

**An Imagined Constraint: Sense of Place and Living Walls at the Drew School,  
San Francisco, California**

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**ABSTRACT**

Living architecture impacts the ways in which individuals interpret urban space and themselves by encouraging personal reflection. Both connection to nature and construction of comparison assist in identity formation enabling living architecture to offer an innovative way to understand living architecture metaphorically. Living walls, however, have yet to be examined for their impact in being an icon for a specific location. I examined a living wall at the Drew School in San Francisco, California to understand its impact on interpreting the school and surrounding community. I recorded a total of four surveys with 250 respondents and four interviews, as well as one two-hour observational period of the living wall. Surveys and interviews indicated that the living wall increased reflection about the Drew school as well as environmentalism, social inequity, living architecture and community. Individuals also used the wall as a marker to help physically distinguish Drew from other private high schools. Survey demographics underlined cultural differences in attitudes towards nature and the living wall's function at Drew. Positive reflections about Drew through the lens of the living wall were primarily memory induced, underlying the profound effect memories have on people's understanding of their environments. Comfortableness and educational attainment also impacted how community members viewed the living wall and Drew. A better understanding of how living walls function as metaphoric representations and encourage dialogue about environmental issues will assist in living architecture design and urban benefits.

**KEYWORDS**

green architecture, urban gardening, identity construction, social influence, community

## INTRODUCTION

Sense of place is a difficult concept to describe and yet inherently important in determining how people emotionally understand the world around them. A lack of sense of place is perhaps best explained by Gertrude Stein when she wrote, “there is no there there” (Stein 1939); sense of place creates place out of space and is inherently important. Sense of place refers to the meaningfulness of a place when compared to other places. It is an abstract and existential construct that falls alongside equally ambiguous “place identity” and “place attachment ” (Brown 2003, Manzo 2003). Sense of place is understood in terms of both positive and negative meaning (Tuan 1980, Buttimer 1981), but what constitutes sense of place is still unclear (Manzo 2003). While some argue that sense of place is constructed through place attachment (Bricker and Kirstetter 2000), the emotional and dynamic context that must influence sense of place has yet to be fully addressed. Sense of place studies are limited in that they usually evaluate how (or how not) similar a place is to *home*. This is a flat interpretation of sense of place construction, as by comparing everything to “the home” scholars ignore that some places have unique meanings of their own (Manzo 2003). Places that individuals go to outside of the home (work, church, school) have only been examined in respect to how they mimic home and are not usually evaluated for their negative, neutral, or unique impact (McAndrew 1998). More recently, studies on sense of place have focused on the importance of nature, incorporating eco-psychology and deep ecology into place based relations. These studies hint at the importance of ecological connection in sense of place formation (Kaplan and Kaplan 1989, Stedman 2003).

Understanding that perception to the natural world can influence sense of place, living walls allow for an elegant solution to enhance the sense of place of a location. The walls, which have risen to popularity through designs by Patrick Blanc, are becoming more common in urban areas, especially where there isn't room for traditional gardens (Blanc 2008). Living walls have a number of environmentally friendly uses such as grey water reuse, insulation, and offering a home for local flora and fauna (Sheweka 2011, Sheweka 2012). Additionally, the living walls are visually stunning, acting as living art pieces for where they are installed. They differ from other art forms, however, because they are alive. Living walls combine the benefits of both greenery and traditional art forms. Cultural geographers understand sense of place as the organization of human space uniquely dependent on sight, and that therefore individuals' feelings, space, and sight are

intricately linked (Tuan 1980, Stedman 2002). A study on how living walls establish sense of place, at a location other than a home, would allow for clearer understanding of how sense of place is constructed through living architecture.

The living wall at The Drew School in San Francisco, California provides a location for a case study that would be able to explore living walls' influence on sense of place of a school. The high school has an award winning living wall installation designed by Patrick Blanc in 2011, and has a neighborhood and tourist base that interacts with the wall regularly (Blanc 2008, Drew School 2013). The living wall at Drew school presents a perfect location to understand not only how the school community imagines themselves through the lens of living wall, but also the meanings and interpretations of nature and urbanity the living wall recalls.

This case study focused on the question of how individuals at the Drew School imagine community, nature, and urbanity through the lens of the living wall. I broke this into smaller questions: How does the living wall evoke emotional and memorial connections and how does the living wall ground the Drew School as a whole. I obtained results to answer these questions mainly in the form of written assignments, surveys and interviews. Additionally, I discreetly observed community members reactions when walking past the wall. This information and allowed me to analyze living walls' constellation of meanings and influence on sense of place, especially in respect to how living walls help individuals imagine community.

## METHODS

### Study system

I conducted this study during the months of November 2013– March 2014 at the Drew School, San Francisco, CA and the surrounding neighborhood (Figure A1.) The Drew School is a private high school with approximately 280 students, and ~80 administration and faculty members constituting a variety of academic backgrounds. The surrounding neighborhood has many residences – both private homes and apartments – and a variety of small private businesses. In 2010, the architecture firm ROMA, with the assistance of designer Patrick Blanc, designed and installed a living wall onto the south side of the school. The living wall was part of the new Sam Cuddeback wing of the school, which also included a green roof and theatre for the school. The

wall itself is three stories tall and has over 150 native California plant species arranged in asymmetrical sweeping patterns (Figure A2 and Figure A3).

### **Survey and interview approach**

To understand how the living wall alters perceptions about the Drew School, I surveyed participants using the online platform “Survey Monkey,” which allowed me to store, record and analyze my data from online Internet surveys. Students at the Drew School are given an Ipad upon enrollment, and as a result, are comfortable using the survey platform and the technology in general (Waclawski 2012). Three surveys were sent out to students over the span of seven months. The first survey focused on demographic information and student understanding of the living wall, the second survey took the form of a short written assignment asking about student understanding of urban greenery, and the third survey asked more involved questions regarding the living wall and comfortableness at the Drew School. Ten to fifteen minute interviews were conducted with those who volunteered to be interviewed. Student interviewees volunteered through survey three, so all volunteers were also survey three respondents. I looked for demographic information and each survey helped to describe specific demographic patterns and trends (Yanow 1995).

### **Observation**

I observed how students, faculty and passerby reacted to the living wall during an afternoon observation period lasting two hours. The observation was done from 9:45-11:45am on March 25<sup>th</sup>. For the observation, I sat across the street on a lawn chair and observed the living wall without notice of those on the other side of the street. I noted the reaction of passerby’s on both side of the street in one of five categories: no notice, stop and look, take a picture, touch or other. If I was unsure of the individual’s reaction, they were not marked.

### **Interpretive analysis**

To quantify data and find overall patterns in individuals' perceptions of the wall, I examined responses from each survey and used interpretive analysis to analyze the data (Mack 2005). After reading the full content of each survey, I examined some of the opinions expressed towards the living wall and the Drew School that included; being "uninterested/hateful" towards the wall; feeling neutral towards the wall; seeing the wall as ecofriendly, interesting or useful; finding the wall aesthetically pleasing and important; and taking pride in the wall. Generally, I used interpretive analysis to determine the extent to which individual's past experiences impacted their current feelings towards the Drew School and what affect the living wall has had on their feelings towards Drew in general. These results used not necessarily as hard data, but to understand individuals' perceptions of the living wall. I described these "codes" through a number of coding questions, which I developed (Table 1).

**Table 1. Coding questions for surveys.** Data was analyzed from demographic surveys to understand trends in understandings of the living wall.

Question	Question Clarification
How comfortable does the individual feel at the Drew School?	In response to Survey 3. Are they happy there, do they identify strongly with the school? Are they proud to attend Drew?
How deeply does the individual relate to nature?	Important? Beautiful? Do they seek it out? Do they miss it?
How does the individual feel about the living wall?	Do they think it's important? Iconic? Pretty? Useful? Do they seek to spend time around it? Study It?
How does the individual describe the living wall's function?	Environmental? Aesthetic? More abstract? Spatially?

## Interviews

To explore the social impact of living walls qualitatively, I used interpretive analysis of interviews to unearth the subtleties of the wall's influence on opinions on nature, urbanity, and individuals' connection to both. Listed below are the questions I asked during the interviews

(Table 2). Interview questions were tailored to the interviewee and lasted anywhere from 10-15 minutes. Specific questions varied by individual.

**Table 2. Interview questions.** Questions that were asked of interviewees depended on their written response portion. Questions 1-4 were asked of select students and questions 5-8 were asked of a faculty member.

Question Number	Question
1	What is the student perspective of the living wall?
2	What do you mean by “bragging right?”
3	You mentioned that you see the living wall as a representation of what ‘we want Drew to be.’ Can you elaborate on that?
4	What do you think the living wall contributes to the Drew School?
5	What does looking at the living wall make you think about?
6	How do you think students feel about the living wall?
8.	How do you feel after looking at the living wall?

### *Interpretive analysis techniques*

I used interpretive analysis interviews to uncover the different types of perceptions about nature, sense-of-place, and the Drew School. This allowed for a more interpretive and deeper qualitative understanding of the social impacts of the living wall and how the living wall acted as a lens for the Drew School (Yanow 1995). My analytical techniques could be compared to literary analysis, where style, point of view and connotations are taken into perspective (Palmquist 1997). In total, I analyzed five interviews. Similar to traditional discourse analysis, which exposes techniques used to influence the writers, I used interpretive analysis to understand what had influenced the interview participants’ perceptions about the living wall and how those interpretations then related to the Drew School (Table 3).

**Table 3. Literary tools used in interpretive analysis.**

<b>Analysis</b>	<b>Qualification</b>
Connotation	The implied meaning that the speaker has behind a remark
Point of view	How the speaker is looking at the question. From a student perspective? A community perspective? How long have they known Drew/the living wall?
Allegory	How does the speaker relate to a larger picture or make their remarks into lesson-like quality?
Figurative language	How is language used to express meaning beyond literal remarks? How does this add to connotation?
Tone	Happy? Sad? Frustrated?

## RESULTS

I examined each of the survey responses, totaling in 250 surveys, 108 from survey one, 39 from survey two, 77 from survey three, and 26 from the faculty survey, and interpreted four interviews. I found that most Drew School community members felt positively towards the living wall, had mentioned it or discussed it in conversation, and thought it served as an icon or symbol for the school. Most students found that the living wall made them feel more connected to the Drew School. Most adult faculty members believed that the living wall had positive effects on their mood, and used a variety of positive vocabulary when asked to describe it. For qualitative information, I used interpretive literary techniques to understand deeper themes and perceptions.

**Table 4. Survey response summary.**

<b>Survey</b>	<b>Date release</b>	<b>Number of responses</b>
One	October 23 <sup>rd</sup> , 2013	108
Faculty	November 20 <sup>th</sup> , 2013	26
Two	December 2 <sup>nd</sup> , 2013	39
Three	March 6 <sup>th</sup> , 2014	77

### Demographics: student

Students comprised a broad group ages and interests, with variety of opinions and relationships about nature, the Drew School and the living wall. In total, 224 responses were gathered from three surveys, the majority in the form of survey one and three, which were released to the entire student body. Survey two was only released to Biology students. When polled, 33.77%

of students were male and 66.23% were female. Most students (46.3%) saw the living wall more than once a day and 72% claimed that they talked with friends by the wall. Students identified with nature in a variety of ways, with 39.81% identifying as “outdoorsy,” 42.59% identifying as “maybe outdoorsy,” and the other 17.59% identifying as either undecided or not outdoorsy (Table 1.) Students showed interest in over 15 different academic subjects ranging from Theatre Technology to Chemistry, although Biology made up the largest percentage of any academic subject, with 22.08% of total students. Students had mixed levels of seniority, and 42.59% students surveyed had attended Drew for one-two years.

**Table 5. Student demographics.** Basic demographic information from survey one.

<b>Personality</b>	<b>%</b>	<b>Wall exposure</b>	<b>%</b>	<b>Seniority (yrs)</b>	<b>%</b>
Outdoorsy	39.81	1+/day	46.30	0-1	22.22
Maybe Outdoorsy	42.59	1/day	28.70	1-2	42.59
Not Outdoorsy	13.89	1+/week	17.59	2-3	19.44
I don't know	3.70	1/week	3.70	3-4+	15.74
		1/month	3.70		

Students overwhelmingly identified positively with the Drew School and the living wall. 81.82% claimed that they felt “comfortable” or “very comfortable” at the Drew School, 72.72% felt “very strongly,” “strongly,” or “somewhat strongly,” connected to the Drew School as a place, and 27.27% felt more connected to the Drew School because of the living wall (Table 6). Additionally, 83.11% felt that they would be “Very Upset” or “Bothered” were the living wall to be taken down.



**Table 6. Student understandings of the living wall and Drew.** Comfortableness and connection to the Drew School overall, regardless of living wall attachment or belief.

Level of Comfort at Drew	%	Strength of Connection to Drew	%
Very Comfortable/Comfortable	81.82	Very Strongly – Somewhat Strongly	72.73
Undecided	12.99	Neutral	15.58
Uncomfortable/Very Uncomfortable	5.19	Somewhat Weakly – Very Weakly	11.69

When asked what the living wall contributes to the school, 79.22% answered, “it looks nice,” 64.93% answered “environmental awareness,” and 54.55% answered, “it is iconic.” 50% of those who answered, “it is iconic” also answered that “it makes me feel proud,” while 55.26% of those who answered, “it makes me feel proud,” also answered “it is iconic.”

**Table 7. Student understandings of the living wall’s contributions to the Drew School.** Information taken from student survey three.

Environmental Awareness	Aesthetics	Pride	Iconism	Nothing
64.64 %	79.22 %	49.35 %	54.55 %	5.19 %

### *Demographics: faculty and administration*

Faculty and administration generally shared positive opinions of the living wall, though they had a wide variety of viewpoints on nature, the importance of urban greenery, and feelings associated with the living wall. “Beautiful” (100%), “essential” (73.08%) and “spiritual” (46.15%) were the top three words associated with nature. 69.23% of the faculty claimed they felt connected to nature and 84.62% went out of their way to see greenery in urban areas. “Happy” (84.52%) and “calm” (92.31%) were the most common feelings towards/about nature, although “nervous” (19.23%) and “scared” (11.54%) were also represented. 57.69% of faculty members experienced memorial evocation (were reminded of something) by looking at the wall. Compared to those who were unable to establish a memorial connection, faculty members that could were 244% more likely to feel “proud,” 220% more likely to feel “happy” and 440% more likely to feel “calm”

towards the living wall. A P-value of 0.017 indicates the statistically significant relationship between memory and emotional connection (Table 8).

**Table 8. Faculty’s connection between memory and emotion.** The connection between whether an individual’s ability to recall memories via the living wall attributed to their emotions towards it. Null hypothesis stated that memorial connection should not influence emotions felt towards the living wall. P value: 0.017053626

Emotion Felt	No Memorial Connection	Memorial Connection
Proud	3	10
Happy	4	12
Calm	1	6

### *Qualitative distribution*

The written component of each survey response was interpreted for the individual’s general relationship to the Drew School, nature and the living wall. Due to the somewhat limited nature of the surveys, I could not track one survey respondent’s responses across all three surveys. However, the general trends for each survey could be examined. I did not code individual responses, but selected poignant quotes to use in the discussion. Of all of the survey’s written responses, there were only three that were negative. Every neutral survey response also included some sort of positive reflection on the Drew School or the living wall.

### *Interviews*

Interviewees expressed a varied understanding of the living wall, and the Drew School, although all interviewees used the living wall as a representation of the school itself. Of the four interviews performed, Three of the four interviews used the living wall to describe the Drew School’s connection to nature and environmentalism, while only one of the interviewees – the community interview – viewed the living wall and the Drew School in a negative light. Like qualitative data in the survey responses, interview responses were mostly examined for thematic content and passages to explain understanding of the Drew School through the living wall. The most dramatic and straightforward passages are included in the discussion.

*Observational data*

After surveying the living wall for a two-hour period, from 9:45-11:45am, I found that the living wall caused a reaction in 27% of passerby. To “stop and look” was the most common reaction to the living wall (18%), while another 8% of passersby took pictures, let their dogs sniff the wall, picked flowers and physically touched the wall. Bicyclists also expressed interest in the living wall (turned and looked at it while passing by), but were not included in this data because they were unable to further interact with the wall. At approximately 11:00am, it began to rain and interaction with the living wall decreased notably.

**Table 9. Observational data of passersby.** Observations of individuals walking past the living wall taken from 9:45-11:45 am, March 25, 2014.

<b>Response</b>	<b>Number of People</b>
No visible response	44
Stop and look	11
Take a picture	2
Touch	1
Pet interaction	2

## DISCUSSION

My questions allowed me to analyze sense of place at the Drew School, focusing on how the living wall evokes memories and emotions and how the living wall grounds the school within the greater San Francisco landscape. Positive nostalgia and environmental reflection were the dominant frames of understanding among surveys and interviews. I attributed reactions to the living wall as a direct response to the Drew School, as the living wall acted as a living flag for the school. This was evident in how survey respondents consistently mentioned the living wall as a “selling point,” or something “pointed out to prospective students” at the Drew School. This vivid way of presenting flora allows the living wall to be viewed iconically, or as a tangible representation of whatever it embodies. Students and faculty also used the living wall as a way to remember or reconnect with other natural experiences they have had, either real or desired. Positive feelings, strong association and comfortableness with Drew, and increased knowledge of urban

greenery were direct results of interacting with the living wall. Additionally, students and faculty used the living wall to describe the Drew School spatially, particularly referencing how the wall is the most defining feature. Below, I analyze the two key different evocations of the living wall, how it grounds spatial understanding, and how the living wall impacts the community in a greater context.<sup>1</sup>

## **Content: adult perception**

### *Faculty surveys*

The faculty's broad range in age exposed a variety of different educational, personal, cultural and historical backgrounds, which contributed to faculty's comprehensive understanding of nature and mixed views on the living wall. Ecopsychologists contend that humans have the natural ability to connect with nature, and that certain historical movements in time have encouraged this behavior more often than others (Roszak 1992, Rosak 1995). Therefore, older faculty members who described nature as "spiritual," may be demonstrating their understanding of the American environmental movement of the 1960's and 70's, as opposed to their younger counterparts who instead often described nature as "essential." Eco psychology can therefore explain somewhat, the varied perceptions of nature that occur across individuals of different ages.

Unlike students, many faculty members saw the Drew School as a workplace, which impacted their understanding of the living wall. Understanding of place is not always positive (Tuan 1980), and "the work place" for some faculty was symbolized through the living wall. This can be seen in the faculty member who described the living wall as, "work" and was then unable to attribute a single feeling to the living wall. On the other hand, some faculty members who were either more enamored with their work, or found work to be positive, symbolically represented

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<sup>1</sup> A note on definitions: Throughout this paper I refer to the living wall's two main evocations as iconicization and groundedness. Iconicization differs from symbolism in that it alludes to the positive and slightly hallowed way in which the students viewed it. Symbolism merely is a representation with reference to a particular sign. Groundedness differs from rootedness (McAndrew 1998), in that it lacks the deep connectivity that rootedness implies. Groundedness merely spatially bases something, without an emotional connection.

those positive feelings through the living wall. Faculty members that found a memorial evocation from the living wall, were much more likely to feel pride and happiness by looking at it. Memory is one of the most powerful ways to induce emotions; a reminder of a happy experience is likely to induce the feelings of happiness (Bradburn 1965, Levine 2004). Not all emotions however, were simple: when asked what feelings individual's felt towards nature, combinations included, "calm, weak," "happy, nervous," "sad, calm", and "happy, nervous, calm." Complex relationships between place, memory and emotion all contributed to how faculty members saw the living wall.

### *Faculty interview*

An interview with a faculty member allowed for increased understanding about the living wall's impact on adults and how it amplified their understanding of Drew. This individual had extremely positive feelings towards the living wall and Drew, particularly referencing how comfortable and proud they felt there. Importantly, the individual understood the living wall metaphorically, referencing their childhood and their mother:

When I look at it an inner voice in me shouts out the hallelujah chorus. The blossoms are out and its exploding! I'm a garden person anyway though. Its joyful. My mom was a gardener and its like pieces of my childhood to me.

These positive memories, and almost religious feelings, helped construct positive associations with Drew. Memory based understanding of objects and places are deeply important, especially when they help construct a sense of "home," the most important place in the psyche (Riley 1992, Moore 2000). As the faculty member recognizes this connection, s/he shows the power of past memories in constructing new understandings of place. Additionally, the faculty member constructed the metaphor of the living wall as bringing life to Drew.

I think there is a heightened sense of awareness about what an environment is and I think that ultimately it captures a sense of life... But to me it means ultimately, you know it's a statement about being aware of the environment.

The sight of the wall reminded him/her of environmental stewardship, allowing for metaphorical understanding in two ways. Therefore, the deeper understanding of the living wall and its meanings helped make the living wall an important positive representation of Drew for the individual. The

individual also, however, understood that not all faculty might feel the same: “But it’s a workplace. Some people come hurried, late, stressed and it’s the first thing they see and they’re going to work.” This confirms my belief that faculty members who dislike work, see no importance to the living wall. The individual’s acknowledgement of the difference between work and home also helps explain the living wall’s function as a marker of the school. To some faculty, the wall meant work and therefore not home, whereas others who had deeper connections to their work might have found the living wall to be a welcoming sight.

### *Community member interview*

A community member’s mixed feelings about the living wall illuminated the unforeseen and sometimes negative impact on the nearby community. The individual described the wall as, “elitist,” and a “hallmark of [Drew’s] attitude towards the community,” also mentioning how the living wall was pitched to community members as part of a project to keep the lunch-yard quieter. The individual referenced the noisiness of the student body, the excessiveness of the project, and how ugly the living wall looked for a large part of the year. His/her negative outlook on the living wall stemmed from the unhappiness that the individual felt because of its installation: “they tore down some beautiful Edwardians, damn shame,” and because of the contrast it made with the subsidized housing next to the Drew School, “the nerve they have.” He/she did claim however, that it was good to see more green from his/her apartment. His/her understanding of the wall was directly related to the historical context of the living wall installation and their educational background. This interview shows how the living wall acts as an icon of the Drew school, and also shows confirms how sight and emotions are linked (Manzo 2003). Other community members were not available for comment.

### **Content: student interpretations**

Students used the living wall to represent and define their school, either as a mechanism for mapping or as a way of understanding Drew. This usage affected how sense of place at Drew was constituted, especially how the living wall indirectly contributed to the colloquial naming of Drew. Informal naming can be seen from a conversation about the living wall with family

members, to students being asked by others if their school was, “the one with the living wall.” The name of a place is a powerful link between people and place, symbolizing the history and meaning of the location (Williams 1998); the fact that the living wall contributed to students identifying of Drew exposes the inherent importance of the living wall as a marker in urban space (Tuan 1980). Feelings of groundedness and iconicization were not dependent on each other, as many students used the wall as one or not the other, or both without correlation. Regardless of how students felt towards the living wall, most students used the wall as an identifying point, either as something that made Drew different than other schools or as a physical representation of the things that Drew stands for.

### *Groundedness*

The living wall supports the belief that the organization of space is dependent on human sight and that individual internal understanding and organization of place is necessary to identify locations (Tuan 1980). Essentially, the sight of a living wall becomes synonymous with Drew. This can be seen through how there might be many reasons why the Drew School is not St. Ignatius (another private San Francisco high school), but survey respondents defined other schools as those that lacked living walls. Space is organized into specific places by some sort of definitive marker (Manzo 2003). In survey responses, a majority of students reference it as a definitive point of Drew, and used the living wall to describe their school to family and tourists. One student observed that:

I commonly get things like “Drew... That is the high school with the living wall, right?” Or “The living wall on Broderick close to where the 1 (California) stops?”

These individuals then in turn came to see Drew as “the school with the living wall” and other schools as those without. A perfect example of this can be seen through this student’s statement:

This is going to sound bad, but I feel like we have it more just to be able to say we have it, and prove that we're a progressive/ environmentally conscious school. Having it in the first place does make this true on some levels, but you get what I'm saying.

The student is aware of the difference between Drew and other schools, and suggests to that it was intentional to make that difference so noticeable. More commonly students used the word “unique” to describe the living wall, which put a somewhat positive connotation on the difference. Another student referred to the wall as “Drew’s bragging right.” “Bragging right” also underlines the fact that the wall is worth bragging about in the first place, but also hints at the excessive boasting that usually accompanies bragging. The sight of the living wall therefore draws comparison though the visual representation of “the have vs. the have nots” where Drew school students are “the haves.” Therefore, the living wall at Drew is primarily important because other schools do not have living walls. One would not characterize a high school as “the one with the gym” or “the one with the football team”; those definitions are neither precise nor extraordinary. It is only when people can categorize those that have and those that have not, that the owning of something becomes novel and its existence becomes definitive (Manzo 2003). This exclusivity is also seen through a student’s reference to Drew as pretentious (see *Negative Interpretations*, below). Different is not always used as a positive modifier.

The difference created by the living wall allowed for the wall to be used as a comparison point, both defining and creating contrast. The ability to differentiate between places is what breaks up space into place and is required in order to truly identify with a location (Tuan 1980, Manzo 2003). Most students found the difference positive, and claimed the wall was iconic.

I see the living wall as an iconic part of Drew School. While most kids that go here take it for granted because they see it everyday, they don't realize how special it is, me included. How many living walls do you see everyday if you don't go to Drew? I have seen people on weekends admire and observe our living wall because they have not seen anything like it. They talk about it and point out things that they like about the wall. It's definitely more of a difference maker towards the others that walk pas there every now and then, compared to the students that see it everyday. I think it makes Drew stand out in a very urban environment by adding green into the sight of a bunch of buildings. It stands out a lot. It connects the outside neighborhood to Drew

As referenced by the student, Drew’s iconicization from the living wall makes it stand out and allows for spatial orientation and definition. This comparison can already be seen through how Drew students consistently pointed out how the Drew school was the only high school with a living wall. Students have already established Drew as a base point and use it to construct opinions of other places (Fried 2000).



*Reflective iconicization*

The myriad of interpretations of the living wall allowed for complex and varied notions of sense of place, which may be defined as a person's overall relationship with a place as a collection of cognition, attitude, and identity based on meanings created by the person in question (Stedman, 2002). Students consistently described the living wall as a, "representation of Drew," transferring many of the living wall's attributes onto the school. This dynamic and metaphorical understanding of the living wall, allowed for a complex understanding of place through exploration of negative and positive experiences and contributed to personal development (Fried 2000, Manzo 2003). The living wall focused these interpretations, and helped develop personal identity and complexity. However, understandings of place are not static, and change as people do to reaffirm humans' relations with their environment (Brown and Perkins 1992). It is important to note then that the same individual's opinions are likely to change over time, and the context in which perspectives are formed will also change or even disappear. This can be seen in the difference in perception of nature among different ages faculty. Interpretations of the living wall were primarily in three categories, 1) an abstract but positive reflection of Drew; 2) an environmentally friendly outlook; and 3) wastefulness. There was also a group of individuals who had no opinion, or didn't care. Rationale for each category can attributed to the cultural, historical and social context of an individual, as well as their educational background (Kudryavtsev et al. 2012).

**Abstract positivity.** The majority of students showed positive connection to Drew and used the living wall as a lens to describe Drew's positive attributes. These students admired more understated qualities of the wall such as its modernity, uniqueness, and artistic nature, demonstrating background knowledge about architecture and environmental design, as well as their own experiences as students at Drew. This was a metaphorical understanding. An example of a student's reflection is:

I feel the living wall is amazing, unique and artistic. which reflects on what Drew is, amazing, unique and artistic. It is so creative the way that each plant gets the nutrients that it needs for survival. Honestly the living wall is symbolic for all the different parts of nature coming together and growing as a community.

Descriptions of positive experiences with the living wall usually mentioned the specialness or artistic quality of the living wall signifying that those who interpreted the wall were then able to reconnect those qualities to Drew. Place as metaphor is a tool frequently used to strengthen connection to place (Stedman 2003), and students' ability to independently view the living wall as an abstract metaphor for Drew underlines the living wall's ability to focus positive experiences of Drew through the wall.

Even though I don't really relate to others through the living wall, it makes drew, drew. When you drive or walk past it, you can't help but feel a little excited about having that be on your school wall and I think it adds to Drew's aesthetic modern and somewhat clean beauty.

Themes of modernity and art came up frequently in student responses, as abstract positive interpretations.

Aside from artistic or modern conceptualizations of Drew, many students metaphorically appreciated the vivacity of the living wall. Students usually wrote this as, "the living wall is full of life, just like Drew," students made a number of reference to plant communities, the diversity of plants, and how plants can harmoniously work together. However, this quality of vivacity, or literal abundance of plant life, could also be as relating to environmentalism, and fueled the second major discourse.

**Environmental consciousness.** The living wall provided a reflection of environmental stewardship and consciousness at Drew, which was exposed through references to the living wall's environmental purpose and natural appearance. In this case, the physical context of the wall and the education background of students greatly contributed to this interpretation. Urban youth with high levels of exposure environmental consciousness have been shown to have increase sense of place to natural areas (Kudryavtsev et al. 2012). Students were able to connect the living wall's and the Drew school's commitment to environmental sustainability through sight and education. Survey demographics also showed connection to environmental education, as over 80% of students claimed to have had a conversation about the living wall with a teacher. One student explained that:

I've always valued environmental sustainability, and the fact that my school has such an amazing physical manifestation of their commitment to a "green" future

makes me feel as if my personal goals and values regarding sustainability are echoed in the Drew Community.

Perhaps because environmental sustainability and stewardship are taught at Drew, students mostly found the living wall's representation of environmentalism positive and in line with their own personal beliefs. Students who pointed out Drew's environmental consciousness prioritized that value in their own lives, confirming that individuals often choose their environment in order to reflect their values (Manzo 2003). Some students felt this environmental consciousness less deeply, but still found it important enough to mention:

The living wall is green and represents our school's commitment to the well being of the environment.

Because people seek out meaningful places in order to enhance self-growth, students who expressed their penchant for environmentalism acknowledged that they had gone to the Drew school for self-growth (Searles 1960, Kaplan and Kaplan 1989). However, like the other metaphorical understand of Drew, environmental attraction was founded on a positive context. If students were not having a good time at the Drew school, that was likely to show in their responses more than their environmental behavior.

**Negative interpretations.** As interpretation of place is often used as a tool to reaffirm humans' relations with their environment, students who had weak or negative interpretations of Drew extrapolated those meanings to the living wall. At Drew, negative student perceptions of the wall were strongly influenced by socioeconomics. Examples of this included one student who described the wall as "a waste of money," and another who described it as, "old, dull, pretentious." By using the word pretentious, we know that he/she is not speaking about an inanimate object, but rather, an institution or general group. However, it should be noted that despite some negative discourse about the living wall, only one respondent claimed that they "would be happy" if the living wall was taken down. That individual also claimed extremely weak connection to school and claimed that the wall was an "absolute waste of money. All about the hype for the school." The extremely negative – and somewhat vindictive – response shows how important environmental awareness and connection to nature are when creating sense of place (Tuan 1980). This underlines the importance of the living wall as a grounding tool, regardless of whether individuals thought that it

represented the Drew School metaphorically (Stedman 2002, 2003). Although some of student's dismissiveness towards the living wall – and this study in general – can be attributed to the immaturity of survey respondents, negative understanding of the living wall was mostly based on context of the living wall (belonging to Drew), showing the importance of context in place based attachment and identity formation (Fried 2000).

### **Context: students' background**

The social, cultural, historical and environmental context of an individual's emotional relationship to place directly influences their understanding of the place itself. In the case of the Drew School, how an individual understands Drew, and whether the individual viewed the living wall as an icon, were based on two different main factors: comfortableness with Drew, and educational background. These two context constraints allowed for a complex and varied perspective of Drew, and how the living wall was used to establish interpretations. Demographics explained trends between individuals' experience with the living wall/Drew and their background. Students that felt more connected to Drew because of the living wall were more likely than their peers to claim that the living wall taught them something, and the majority of students surveyed felt comfortable at Drew.

#### *Comfortableness*

The strength of sense of place experienced by an individual can generally be attributed to how comfortable or home-like a place seems to them (Tuan 1980, Moore 2000, Manzo 2003). The concept of home is understood more broadly as it has been in the past, now as an existential state (Manzo 2003). Therefore, any number of places can feel like, or mean home. However, this interpretation becomes more complicated when an individual does not feel comfortable at their place of residence, therefore uprooting their interpretation of what "home" is (Frank 1999, Manzo 2003). For the sake of this study it was assumed that home had a positive connotation to the students at Drew. At Drew, the majority (81.82%) of students felt some degree of comfortableness and (72.72%) claimed that they had a "somewhat strong to very strong" connection to Drew as a place. Therefore, high comfortableness was usually associated with a strong sense of place and

low comfortableness was associated with weak sense of place. Students, subconsciously, looked for and connected the living wall to experiences in the home, and looking for memory connections (Manzo 2003):

My home is filled with plants and flowers so the ability to see these plants grow on the wall of my school makes me feel more at home. I enjoy looking at the wall on my way to school in the morning.

The living wall's ability to draw connection to the home, either as a reflection of Drew or directly, greatly contributed to the sense of place that individuals felt. Those who could not recall fond experiences, or feel comfortable at Drew, showed difficulty in doing anything more than using the living wall as a grounding element of the school.

Comfortableness and ease at Drew did not necessarily mean that the living wall was viewed as purposeless, as it was still used as a grounding mechanism. One student, who expressed uncomfortable at school also claimed somewhat strong association to Drew and felt more connected to Drew because of the living wall, claiming that he/she used it as a distinguishing tool, "If somebody talks about it I can say I went to the school with it." Comfortableness therefore, was not related to whether individuals used the living wall as a grounding point of Drew, though it did contribute greatly to a deeper understanding of the living wall's iconicization of Drew.

### *Education*

Preconceived knowledge about environmentalism, or urban greenery in general, correlated with whether the living wall was viewed as iconic or grounding. Students took a variety of lessons from the living wall:

It helps me realize the importance of having an awareness of building green buildings. It also heightens awareness to the significant impact native plants species play in the local ecosystem;

As well as:

It made environmental science closer and made me feel lucky to be able to attend Drew.

Students are aware of Drew's uniqueness in having a living wall, and are also aware of how much the school "pushes" the living wall. The school's biology program has designed a project to involve the living wall into the curriculum, and students are taught of its environmental attributes, and of its biological importance. The consistent mentioning of student education about the living wall helped establish environmental stewardship and increase environmentalism felt at the Drew School. Students then extrapolated ideas of environmentalism more broadly;

How beautiful nature is and how important the little things around us are. If we all just took one moment to stop and look around us the world would be a much happier place.

### **Limitations**

Surveying adolescents involved an element of comedy and also presented a number of issues that probably would not have happened had I surveyed adults or college students. Especially because surveys were anonymous, students were allowed to speak without a filter, and voice their true opinions. I believe that this honesty was crucial to the integrity of the survey, but it was also somewhat limiting. While these answers allowed for a more complex level of discourse analysis and added to my understanding of the living wall, they also left out more detailed or direct answers to my questions. This however, was just a small caveat of working with student's writing, and I overall found slang to actually be extremely informative.

Sense of place research, with respect to living architecture, is limited because living walls are relatively new architecture forms. Compared to other forms, the modern/standardized way of building living walls has only been around for the past 10 years or so, and is not very popular in the United States (although it is popular in Europe and Asia). Compounded with living walls' uniqueness is that most sense of place research is centered on how home-like places can be. This thesis looks at the Drew school with a different mindset, and instead values how the living wall mirrors the values of the school. This thesis, therefore, is a very unique case. Study design limitations, such as being the only interpreter and having a broad research question limited my results. Researchers typically intercode with at least two other coders and calculate intercoder reliability to assure recorded characteristics are relatively objective (Nuendorf 2002, Lombard et

al. 2004). Unfortunately, my coding definitions therefore may not be reproducible or might be contested.

### **Future Directions**

Sense of place research, especially when situated outside of the residence, needs to be more thoroughly evaluated independent of how it relates to the home. In particular, sense of place for teenagers should be evaluated more thoroughly, as sense of place research frequently is centered on the primal setting of early childhood (Measham 2007). Green roof and living walls are expanding nationally, and their impact socially should continue to be studied, regardless of whether they are located at a school. Further research on living walls and their ability to strengthen sense of place should redefine how students should feel at school, and understand whether living walls can strengthen that feeling. More broadly, living architecture's ability to connect and root a community should continue to be explored and implemented in schools worldwide.

### **Conclusion**

Living architecture, through its ability to inspire reflection on the connection between nature, urbanity, humanity and emotion increases sense of place. In the case of the living wall at the Drew School in San Francisco, the living wall acted as a lens to reflect understanding of environmentalism and attributes of the Drew School. The living wall helped to do this by reminding students of their environmental education, as well as memory based nature experiences. This dynamic and metaphorical understanding of the living wall allowed for a complex understanding of place through exploration of negative and positive experiences and contributed to personal development (Fried 2000, Manzo 2003).

Whether the living wall was able to strengthen sense of place for individuals was linked to the personal context of the individual, based on social, cultural, and socio-economic impacts. While these particular influences cannot always be altered, their importance in understanding how places are viewed cannot be underrated. Living walls at Drew promote conversations about environmentalism, urban greenery, and sustainability, and allow for students to understand their school through the lens of the living wall. Living wall implementation in other schools could also

lead to increased conversation about those discourses, and also increase the level of student comfort while at school.

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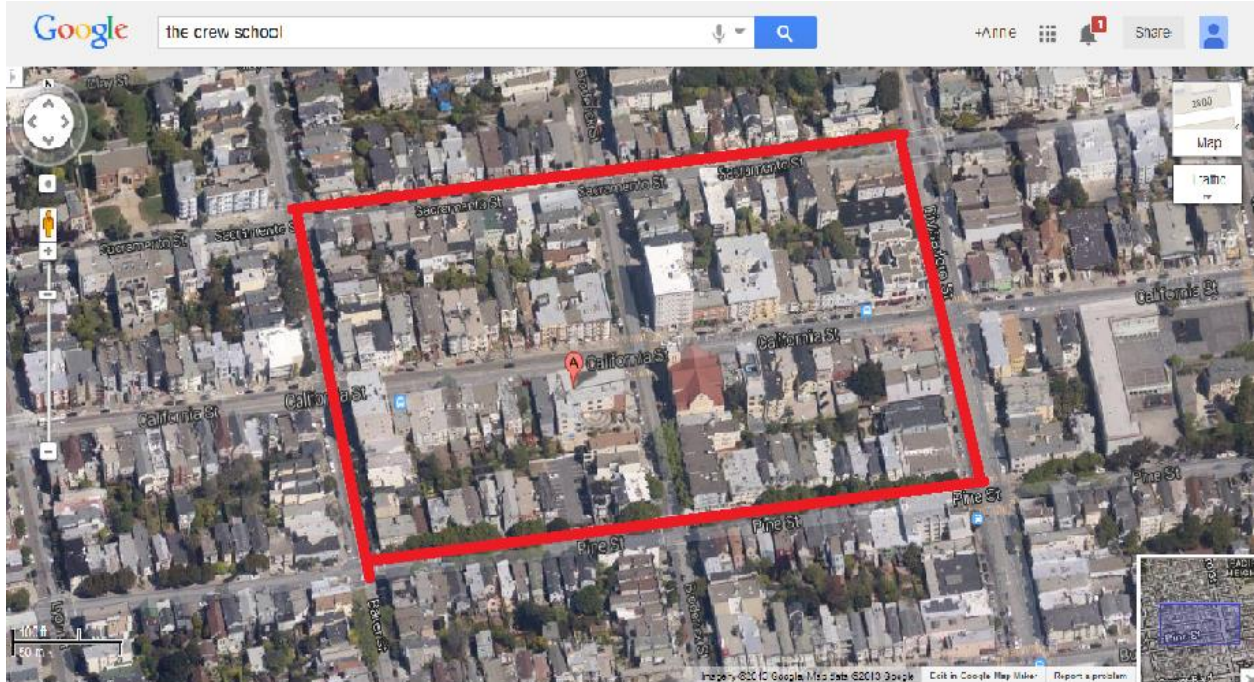
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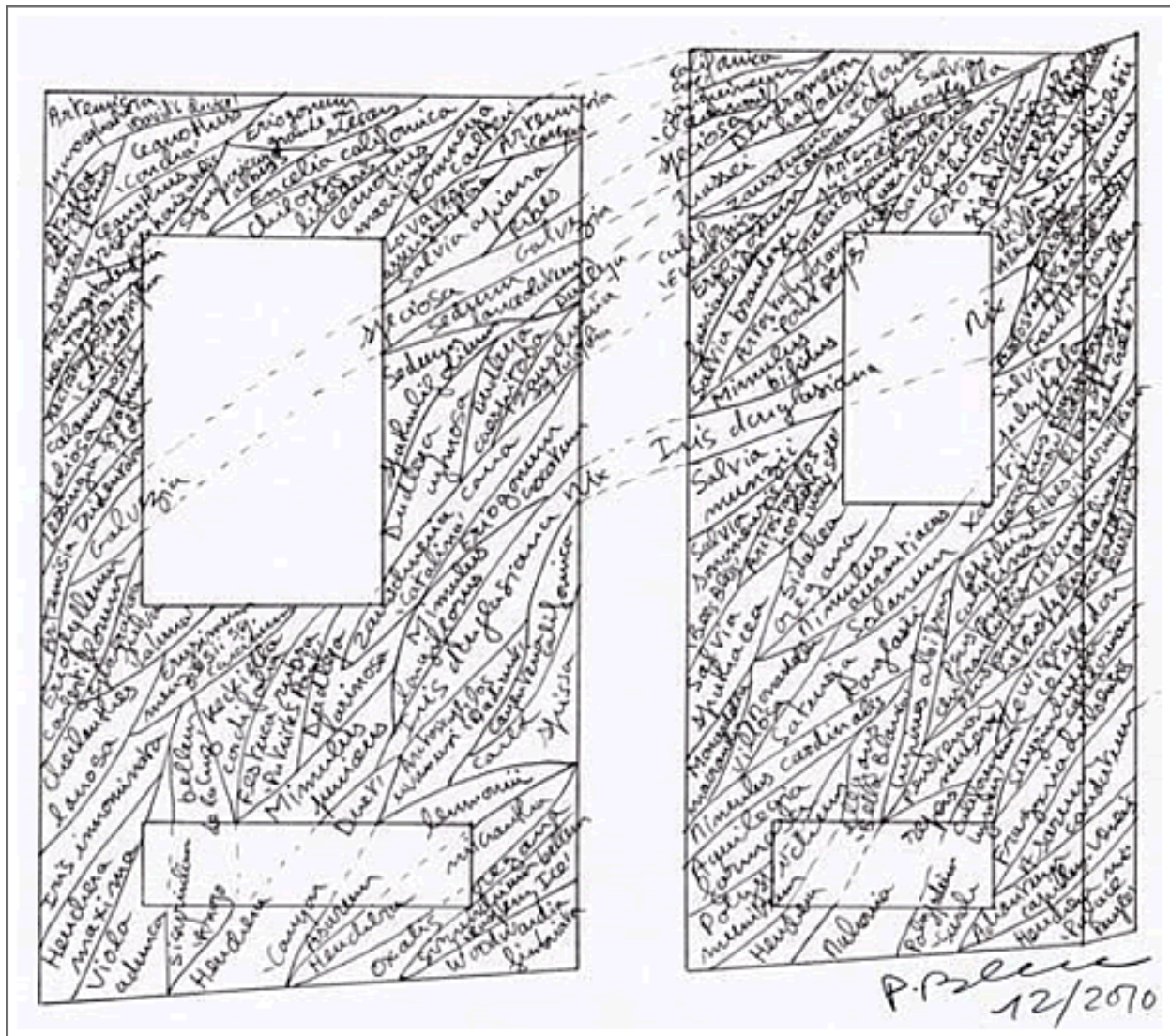
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## **APPENDIX A: Living Wall Visualizations**



**Figure A1: The Drew School set within the nearby residential community.** The Drew school is located at marker A on this map, within a primarily residential and small business district.



**Figure A2. Original plant design concept for the living wall by Patrick Blanc in 2010.** This original sketch for the living wall shows the art-like quality the plant build up is. The living wall is located on the South side of the building and includes more than 100 different types of native California plants. This sketch is no longer accurate however, as many of the plants on this rendering were perennials that could not survive cosmetically and that the school choose to remove. Today, this pattern can still be seen (Figure A3).



**Figure A3: The living wall as seen from Broderick Street.** The living wall at Drew makes up the southmost facing wall of the new Sam Cuddeback wing completed in 2011. Although not pictured, there is also a green roof on top of the building. Grey water is filtered through the living wall as to decrease water use.