Duality and Dichotomy:
Enhanced Experience through Contrasting Elements

Main Entry: du·al·i·ty
Pronunciation: dū-ˈa-lə-tē also dyū-
Function: noun
Inflected Form(s): plural -ties
1 : a theory that considers reality to consist of two irreducible elements or modes
2 : the quality or state of being dual or of having a dual nature
3 a : a doctrine that the universe is under the dominion of two opposing principles one of which is good and the other evil
b : a view of human beings as constituted of two irreducible elements (as matter and spirit)

Main Entry: di·chot·o·my
Pronunciation: dī-ˈkō-tə-mē also dī-
Function: noun
Inflected Form(s): plural -mies
Etymology: Greek dichotomia, from dichotomos
1 : a division or the process of dividing into two especially mutually exclusive or contradictory groups or entities
2 : the phase of the moon or an inferior planet in which half its disk appears illuminated
3 a : BIFURCATION; especially : repeated bifurcation (as of a plant's stem)
b : a system of branching in which the main axis forks repeatedly into two branches
c : branching of an ancestral line into two equal diverging branches
4 : something with seemingly contradictory qualities

*Merriam Webster Online Dictionary
http://www.m-w.com/
INTRODUCTION

Just as two forces acting on the sun -- gravity pressing in crushing the mass and explosive forces flowing out of the sun -- the balance of the two is the harmony of the natural world. Similarly, a violin solo does not compare to a full orchestra. Thoreau's Civil Disobedience points out there must be that balance between flowing with the system and challenging it in order to thrive in a society. Both of those extremes Thoreau mentions can be taken to excess to the detriment of a society, but when tempered with each other, the society grows and becomes stronger. As the saying goes, good cannot exist without the presence of evil. There must be a contrasting element to a point for it to be considered more thoughtfully and to be more poignant. Goodness would not be such a highly held value if it could not be contrasted against evil. Likewise, architecture can be better understood and more appreciated when shown against a contrasting backdrop. Hegel supports this idea in his reasoning of a synthesis of ideas. A better so-
olution can be found to the problem by combining a thesis and its antithesis into one idea that incorporates each of the issues. Perpetuating this in a cycle yields higher and higher synthesized ideas and improved solutions.

Special thanks go out to all those who contributed to the process of this thesis. Beth Wood has been a tremendous support in the conceptualizing of this process as the thesis advisor and who finally got sold on the idea. Jack Wyman, thesis professor, has maintained the grounding this project needed to become a realization. A thank you also goes out to Jason and Al who have been the ever ready critics pushing the progress of design. Finally, to my family, including Josh, who have supported this arduous trip every step of the way.
BACKGROUND

The primary goal of the architecture thesis is to explore issues of duality and dichotomy. Issues and contentions are: art and architecture symbiosis; material relationships; and the creation of spaces and environments in the sense of time as an experiential dimension. Art will be explored through a dichotomy of experiential space and functional space. The idea is art is not a destination, but a part of the experience of another function – a more traditional daily use feature of a large city. There is a duality that exists in the architecture of the tension between the art and culture as well as functional and technological use of architecture. The two play off one another and, in turn, create a fully encompassing experience of the human spirit. These issues are compounded by the addition of a second use to the building.

The transformation of art to graphic or computer design and means of use is focused on in the display. New Media is an issue with
how new forms of media are affecting the art movement today and issues concerning their display with architecture. The building is also drawing from the old as well as the new and looking at how the synthesis of the two can produce a more holistic experience. Another area of attention is the use of light and how dark and light areas can be used to differentiate spaces. Light can also be differentiated in its use of computers and communication with linear qualities against its ability to illuminate spaces and its other characteristic of wave form. The current trends of architecture show a lack of hierarchy, or no commonly used paradigm for design, and a chaotic state of design demonstrating there is no single direction but, more likely, two general approaches. Concepts in the design include ideas on how manipulation can strengthen the design by contrasts or controlled environments in order to affect individuals or groups as they pass through or occupy a space relative to the amount of time spent in the space.
Time is considered in another layer of the design as to how spaces can change or evolve relative to the length of stay of a user or relative to the time of day or year.

The location of the site for this thesis project is downtown Pittsburgh, Pennsylvania. The area was chosen because of the density of built environment and pedestrian circulation. The site is located in the cultural district of downtown Pittsburgh and lies midway between the main parking structure for events and the football and baseball stadiums. There is an existing parking lot on the site and is infrequently used, blocked off from the rest of the city by a tall chain link fence. The hard urban edge is disrupted by the break in built environment on the site. Views from the site look into downtown from an axis of entry. Opposite this view lies the North bounding river and an entry point into the downtown. The other axis of the site creates an
edge border of downtown. Dramatic views and a diverse pedestrian population compose the edges of the site. The site serves as a linkage between the river and suburbs North of the city to the downtown area.

The culture of the area is diverse in the types of people moving through this area of Pittsburgh. The demographics of the city include college students from multiple campuses in the city as well as a large body of blue-collar working force members. Culturally minded individuals also predominantly occupy this area of the downtown. A nearby high school, School for the Creative Arts, has been recently established for the creative and performing arts. The convention center, attracting a business minded crowd, lays just a walk away on the riverside axis of the site. College students are frequently in this area of the downtown for the coffee shops, concerts and comedy shows further in the cul-
ultural district. Pedestrians routinely pass this area on their way to work. Football and baseball fans walk directly by this site going to the game from their cars parked in the event parking buried deeper inside the downtown.

The project chosen to demonstrate these issues is a building with two combined components: a contemporary art museum and a high style restaurant. The museum focuses on interactive exhibits and more contemporary art where technology is a factor in the media (especially light as a material). Theatre is also accommodated in this portion of the building to explore independent films as a form of art; this is done in an effort to establish the idea art is not just oil on canvas today as it has been in the past. Permanent and temporary galleries will complete the trifocal exhibition areas. The first floor is the staging area for pieces on loan and a sculpture garden used a backdrop for varying functions in
the open plaza area the first level provides. Private areas in the museum component include studios for working, prep stages, workstations, storage on installment pieces and a gift shop. Lobbies, restrooms, offices and support spaces compose the remaining hierarchy of programming for the museum and are essential components to both museum and restaurant and will be strategically placed in the building in the attempt to blur the line between the two extremes of the project and demonstrate unifying elements and create continuity to the building. The restaurant includes a bar area and intimate dining as well as private dining areas (party rooms), a natural grocery store, wine storage, herb garden and farmers market. Receiving, kitchen and preparation areas are all privatized components solely for the use of the restaurant similar to studios and workshops in the museum.
Coop Himmelblau, Frank Gehry, Maya Lin and others have all explored this idea at one point or another, but only through the perspective of the antithesis to the status quo. Coop Himmelblau's Rooftop Office is a prime example of an antithesis to the cultural context. There is a blunt contrast between this new addition and the surrounding historic Viennese architecture. This direct contrast is exactly what creates the clarity of identity for the addition. If the same piece of architecture was placed in Los Angeles, the distinction would not be there, and thus, it would lose a part of its character. The piece forces people to notice it and become aware of the distinctions between the addition and the surrounding architecture. People are forced to see one another in the same image and decide which of the two they prefer and for what reasons. The blunt contrast is not enough. There is no middle ground in this case for an appreciation of how the two designs can integrate and work cohesively. Instead
of a blunt contrast, there should be a blurring of the two with a realization of how they two can work together in synthesis. Maya Linn’s Vietnam Memorial has mastered the idea of dichotomy in this piece. While most memorials of the past have been more closely related to the Washington Memorial, tall white monuments to individuals, Linn chooses to go below ground in a long black hole dedicating the memorial to all those who died in combat. Clearly opposing design criteria for each. Frank Gehry has created a duality in the “Fred and Ginger” apartment complex. While the facades appear to conflict and represent two completely different characteristics, the floor plates on the interior of the buildings are the same. These contrasts not only set it apart from the rest of the environment, but also from each other, creating a sense of identity within one building.

The city of Pittsburgh has its own precedent, which also needed
to be considered during the thesis project. There are primarily two paradigms set by the city driving the design of each of the two components of the building. The Alcoa Building along with other newly constructed pieces such as the new convention center and the School of the Creative Arts (SCA), set the precedent of new development in the downtown area and the direction the city of Pittsburgh would like to go in the future of their city. Since the new working force is geared toward a technological field of research and development, technology is a main factor in the building design for the future of Pittsburgh. Modern and postmodern architecture is the newest trends in the coming days of the city. The focus is on what is new and forward thinking, not only for the benefit of the city, but also for the people and the culture, and the architecture is now choosing to reflect that shift.

Ever since the industrial revolution, Pittsburgh has been at the heart of the steel city. So much so, Alcoa has chosen to locate
the center of its company there. While the transition from steel production to technology has been the intent of the industry, the buildings are still opting to incorporate that important aspect of the past in new designs. An ideology of focusing on the upper echelon of the population is also now taking hold. Focus has been centered on double income no kids families and a resurgence of living downtown. These are some of the characteristics the museum component has assumed in the thesis project. The restaurant, on the other hand, has taken the role of tradition when looking at the city and delving into the past, awakening the spirit of where the city has come from, its roots. There is a rich sense of culture in Pittsburgh. While they have been the heart of the steel industry for America for the past several decades, many of the original buildings and shipyards were built from masonry, the first materials widely available and shipped on the rivers surrounding the city. Pittsburgh's past is rich in the culture of
the workingman. As with most cities, Pittsburgh began small and evolved tightly knit. The sense of neighborhood and a common relationship with others is important to their community. The city responds to the traditional and the familiar. They hold history in so high a regard; the old fishing wharfs along the North side of the river have been converted into what is now called the Strip District, where new clubs and restaurants are creating a resurgence in this previously run down part of town.

Precedents of art have also influenced the design. Thomas Heatherwick and his work in England relays a great deal the sense of integration intended for the first floor of the building. The art creates a sense of space and is reliant on products and the environment to fully realize the piece of art. The sculpture serves as a platform for other more utilitarian functions. Users begin to become engaged in the displays so art is no longer a static
image to be viewed, engaged in and interacted with. Likewise, high profile restaurants are the basis for the upper level designs for this building. They maintain clarity of purpose within the spaces, incorporating high levels of design. While there is no doubt the person is standing in a restaurant, the art of display and preparation still gives it a sense of duality, where both components are affecting one another. The elements are used as compliments again just as in the first floor but at a different level, again utilizing strategies for duality and dichotomy.
RESULTS

Adjacencies between the museum and restaurant are important to influence and enhance each other. While in an exhibit, for example, a user may smell the dinners of restaurant goers. Conversely, the couple quietly enjoying dinner may find their eyes drawn to the display a floor below them in the museum. There is also interaction between the two where the restaurant or kitchen can become a display for the galleries, and the displays of art can take the form of the dining experience as in a loan of the Warhol cans of Campbell soup in the Andy Warhol museum also located in Pittsburgh. Lower in the building, dual programming takes place in the same space so that people with multiple destinations can share the same space and absorb more than what they had originally anticipated. These areas are the harmony found between the two extremes. They create a fusion of paradigms and offer the most to one another. That is not to say the pure paradigm design in other areas of the building are less experiential, but rather,
these areas are what make the synthetic spaces possible.

In order to experience the building at all of its layers and interactions, circulation in programming is a major determinant. Circulation forces users on one component to cross over into another program of the building, forcing them into the other paradigm, for varying degrees of time in elevators, restrooms, hallways, discussion zones, etc. The circulation is a thread tying the two components, stitching museum and restaurant together and tying it to the rest of the urban fabric. Transportation at the street level ties the building in to the rest of the city; the building will navigate passersby into the building through its raised design, keeping the first floor open as a public plaza, just as common as walking across the street. Two main circulation systems are present in the building. The first is the vertical circulation of the glass elevators in the rear of the building.
As the user ascends this elevator they are exposed the zipper effect of the building and can see the interrelation of the museum and restaurant unfold. They see the integration at lower levels and see how the building splits into its two paradigms of design. The complete building is revealed to them so they can fully understand the workings of the building. The second system is a network of stairs jumping from floor to floor and from one component to the next. For example, if someone comes to the building with the intent of having a meal, they must first go through the first floor lobby used for both programs and into the second level where restaurant and museum is heterogeneously mixed. Then they move to the third floor of the groceries and to the fourth floor of temporary exhibits in the museum before arriving on the fifth floor restaurant. Similarly a user intending on seeing the permanent exhibits must pass all of these spaces as well as the restaurant before making it to their desired destination. The top floors are
absolutely isolated from one another and complete the bifurcation of integration to isolation.

Structure is another key element in communicating the duality of the building. Different structural systems are assigned to each of the uses, museum and restaurant, in order to clarify their distinctions and give each a sense of individualism, reinforcing ideas of dichotomy. The sense of duality is communicated in the sense there are two systems within one building - two parts to a whole. Depending on the scale or layer an observer is looking at the building will determine whether they see a dichotomy, duality, or an individual paradigm. The museum uses a steel system with columns and beams in a more sleek thin construction approach. The facades are curtain wall steel paneling. The restaurant uses load bearing masonry walls and a waffle slab ceiling. Floor slabs in the restaurant are concrete pours. Windows are punctures in
the walls, whereas museum light is simply the absence of paneling or a substitution of glass for steel.

This thesis project is a combination of both a museum and a restaurant. Explorations and issues involved are concerned with identifying the dual nature of architecture and identifying contrasting features and exploiting them in order to give the user a sense of place and recognize the themes of each of the programmatic pieces. Dualities within the programs of the building include: functional, formal and spatial.

The functional duality lies in the programs themselves of a museum and a restaurant. While this combination may be a commonplace, it is a very poignant argument for a duality. Looking at these two pieces in terms of Maslow’s Hierarchy of Needs, food is at the bottom of the pyramid, constituting the most primal and natural
needs of all people. This becomes the basis for the restaurant, catering to everyone's needs at the most basic of levels. The top of Maslowe's pyramid is self-actualization. This part of the pyramid engages the person in their culture and knowing their surroundings, being involved with a community and having a higher purpose other than self. A museum falls into his category as a center of culture in a community. It is a place to go to share your opinions and be involved with the culture of our time. So, these two programs fall at the top and bottom of the pyramid, a counter balance of primal and sublime.

Formal duality is expressed in multiple ways between the two paradigms of museum and restaurant. Expressions in the museum are curvilinear and have a more free flowing method of design. Rounded corners and circulation surrounding internal spaces make up the primal design elements. The interior façade for the museum is
composed of vertical glazing emphasizing the movement up towards the permanent gallery and the height of the form. The cantilevered sculptural form of the museum is the antithesis of the restaurant and cantilevers out and grows larger floor plates as it moves upward. The restaurant is a floor shorter, making up for its height with a rooftop garden accessible at the same level as the top floor of the museum. The load bearing masonry walls are all rectilinear in form with clearly defined spaces. Hard edges and internal circulation to bifurcated external spaces contrast the museum design. The interior façade is heavier and thicker than the museum and has ribbon punctured windows to emphasize a horizontal flow to the design and the stocky nature of this piece.

Spatial duality between museum and restaurant is the difference between energized spaces and relaxing ones. The museum is dynamic with movement of people constantly going in and out of the
exhibits. There is no defined location for a person to be at in any moment in time. The lighting is bright and artificial for the art to be best viewed and preserved until in the digital realms where the main focus of light is not ambient light shown on the art, but clearly the opposite of light coming directly from the pieces of art themselves illuminating the spaces. The restaurant contrasts this approach in that the spaces are more a destination than a free flowing movement throughout spaces. There are clear destinations where people go in order to sit and relax, enjoying their meals. Spaces are much more intimate and closely defined and darker than the museum in order to allow for the focus of food and company rather than the art. Holistically, the museum exhibit and the dining room is the same space at a very general level. Both are large open spaces designed to hold people for limited durations to provide a service. While attention in the museum is externally driven towards the walls, the restaurant is
introverted, forcing attention to the company involved and the meal in front of them in the interior of the room. The same space is used for inverted reasons.

While duality is used to convey the idea of two sides of the same coin or two modes or elements irreducible within one system, dichotomy refers to two systems or elements, which are mutually exclusive from one another and cannot exist with the other element. This is a more basic way of thinking of opposites from duality. There exists a balance in duality; a second level of existence where two concepts create a harmony within one entity in order to produce a better singularity than either of the two could have provided on their own, a synergy. The dichotomy of the two paradigms follows a similar pattern of opposites, which includes: pedestrian, light and time.
As mentioned earlier, there is a large, diverse population in Pittsburgh. For exercises in dichotomy, however, special emphasis is placed on two main categories, one category for each of the components of the building. The museum, by nature, engages a more cultural crowd. The main focus of this component is the high society going to downtown for symphonies, theatre and other galleries. This is a high society crowd in the upper echelon of the community. The restaurant diverts its attention toward another group: the working class. This crowd is drawn from the strip district to the east and from visitors or the steel city workers going to the games on weekends, since the site is directly in the path of ticket holders to the baseball and football games. Theses two crowds in themselves are quite different from one another and the mixture of both in the same building will add to the eclectic nature of the building and be an attraction for all those in between these two differing groups of people.
Light is a greater binary illustration of how this dichotomy works within the building. The museum is a light filled area full of color and vibrancy. Heavy ambient artificial light is poured onto these spaces to allow for the best viewing atmosphere. The restaurant, in turn, is a darker series of spaces. Low levels of candle lighting and daylight influence the space to imply a more intimate setting for the meal. This fits well into a bar environment or small settings for dinner where the focus is never more than a few feet away from the occupant.

Time is a great influence to when the spaces are to be occupied. The museum will experience its heaviest traffic during daytime hours and exhibition openings during the day. Traffic will be in continuous streams throughout the day and much heavier on the weekends. The restaurant has many major rushes during a day but
will see higher pedestrian during the evening hours of the week, quite the opposite of the museum. This ensures a steady stream of people coming to the building nearly all day and all night during both weekdays and weekends. At the same time, there will be less risk of these groups meeting in mass at the same time, reducing the total amount of people in the building at any given time.

While there are numerous contrasting features of the building within the confines of the programmatic functions of the building, the building itself undergoes many shifts and changes in dichotomy and duality without relying on differences coming purely out of the functions of the building. The building looks at five major modes of duality in displaying a nature of paradox: integration, circulation, uses, codependence and transparency.

Integration looks at the building as a mutable object that shifts
from exceedingly isolated museum and restaurant components with no visual connections at the top of the building to completely integrated museum and restaurant paradigms at the first floor of the building with a homogenous mixture of both a sculpture garden for the museum and a farmers' market for the restaurant. Both work together to enhance one another. The sculpture serves as the backdrop and displays for the farmers market while the fresh foods are used as the visual stimulant for the sculpture garden. The two work with one another at this level. The exterior of the building transitions into the interior from this first level open public plaza and the screening of facades from the glass shell to the interior opaque facade and on into the building. The integration moves from the top isolation to a more spread out level of programming and mixture to a heterogeneous mixture at the second floor to total integration at the bottom. This flow of integration can be easily seen from the elevator on the inside or from the
exterior looking onto the corner of the building.

Circulation is looked at in the building as two major ways of progression, vertical and horizontal. Elevators and stairs split this again in the vertical system and by hallways and bridges in the horizontal system. Another variation on circulation using both vertical and horizontal in each is the circulation core separated from the rest of the building, allowing a more unbiased and objective view of the building, watching it split away from each other and connected to the building by a system of bridges going to the floor plates. The other is the series of stairways that may be taken from the lobby in the first floor to successive floor plates, so that, on the way to a destination, the user is exposed to both of the components and can gain a first hand experience of both paradigms as they travel up through the building.
Uses of the building are split at a basic level of the museum and restaurant, but both are housed within the same building. They are the two parts to the whole of the building. This looks at the functions of the structure no longer as a dichotomy of function but as a duality of the same building. Spaces significant to their respective programs are highly specialized to those functions through the use of a paradigm design. Spaces similar to one another have common qualities un-unique to either program. For example, the bookstore and the wine storage are obviously dedicated to an individual function, museum for the former and restaurant the latter. Common spaces such as restrooms and offices have qualities and traits inherent in both of the systems relating them to one another and not segregating themselves to just one purpose. This implies a use of space to the users and easy identification of what the intentions of the spaces are.
Codependence lies along the same lines as the issues of use. Very clearly in the building, museum and restaurant are very independent of each other in specific areas, most evidently in the upper floors. There is no ambiguity here as to which program a space belongs to. There is a soothing calm in the knowledge a user knows where he is and what they should be doing there. Conversely, lower in the building, space are highly dependent on one another. The first level plaza is dependent on both museum and restaurant in order for the space to be a success. The sculpture garden requires the foods to realize its full potential as art just as the market requires the sculptures for the use of display settings for the fresh fruit and vegetables. Just as synthesis is the product of a convergence of thesis and antithesis, codependency results from the marriage of these concepts and emerges within the building between the top of independence and the bottom of dependency. On the second floor, there is a combination of bar and
interactive exhibit within the same space. Museum spectators can hear the din of bar patrons over the video display walls, which don’t quite meet the ceiling plane. The bar members can also see shadows and inverted images of displays on the translucent walls on the exhibit. The same ceiling connects these spaces while flooring patterns and lighting are different in both. The two rooms occupy the same space and are better off for it. They give greater character to the spaces and create uniqueness in both areas separating these rooms from others of its kind in Pittsburgh. The interplay of the two spaces enhances the experience of both, and it is through this codependency the solution is achieved.

Transparency plays a significant role in how the building is read, whether it is read as a museum and a restaurant or as a building housing two separate functions. The glass envelope around the entire building serves as the initial layer of transparency for
the building. This begins to blur the lines of sight into the building. During the day, the reflections from the glass make it difficult to see inside the building, thereby, making the building read as one single element on the sight. As the sun goes down, the glass becomes more transparent and more inconsequential. The building transitions from the solid box-like structure into two halves of a building, on a sculptural steel columned structure and another a straight edged masonry walled structure. Interior lights are shown out into the street. Whereas the building used to be more introspective on itself, forcing users to enter and experience it, the building is now an extrovert, allowing everyone to see inside the building. The interior facades now show through the glass, total integration at the bottom, physical connections higher up, only visual connections even higher and no visual connections between the two at the top. The backdrop of the slice in the center of the building splitting the two forms would be an
old parking garage if it were not for the vertical circulation core running up the back of the building. This blocks sight lines further past the building, forcing eyes to turn and look to the interior of the spaces allowed by a partial second skin and the cutting slice through the center of the building. The building itself represent dichotomy in its transparency. The first façade is highly transparent and the second highly opaque. The building takes up only half of the site. The two edges facing the street create the triangulation of the building and maintain the urban edge of the city. The interior half of the building, beyond the circulation core, is entirely open and void of solid form. This solid and void polarity is the largest scale of the building’s duality.

Ultimately, in accordance with the idea of architecture’s connection with art and the basic functioning of society, these become
the forerunners of a society's cultural impacts and statements. The two main uses of the building are a contemporary art museum and a restaurant. The museum needs to be a flexible space, able to accommodate several types of installations in varying mediums. The restaurant is more stable in spatial relationships and is presented as the antithesis to the design paradigm of the museum. The combination of these paradigms will create ambiguous areas within the building and presents the user with choices revealing their codependency on one another. The contrast occurs as a societal normative space where continuous regular use by everyday citizens will see, use and interact with the spaces.
REFLECTION

Through the study of duality and dichotomy, the result has been a larger understanding of why there is such an importance associated with contrasting elements in architecture. It is the freedom of choice. Deconstructivists have tried to explore the binary nature of architecture by exploiting the contrasts and the socially unaccepted norms of society. The architecture itself is not the great achievement in the feat. What has happened because of it is the realization of opportunities and options available other than the status quo. The observers now can look at the new voice of architecture and compare it with the traditions and make a decision for themselves about which they like and develop their own paradigm of appreciation. The real architecture happens at the harmony between spaces and paradigms. The blurred interpretation of both affecting one another creates enhanced spaces. They are exposed to more than just one design can offer at these points. Just like in the project for a museum and restaurant,
the visitors are exposed to more than just a museum and more than just a restaurant. The interplay is where the harmony is discovered. Although the focus and real synthesis of the project is found in these overlapping spaces, it is necessary to first have a point of origin where the harmony can come from. While this book is a simple dichotomy of black and white, the blurring happens in the project and in the mind of the reader as they turn pages of images while reading the same page or glance at passing pages of text keeping in mind the same image. Black and white, past and future, right and wrong, thesis and antithesis, culture and technology, hard and soft; each must exist in order for their to be a balance and something better than either of the two on their own could achieve, a synergy of two extremes.
REFERENCES


