design Proposal: Application of Principles

The healing theories of teleology, salutogenesis, and psychobiology can begin to manifest themselves in an architectural language that cater to the user demographic, provide a variety of spatial experiences, maintain a balance between outdoor and indoor, and connect to the site and Anacostia River.

## *Programmatic Arrangement*

The programmatic sequence focuses on the processions of three main user groups: the child, the potential adopter, and the dog. These users then require two significant spaces of meeting: one in which the child will meet the dog for the first time and another in which the potential adopter will meet the dog for the first time (Figure 68).
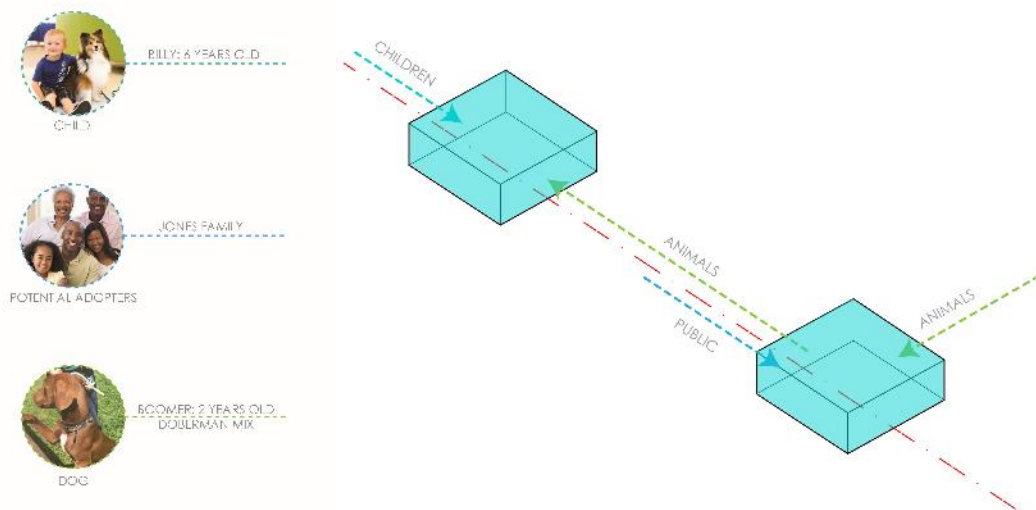


**Figure 68: Main user groups and meeting space parti**
Source: Author

Given the existing topographical site conditions and flooding predictions, the site is built out from the eighteen-foot spot elevation (Figure 69). With these circumstances in mind, datum lines can be taken from the D.C. Mental Health Hospital as well as two main axes from the urban and river influence, thus allowing for the programmatic elements to be placed on site (Figure 70).



**Figure 69: Category 4 Storm Surge and Flood Plains**
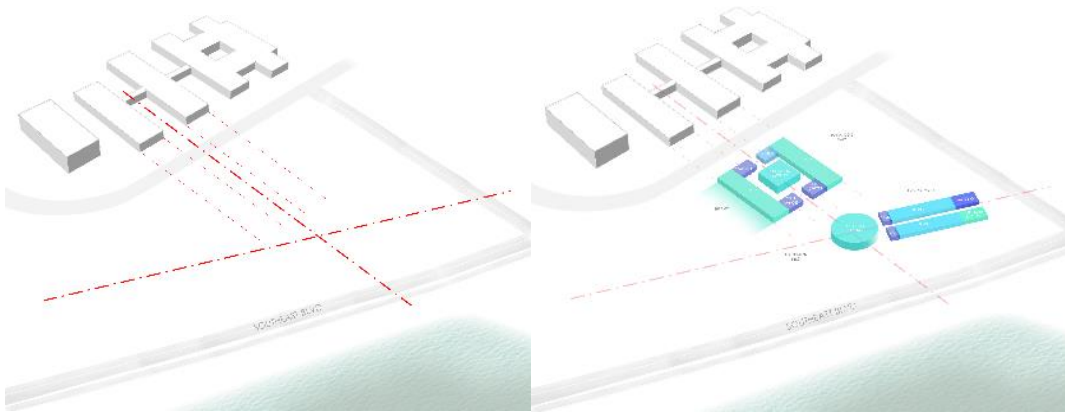Source: ArcGIS and Author

**Figure 70: Arrangement of program on site with urban datums and axis that conforms to the angle of the Anacostia**
Source: Author

*Process*

  The architectural language and outdoor space must speak to one another both in theory as well as in sequential procession. Various materials, garden arrangements, and spatial connections were examined and analyzed in order to arrive at the ultimate design of this Animal and Child Welfare Facility (Figure 71).
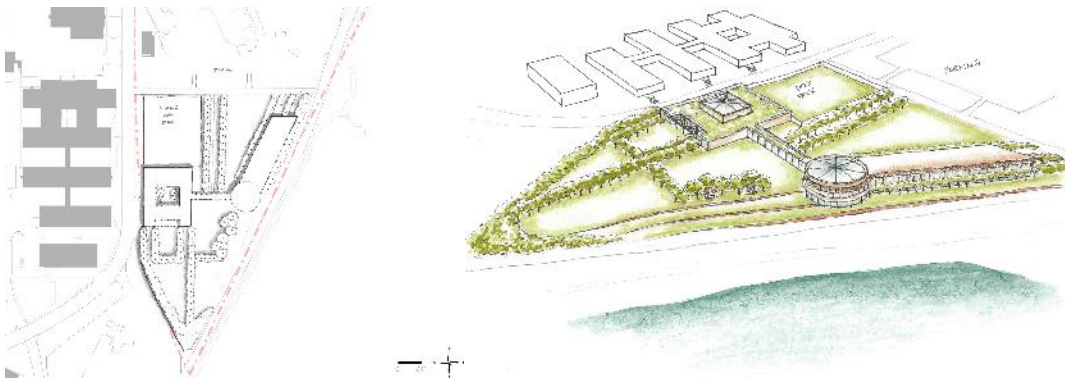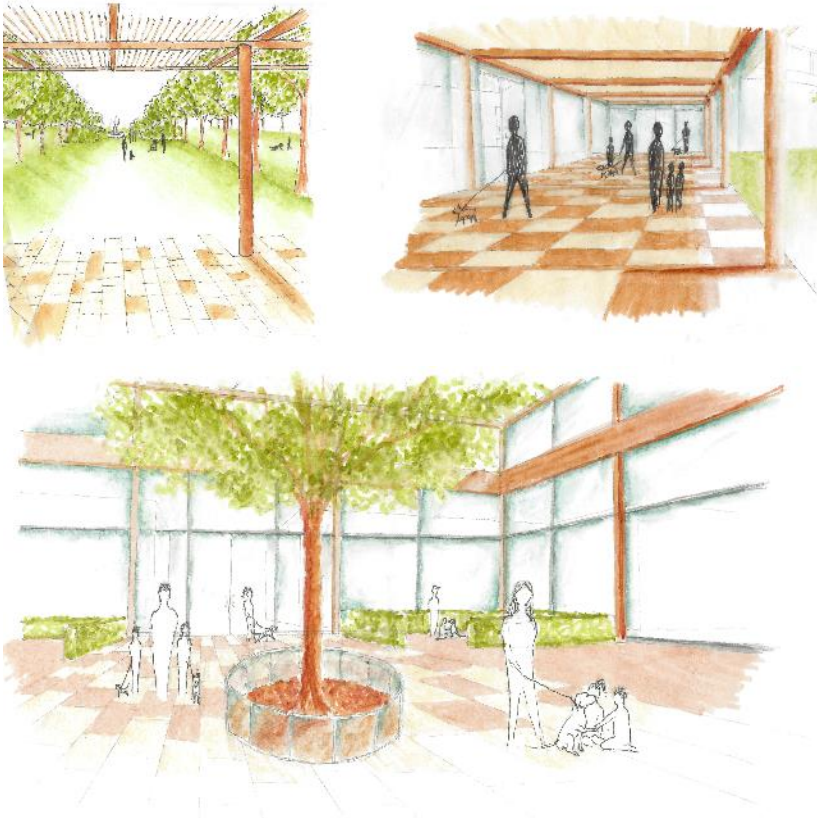
**Figure 71: Process sketches and site configuration**
Source: Author

## *Design*

The multitude of spatial experiences articulate themselves within a vast landscape of garden elements that form related parts to a whole. This includes green parking to the north, the open public dog park, garden spaces that repeat the module proportion of the built form, and a language of louver systems for the two meeting spaces that rise above the rest of the site (Figure 72). The recreation field and east portion of the dog kennels are located six feet above Southeast Boulevard, allowing their view to surpass vehicular traffic and arrive at the water and tree cover beyond (Figure 73).
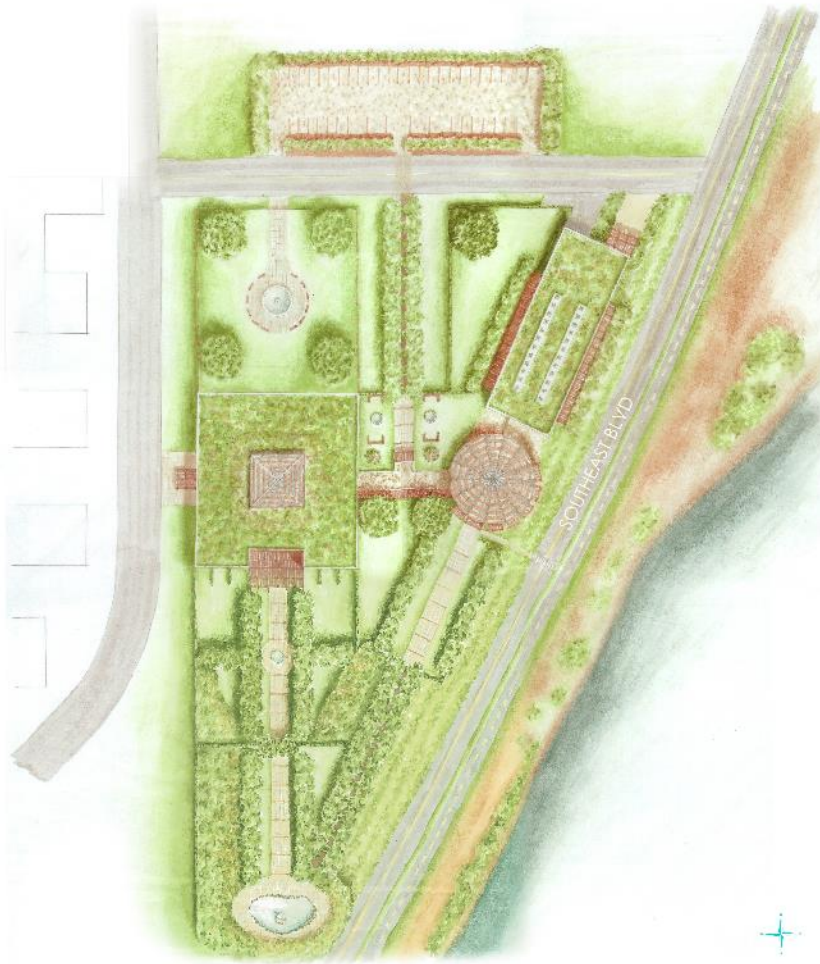
**Figure 72: Site Plan**
Source: Author



**Figure 73: Aerial**
Source: Author

A granite pathway follows axes both within and beyond the built form into the garden spaces, arriving at an oasis that highlights the intersection of the two main axes. The three healing theories present themselves through visual adjacencies, group and private therapy rooms, indoor and outdoor therapy spaces and dog kennels, connections to the garden and waterfront throughout the building, and allowance of natural light (Figure 74).
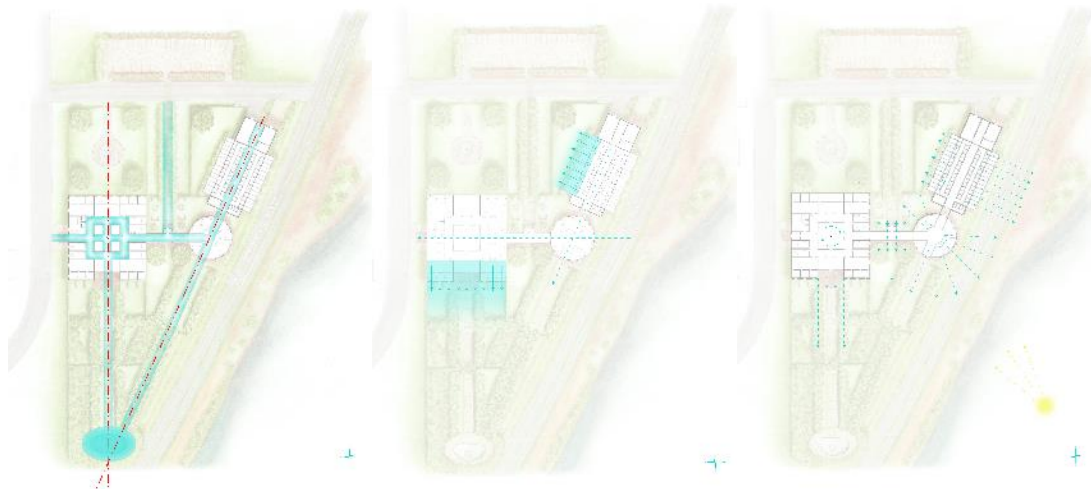


**Figure 74: Path, Teleology + Salutogenesis, Psychobiology**
Source: Author

Billy, a six-year-old with behavioral issues, enters on the west and is greeted with a wooden trellis of wisteria with flowers and vines bleeding into the honed granite tile cladding of the building. Before he puts his things down in the cubby and snack room, he will see through the main courtyard to the activity occurring within (Figure 75). As he circulates around that courtyard, two foot by two foot wooden panels bring the scale down to a child's level and further highlight the monumentality

of the large glass enclosure with its sculptural tree in the center. This is where Billy

will meet the dog he will be working with for the very first time (Figure 76). He and

the dog may then travel to the garden spaces through a variety of transitional elements

and thresholds (Figure 77), to finally arrive at the oasis at the end and intersect with

the public (Figure 78).



**Figure 75: Child Entry and Courtyard Approach**
Source: Author

**Figure 76: Child/Dog Courtyard**
Source: Author



**Figure 77: Garden Transition**
Source: Author

**Figure 78: Oasis**
Source: Author

      The Jones family, the potential adopters, will enter in through the allay of

trees to the north leading directly to the central link of the building that connects

visually to either side of the garden as well as to adjacent spaces in the building

(Figure 79, 80). They will arrive in the adoption courtyard in which there are low

walls segmenting the pens with flexible seating. Passing through, they will witness

other families and potential adopters interacting with the dogs that may find a forever

home (Figure 81). They will then arrive in the kennel space and choose to bring a dog

back with them into that interactive courtyard (Figure 82).

**Figure 79: Public Entry**
Source: Author



**Figure 80: Link**
Source: Author

**Figure 81: Adoption Courtyard**
Source: Author



**Figure 82: Kennels**
Source: Author

Boomer, the two-year-old Doberman mix, will enter on the north end of the

kennels surrounded by dense vegetation so as to ease him into a foreign environment

(Figure 83). He will then arrive in the kennel space flooded with natural light and

transparent spaces with the outdoor dog runs attached to the exercise yard in which

handlers will play and train the dogs housed in the facility (Figure 84). Boomer will

either travel back into the adoption courtyard with a potential adopter, or he may

travel through it to begin his training and interactive experience with a child in need.
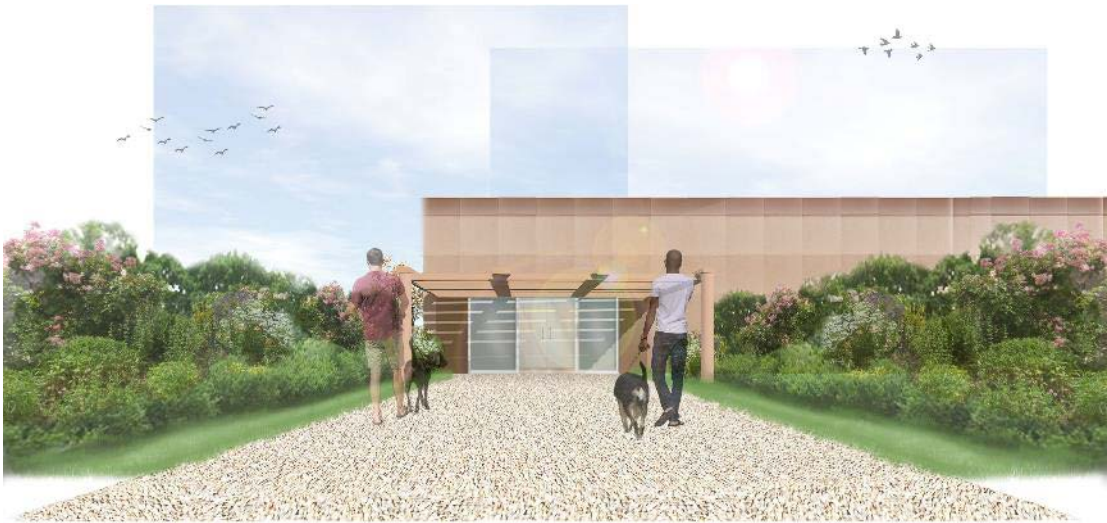


**Figure 83: Dog Entry**
Source: Author

**Figure 84: Outdoor Runs**
Source: Author

# Conclusions

Architecture has the immense power to foster and encourage these healing theories of teleology, salutogenesis, and psychobiology in order to better the experiences and ultimately the lives of its users. It truly can create this rehabilitative connection between child and dog so that they may leave a facility such as this having been emotionally and psychologically affected for the better.

After consideration of various alternatives of both built and natural form, this design may be altered in a multitude of ways to successfully accommodate not only children and dogs, but also the workers of the facility. An additional residential component to the design for the veterinary staff may be beneficial for the canines as well as for the human-animal bond and expedited rehabilitation for the animals. There may also be a balance between the control of spaces that these troubled children and dogs benefit from, and a more flexible and generous arrangement of both indoor and outdoor program.

With alternatives considered, these experiences are not simply immediate and short-lived; these are experiences that will last both human and dog a lifetime. Through these theories and an understanding of the needs of children and animals with such a troubled past, the Animal and Child Welfare Facility has the ability to act as a precedent for future rehabilitative design.

# Bibliography

"A family-friendly veterinary facility," dvm360, accessed November 14, 2017,
	http://veterinaryhospitaldesign.dvm360.com/family-friendly-veterinary-
	facility?pageID=4.

 "About Us," Little Shelter Animal Rescue & Adoption Center, accessed October 24,
	2017, http://littleshelter.com/about/.

*Animal Healers*. Video, Special Education, 2006.

Chandler, Cynthia K. *Animal-Assisted Therapy in Counseling*. 3rd ed. Routledge,
	2017.

"Dog Training," Humane Society of Truckee-Tahoe, accessed November 14, 2017,
	http://hstt.org/dog-training.

Esser, Aristide H. *Behavior and Environment: The Use of Space by Animals and Men*.
	New York-London: Plenum Press, 1971.

Franck, Karen A., and Bianca R. Lepori. *Architecture Inside Out*. 1st ed. University
	of Michigan: Wiley, 2000.

Hamilton, Lindsay, and Nik Taylor. *Animals at Work: Identity, Politics, and Culture
	in Work with Animals*. Vol. 16. Human-Animal Studies. Boston: Leiden,
	2013.

Hart, Benjamin L., and Lynette A. Hart. *Canine and Feline Behavioral Therapy*.
	Philadelphia: Lea & Febiger, 1985.

Horowitz, Alexandra. *Being a Dog: Following the Dog into a World of Smell*. Great
	Britain: Simon & Schuster, 2016.

"Jeevashram Shelter," Kamath Design, accessed November 14, 2017,
	http://www.kamathdesign.org/project/jeevashram-shelter.

McCardle, Peggy, Sandra McCune, James A. Griffin, and Valerie Maholmes. *How
	Animals Affect Us: Examining the Influence of Human-Animal Interaction on
	Child Development and Human Health*. Washington D.C.: American
	Psychological Association, 2011.

Murphy, Michael. "Architecture That's Built to Heal." TED Talk presented at
     TED2016, Vancouver, Canada, February 2016.

Nagel, Sabrina. "Common Environments that Foster Human/Animal Interaction."
     Survey, 2017.

Nickl-Weller, Christine, and Hand Nickl. *Healing Architecture*. Munich: Braun,
     2013.

"One Kids Place / Mitchell Architects," ArchDaily, accessed November 29, 2017,
     https://www.archdaily.com/82958/one-kids-place-mitchell-architects.

"Pet Assisted Therapy: Bringing Smiles to Patients and Children with HSTT Certified
     Therapy Pets," Humane Society of Truckee-Tahoe, accessed November 14,
     2017, http://hstt.vhost4.sierraweb.com/pet-assisted-therapy.

"Phasing- A Way to Move a Dream Project Forward," Pet Wise Communities,
     accessed November 14, 2017,
     https://petwisecommunities.wordpress.com/2015/03/.

Phillips, Derek. *Daylighting: Natural Light in Architecture*. 1st ed. Architectural
     Press, 2004.

Plummer, Henry. *Poetics of Light*. Architecture & Urbanism Extra Edition Series. A
     & U, 1993.

"Town of Truckee Public Service Center Animal Shelter," Animal Arts, accessed
     November 14, 2017, http://www.animalarts.biz/architecture/animal-
     shelters/townoftruckee/.

"Veterinary Clinic Masans / domenig architekten," ArchDaily, accessed November
     14, 2017, https://www.archdaily.com/608705/veterinary-clinic-masans-
     domenig-architekten.

"West Limerick Children's Centre / SATA,' ArchDaily, accessed November 29, 2017,
     https://www.archdaily.com/559747/west-limerick-children-s-centre-sata.