

University of Florida

Ceiling Condition: Extension Interlock

The Tectonic Ceiling correlated to Program

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Magna Cum Laude Honors Thesis

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Thesis Subject: Architectural Theory

Thesis Topic: The Tectonic Ceiling correlated to Program

Architecture Thesis Outline

- Thesis statement
- Precedential Study
- Architecture thesis topic's introduction
- Results' evaluation
 - Interlocking Architecture
 - Experiential Architecture
- Architecture thesis conclusion
- Architecture thesis bibliography

Program: Café, Office Space, and Two-bedroom Apartment

Precedential Study: The techniques of Carlos Scarpa's intricate details used to express the tectonics of the buildings components.

Thesis Proposal: To explore the vertical and horizontal relationship of the ceiling-wall-ground as the structure, a spatial composition, and most of all as a programmatic driver. To study the psychology of space tied to tectonics of architecture and describe the experience of moving through. To present the results of a study of the human act of looking up connected to the tectonics of the ceiling condition.

Thesis Statement:

While there are many factors that can contribute to the phenomena of looking up, it can be simplified down to its core that begins to talk about the tectonics that compose it. “Space is architectural when the evidence of how it is made is seen and comprehended (Frampton 228).”

Precedential Study:

Carlos Scarpa (1906-1978) was an Italian architect that was influenced by the materials, landscape, and the history of Venetian culture. This paper will look at two of his works: Fondazione Querini Stampalia and Banca Popolare di Verona correlating how the joint is used in his buildings to create a syntax relating the ground, supporting structure, and ceiling. The thesis is mainly about the tectonics of the ceiling condition however, the ceiling cannot be addressed fully if not in conjunction with the support and ground.

Scarpa was able to translate his interests in regionalism, history, invention and the techniques of the artist and craftsman into an emphasis on the joint. This is apparent in Scarpa’s renovation of Fondazione Querini Stampalia, where “a stereotomic earthwork, laid into the



Figure 1- Scott, Rory. “Spotlight: Carlo Scarpa.” *ArchDaily*, 2 June 2017, www.archdaily.com/638534/spotlight-carlo-scarpa.

undercroft of a sixteenth-century palace, is accessed by a lightweight bridge that acts as a kind of fixed hinge between the terra firma of the campo and the transformed shell of the palazzo (Cadwell 17).” It is composed of arched steel and larchwood treads (Figure 1). On the railing we notice the breaks in-between the wood

that not only creates sound, but also a reflection of light through the spaced treads. One can trace the underlying structure from teak to steel strut, to steel support, to a second strut, to that strut's doubling. Each piece here works to articulate and show the fundamental essence of structure: "the negotiation of load to support," translating the horizontal to vertical. However, at the final connection, the most prominent connection of strut to bridge it seems to almost disappear; "the double strut simply folds into the span's plating, where steel abandons all skeletal pretense in series of ductile laminations (Cadwell 18). Scarpa is able within this detail to create a "tectonic condensation; as an intersection embodying the whole in the part" (Cadwell 19).

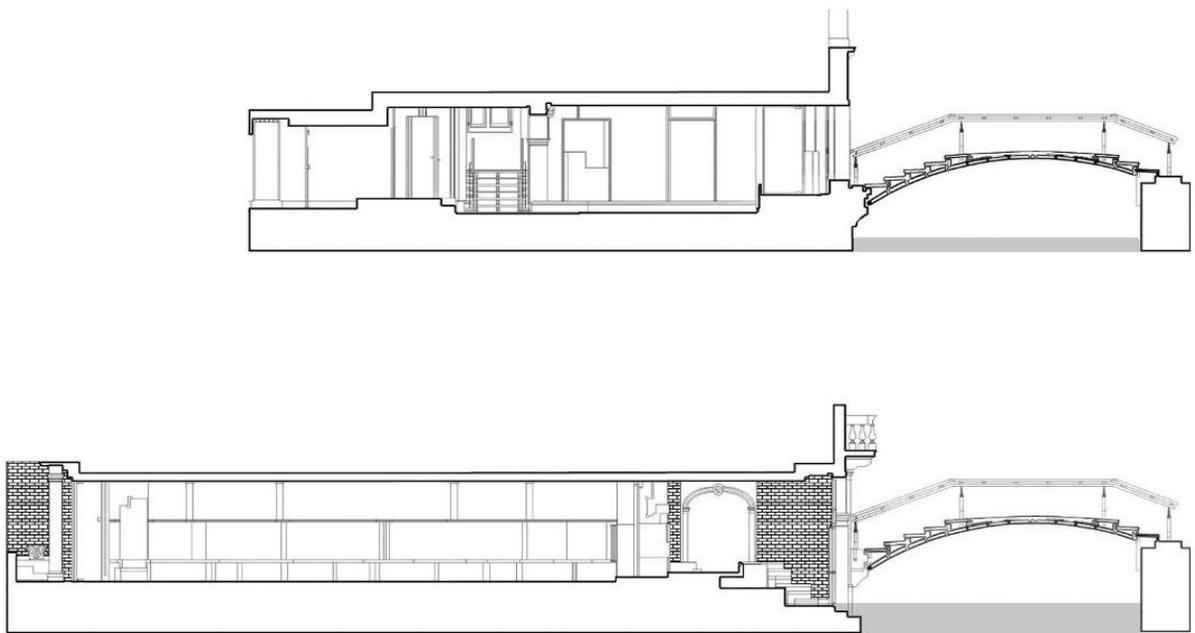


Figure 2- Scott, Rory. "Spotlight: Carlo Scarpa." ArchDaily, 2 June 2017, www.archdaily.com/638534/spotlight-carlo-scarpa.

Banca Popolare di Verona is in the historic center of Verona, Italy and overlooks the Nogara Square and Convent Lane. Construction of this building began in 1973 and ended in 1978. In this building the ceiling is subdivided into its smaller parts that leads the eye to the salient points of the concrete column heads that pulls through the plaster ceiling. The colonettes act as “linking

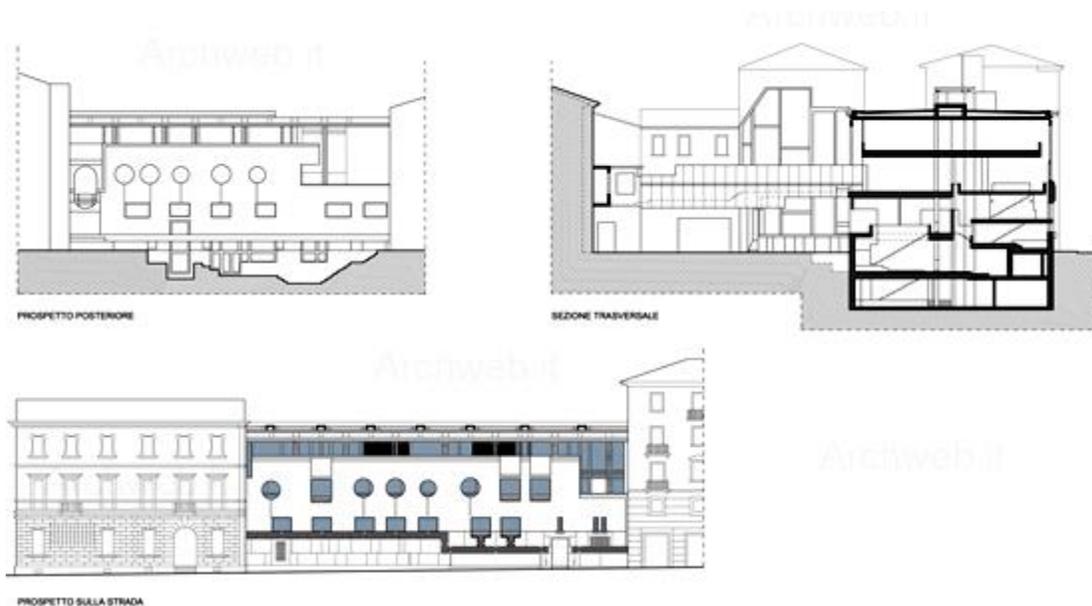


Figure 3- Rigetti, Enrico. “Sede Centrale Banca Popolare Di Verona.” Archweb, 2 Sept. 2002, www.archweb.it/dwg/arch_arredi_famosi/Carlo_Scarpa/banca_popolare_verona/banca_pop_verona.htm.

elements to the architrave above the base beneath” (Frampton 310). In this case the column helps define and centralizes the whole space and bridges the connection literally from floor to ceiling. The tectonics of the ceiling condition breaks up the mass into its component to allows the occupant to appreciate and understand how it is fundamentally built. From the section in Figure 3, not only can see how the building works spatially between floors in coordination with the supporting structure in the background, but also how it relates to the ground and the exterior façade.

In looking at Carlos Scarpa Fondazione Querini Stampalia and Banca Popolare di Verona we see the importance of the joint on the ground, in support structure and in the ceiling.

Introduction:

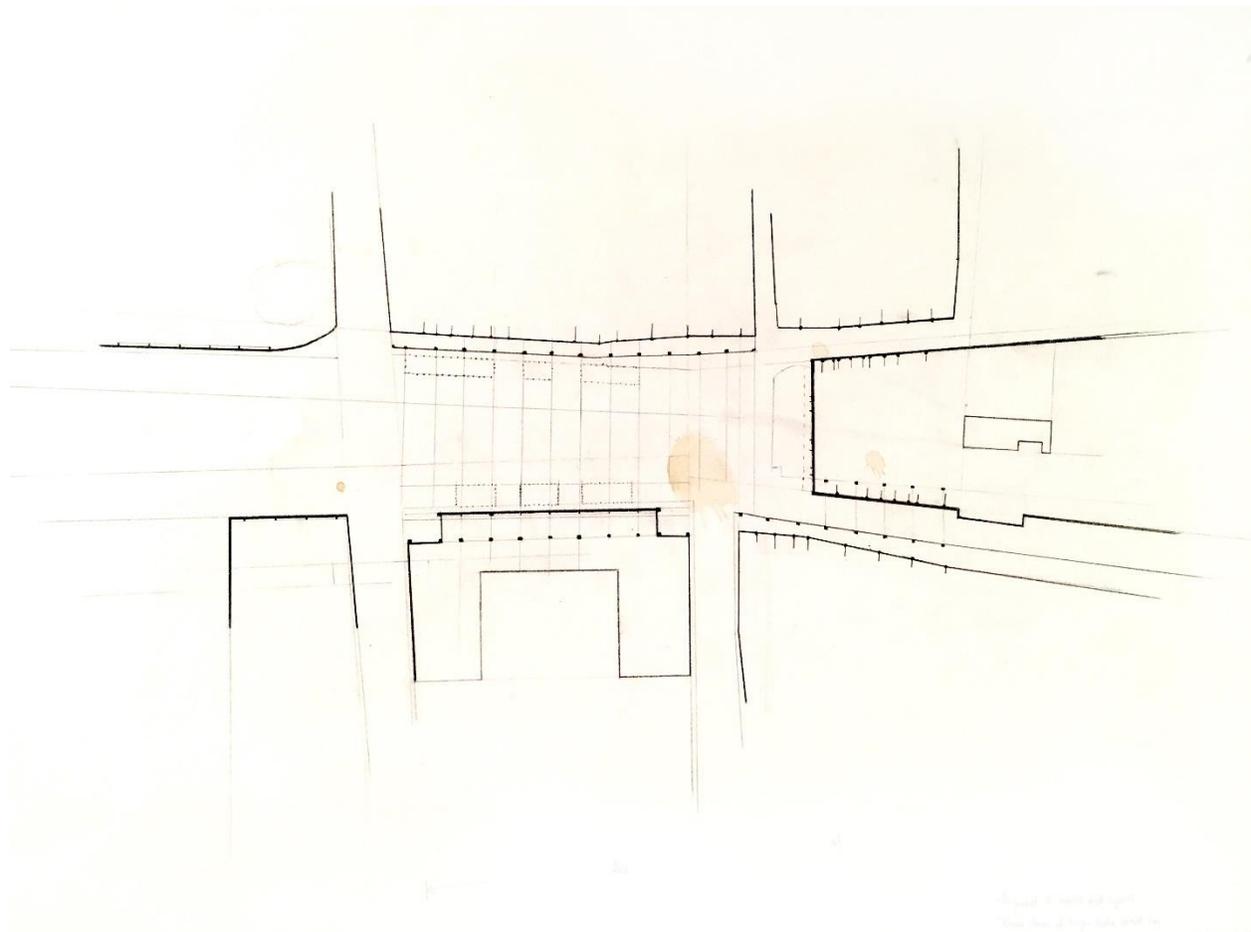
The typical café may seem like a very simple and straightforward space, however upon further study there is a system that organizes the program that is followed by the ceiling condition above, the tectonics of the ceiling connected to the ground condition. This creates an interesting topic of exploration: the human act of looking up, observing, speculating a space consciously or subconsciously. What makes a person want to look up toward a ceiling, to want to stop and stare? The ceiling that unconsciously moves people through a space as it links to the floor in rhythm. Other factors that could tie into include color, form, lighting. But what is the configuration and form that makes a person want to look up? The light shining through? The specific material? A combination of all of these? “Art does not reproduce the visible, it makes visible” as architecture is the art of bringing to the surface these conditions that normally would be left unnoticed. Architecture is an art that makes you want to look up, but more than that to touch, to feel, to pause, to continue walking through and experience.

Results’ Evaluation: Extension Interlock

Our project is situated in the heart of Vicenza, Italy, in the Piazza del Duomo. In this area the market opens and populates the street with people, creating a space of movement in the piazza. The area is surrounded by small shops and the city post office. Within this piazza is missing an important cultural Italian piece, a place of rest, of pause, to relax and enjoy the view of the Campanile della Cattedrale or the Cattedrale Santa Maria Annunciata, a cafe. The program for the project building, Extension Interlock, is a café, office, and apartment. This would create the necessary link between the movement of the piazza and the resting point in the café. This works to match the setting of the place. The setting of the building otherwise known as the context plays a key role to construct a product that fits the specific site. This way it integrates with the

surrounding buildings and considers the existing conditions, cultural history, and local people to create a better place. This is a crucial factor to consider when developing a successful project in a place that responds to the local people and conditions. “The worst enemy of modern architecture is the idea of space considered solely in terms of its economic and technical exigencies indifferent to the ideas of the site” (Frampton 8).

In the figure below is a site analysis of different edge conditions seeing how they may relate to each other. This includes the edges of the distinct roof condition in elevation, the edge created by the colonnade, the interior store front, and the edge of the street in relation to the ground. These edges create horizontal divisions but at the same time it creates datums that runs vertically, looking up between edges.



Interlocking Architecture

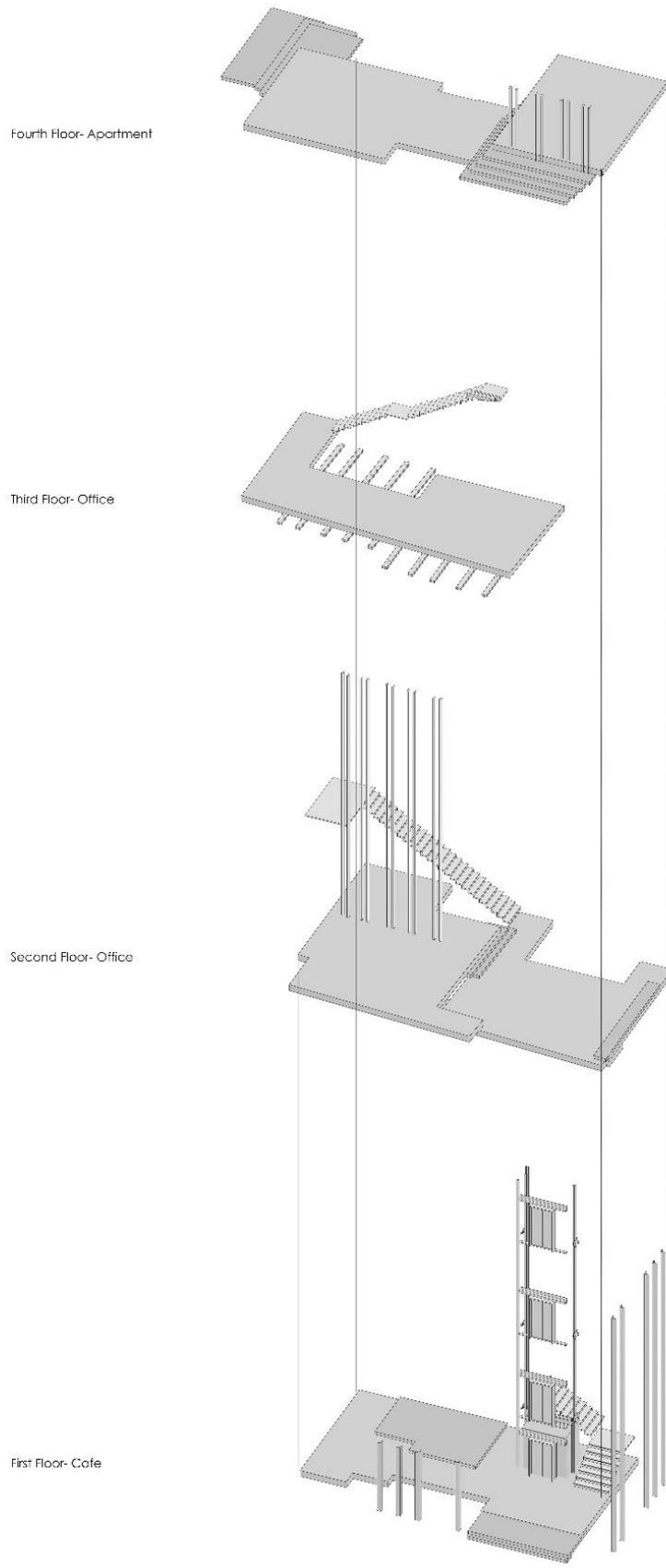
The site analysis sparked my interest of the relationship between ceiling and ground and how this vertical datum can create a horizontal program. I used this to study the interior edge condition of Vicenzas' cafes, seeing the relationship between the ceiling and the program. Architectural programming in this case can be defined as the scope of work or activity that determines and drives the architectural gestures in that space. I noticed how slight indentation in the ceiling marked a difference between the bar, the workspace for the barista, and sitting areas. I also noticed how depth created by the supporting structure within the walls informed smaller intimate spaces to sit in. This in turn led my overarching theme of Interlocking Architecture because I noticed the pattern ceiling condition from the interior that drives the program as there is system between the program structure, ceiling, wall, floor. In this case Interlocking architecture is applied in the literal sense to begin to design a working form for the building, but also an interlocking of function between the components to create the whole. All these systems work together just like in Carlos Scarpa's building studies to create a working space. More than this it begins to work spatially within the building as there are variegated intersections of volumes and voids creating the intersectional spaces.

I first began my building by projecting the interlocking theme and using the site to further inform the building form in terms of the way it functions from the inside out and from the outside in programmatically. The major movement corridors on the site was directed into the project to inform distinct access points and at the same time create undersides of implied spaces. This would bring an intimate space against the street where it is busy. The overall building form created distinct programmatic spaces within and underneath the intersecting and overlapping spaces.

“Interlocking is achieved if in every row of elements, one can identify two sections normal to the assembly plane such that while one section ensures kinematic constraint in one direction, the other section provides the same element w/constraint in opposite direction.” In this case the “kinematic constraint in one direction” is the programmatic plan that works vertically throughout each floor. The horizontal axis that works through the building is created by the programmatic façade.

In the plan it is divided into three corridors: service/movement, central, and the private/public, to organize the program and relate it vertically between each of the floors. Within the floor plan it creates shifts as they interlock spatially and physically to slide up and past each other. In the building the ceiling condition underneath the bar (figure 4) is raised to distinguish this working space against the public sitting areas, but also at the same time reacts from ceiling to ground above as it notes the steps. The office space has double high spaces that reads up to the apartment level that sees a change in program. The individual floor themselves are multiplied to spark the interest in people to want to look up and see or wonder what occur above.





Axonometric Diagram of Intersection

The façade that responds to the interior program, so it functions in a vertical and horizontal system throughout the building creating a grid to organize the plan. The green façade on the exterior that pulls the eye up indicates the major movement system working behind, the elevator and the access point of the stairs. “The elevated eye level finds itself at a new datum removed from the ordinary world” (Frampton 320). The intersection of materials pushing and pulling also aids with the programmatic read on the façade. The circulation that creates an edge, a presence on the exterior.



Experiential Architecture

But why does this matter? Why should architects be interested in the ceiling? The simple act of looking up. The vertical observation. This is itself a phenomenon: The emotional act of looking. It is a pleasurable experience that engages the user and carries them on a “sensory journey of experience and appreciation.” Through the subtle synthesis of materials, form, tectonics, ergonomics and spatial dimension of the spatial analysis it combines to create a “tangible and visual narrative in architecture.”

At the same time, we need to take into consideration our peripheral vision in architecture. What is the role of peripheral and unfocused vision in our lived experience of the world? Unconsciously the architecture leads us through a space as “peripheral vision has a higher priority in our perceptual and mental system.” So even if the person does not physically look up at the ceiling, the unfocused vision we deem as unimportant becomes just as important as what we focus on. In this case, we focus with clear vision on the program and the ceiling leads us through our peripheral vision that integrates us with the space. It allows the occupant to feel embraced and whole within the architecture. In this sense it can it “articulate the experience of our being-in-the-world and strengthens our sense of reality and self.” This is what we can call “Profound architecture makes us experience ourselves as complete embodied and spiritual beings. In fact, this is the great function of all meaningful art.”

Conclusion

Overall, interlocking architecture connects the whole building structurally, organizationally, and within its details such as the building façade, stair details, and most importantly the ceiling

condition. It works to create an overall experience that is consciously walked to be looked at, and yet not looked at, to be unconsciously experienced.

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