

Hyperdimensional Investigations

Robert Reed's Curriculum and the Legacy of the Bauhaus Pedagogy

Introduction

The Bauhaus pedagogy—characterized by the *Vorkurs* foundational curriculum, which taught rigorous visual training, social equity among art forms, and iterative process for innovation— influenced American universities to integrate visual literacy and design methodology into general education. Howard Singerman writes that “the Bauhaus and its foundational course stand for a project of professionalizing artists and rationalizing art in the university—for producing, on the one hand, the artist of the university and for securing, on the other, the idea of art as central to a general education, as the core of the liberal arts.”¹ The Bauhaus diaspora—most notably Walter Gropius at Harvard University beginning in 1937, László Moholy-Nagy at the School of Design in Chicago in 1939, Ludwig Mies van der Rohe at Illinois Institute of Technology in 1937, and Josef Albers at Black Mountain College in 1933 and then Yale University in 1950—modernized art and design programs entrenched in Beaux-Arts curricula.² The Bauhaus pedagogy no longer exists at any school as it was initially designed, but its legacy permeates the curricula taught by the students of Bauhaus faculty at institutions across the United States.

One such student, Yale graduate and professor Robert Reed (1938–2014), adapted Albers’s curriculum to a format that has endured and been informally disseminated through his students, but not yet documented. Reed taught at Yale for forty-five years and was the first—and still only—African American professor tenured by the Yale School of Art. He was the recipient of the 2004 College Art Association Distinguished Teaching of Art Award, of which Albers was the inaugural winner in 1973. Reed primarily taught both Basic Drawing and Introduction to Painting. He was the Director of Undergraduate Studies, directed the Art Division of the Yale Summer School for Music and Art at Norfolk, and designed numerous workshops and intensive summer programs.³ Over the course of his career, Reed taught approximately 1500 students and mentored approximately 100 graduate teaching assistants, many of whom are teaching today.⁴

¹ Singerman 1999: 66.

² Wick/Grawe 2000: 342–356.

³ Susan Whetstone, *Reed CV-Resume 1-2017, Curriculum Vitae*, New Haven: Estate of Robert Reed, 2017.

⁴ Robert Reed, *Roll Books 1970–2014*, New Haven: Estate of Robert Reed.

⁵ Wick 2000: 352.

Robert Reed, like Albers, concentrated on foundational curriculum. His Basic Drawing course consolidated goals from Albers's two-year foundational sequence⁵ into a semester-long course. The autonomy and brevity of this course in the art department allowed it to be sustained as part of the required core curriculum for almost fifty years. Reed was able to impart the goals and objectives of Albers's more extended course sequence in this compacted format through the invention of "hyperdimensional" investigations (assignments which layered multiple Albersian objectives and integrated several physical and temporal dimensions). These investigations concentrated on the Bauhausian goals to teach rigor, social equity, and process, as well as the fundamentals of visual literacy.

This study will explain how three exemplary investigations from Reed's Basic Drawing course—String Perspectives, Photo Booth Portraits, and Dinosaur Construct—are adaptations of Albers's teaching methods that retained and strengthened Bauhaus principles. Each of these investigations demonstrates the hyperdimensional structure that Reed invented. The investigations employ (1) layered objectives to compact the maximum amount of content from Albers's two-year foundational sequence into a one-semester stand-alone course and (2) integrated multiple spatial and temporal dimensions to reach different learners from the diverse undergraduate majors then taking the course. Each investigation will be described in detail, and the multidimensional elements will be identified. The layered objectives will be explained as they correlate to the fundamentals of visual literacy and the Bauhausian goals of rigor, social equity, and process.

Background

Philosopher Karsten Harries, who was a student in Albers's Basic Drawing course at Yale, explains the impact of Albers's teaching in an academic culture defined by the preeminence of language:

Language is not like a house in which everything that we experience can find its proper place. No, what we experience floods that house and, in this sense, one could say that Albers helps to open windows in that house of languages [...] so a lot more was at stake than just learning how to draw or how to see.⁶

What was at stake? If learning visual literacy (how to draw and how to see) is a given, how is this other content defined that was embedded in Albers's and the Bauhaus pedagogy? Harries expressed the need for academia to address meaning and phenomena that exist outside of language—a need filled by the expression of visual forms and an engagement with design methodology. The Bauhaus teaches these other modes of understanding through these three goals: rigor, social equity, and process.

⁶ Faruqee 2016.

Rigor in the Bauhaus pedagogy was anchored in a mission to rationalize art and design and to counter the mythologizing of the artist as anti-social. Bauhaus pedagogy sought

to displace the figure and technique of academic drawing with the objects and rigorous skills of the craftsman. The artist [...] would be liberated by a new audience, a broad general public trained, in Gropius's words, in a "common language of visual communication ... made valid through general education."⁷

⁷ Singerman 1999: 7-8.

The primary means of achieving this goal was to create visible evidence of methodology and to promote a strong work ethic. Albers developed the Vorkurs foundational course to be an intensive training where assignments were constructed with strict parameters for exploration.⁸ Rigor also means practicing economy of means—referring to the efficiency of both material and labor. “Cleanliness and exactness are the most important factors in discipline”; in Albers’s view, they are indispensable for aesthetic education, which for him in no way clashed with the goal of encouraging creativity.”⁹

⁸ Horowitz/Danilowitz 2006: 73.

Social equity at the Bauhaus referred to integrating art into society. As stated in the 1919 Bauhaus manifesto, “Art and the people must form a unity! Art should no longer be the enjoyment of a few but the joy and life of the masses.”¹⁰ Social equity in the classroom meant an equity between art and design disciplines unlike the hierarchy of art forms established by the Beaux-Arts academy. The Bauhaus encouraged its students to work across disciplines and established the foundational curriculum to create unity among the students. At Yale, Albers wrote that the first objective for his foundational curriculum is “to study principles underlying all the arts and which establish their relationship with each other.”¹¹ At a smaller scale, equity was embodied in the simple materials and the design of assignments. Albers “designed exercises so that anyone could do them on some level.”¹² He was particularly interested in the visual phenomenon of figure/ground (the relationship and sometimes ambiguity between an object and the space around it) as an analogy for collective society, which he referred to as the “social equality of figure-background... The distinction between ‘serving’ and ‘served’ relates our work to social problems.”¹³

⁹ Wick 2000: 182.

¹⁰ Ibid.: 33.

Process relates to the central Bauhaus ideal of innovation. Gropius believed that the survival of the arts was dependent on building relationships with industry. “Technology does not require art, but art very much needs technology.”¹⁴ The Bauhaus workshops strived to design better household goods, furniture, and building materials, hoping to insert artists and designers into industrialization and raise the expectations of consumers.¹⁵ Design methodology to achieve this innovation as taught at the Bauhaus emphasized iterative process (the use of repetition to improve; a cycle of testing, analyzing, and refining) as a primary means of innovation. Albers describes this succinctly as “learning by doing.” He writes:

¹¹ Ibid.: 352.

¹² Horowitz/Danilowitz 2006: 73.

¹³ Ibid.: 133.

¹⁴ Wick 2000: 37.

¹⁵ Ibid.

Invention—and reinvention too—is the essence of creativity. [...] The ability to invent through construction and to discover through observation is developed—at least at first—by undisturbed, uninfluenced, and unprejudiced experiment.¹⁶

¹⁶ Wick 2000: 174.

These pedagogical goals of rigor, social equity, and process originated at the Bauhaus “to propel students toward their future as designers working for society.”¹⁷ These goals were transformed as the faculty entered American institutions. Josef Albers’s foundational curriculum developed across three institutions—first at the Bauhaus from 1923–1933, then at Black Mountain College from 1933–1949, and finally at Yale University from 1950–60.¹⁸ The pedagogical goals of the Bauhaus were adapted at Black Mountain and Yale to serve a broader audience. While at Black Mountain College, Albers argued that “art studies are first a means of general education, second a foundation for later specialized and individual artwork.”¹⁹ Albers believed that he “could improve the life of anyone with functioning eyes by exposing that person to visual training.”²⁰

¹⁷ Horowitz/Danilowitz 2006: 95.

¹⁸ Wick 2000: 176 and 351–353.

¹⁹ Horowitz/Danilowitz 2006: 95.

²⁰ Ibid.

²¹ Ibid.:43.

²² Wick 2000: 352.

²³ Horowitz/Danilowitz 2006: 49.

²⁴ Whetstone 2018.

²⁵ Ibid.: 1.

²⁶ Reed 2003: 11.

In 1950, Albers was appointed the chair of the newly named Department of Design, now the School of Art, by the new dean, Charles H. Sawyer, whose mission was “to dust off these Beaux-Arts cobwebs and shepherd the oldest university art school in America into the modern era.”²¹ The Department of Design included architecture, painting, sculpture, and the newly created graphic arts (later graphic design) programs. Prospective students applied directly to these professional programs (as opposed to Yale College), but other undergraduates could attend the foundational courses. Albers developed a shared two-year foundational sequence including the following seven courses: Two-dimensional Basic Design, Three-dimensional Basic Drawing, and Color in the first year; Drafting, Lettering, Painting, and Sculpture in the second year.²² He reshaped the culture of the art programs, populating the faculty with his students and other modernists.²³

This is the revitalized program that Robert Reed joined in 1958. Prior to Yale, Reed had entered Morgan State College’s art education program at the young age of 15, leaving a “childhood of poverty and segregation in Charlottesville, Virginia.”²⁴ Morgan State professor and Yale graduate Abby Sangiamo recommended that Reed apply to study with Albers. When Reed entered Yale in 1958, Albers, seventy years old, was transitioning into retirement. Albers was still a constant presence in the studios, and the foundational sequence was unchanged. Reed followed a common academic sequence for the time—a two-year Bachelor of Fine Arts (completed in 1960) and a two-year Master of Fine Arts (completed in 1962). Reed excelled in the program, becoming the teaching assistant for the Color course and working directly for Albers to mix the inks for Albers’s seminal publication *Interaction of Color*.²⁵

Reed recalls a public lecture when Albers acknowledged his work early in his experience at Yale: “I was wonderfully embarrassed when he pointed me out like that. I didn’t even know he knew I was there.”²⁶ Reed cites this

as an example of the care that Albers showed for his students. He followed their work even when they were unaware. This influenced Reed's approach to teaching. Reed learned students' names immediately and always knew surprising details about them and their work. He wanted students to feel visible even though the course was very focused on the collective experience.²⁷ Reed describes Albers's influence as

attitudinal [...] the attitude about study, the attitude about the role of art in people's lives [...]. It's tough love [...]. Everyone knows that he was a really tough critic, but he cared [...] because he takes it seriously and takes you seriously.²⁸

After graduating, Reed taught with several other recent Yale graduates at Minneapolis College of Art and Design and then Skidmore College.²⁹ "The first year there was really a kind of regurgitation of the courses that I had been involved with [at Yale] [...]. The exciting thing about teaching for me, and following that Albersian mode, was: how can I put it in my terms?"³⁰ When Reed joined the faculty at Yale in 1969, the curriculum needed further reinvention to accommodate the transition from a professional degree to the liberal arts degree that remains today. With this change, art majors no longer had a prescribed foundational sequence. The only uniform requirement for the major was two semesters of the semester-long Basic Drawing course, a course that Reed would champion for forty-five years.

Students were not required to take Reed's section of Basic Drawing; there were always other faculty teaching their unique versions of the course. However, Reed's section had the reputation as the choice for students seeking a challenge. As one student said, "I sought his class out. I was self-selecting—I signed up for boot camp."³¹ Reed's teaching impacted students across many disciplines as he—like Albers—embraced cognitive diversity within his class. The roll books from two drawing classes at either end of his teaching career document the diversity of the students' majors. In 1978,³² in a usually large class with 32 students, there were five art majors and 16 architecture students. Other majors represented included music, psychology, engineering, and political science. In 2014, still only three out of 15 students were art majors. Other majors represented included history of science, mechanical engineering, and philosophy. In an undated syllabus, Reed states:

This section of Art 114 is designed to accommodate students from all disciplines and skill levels who wish to be actively involved in a "hands on" studio experience as part of their liberal arts or professional education at Yale. Previous experience is not required. Students with prior studio experience are challenged based on their individual level of expertise. The course examines pictorial recording using the language of drawing. It encourages relational thinking between disciplines and pursues the art of drawing as a link between art and human activity. It is

²⁷ Byron Kim, interview by Cathy Braasch, July 25, 2018, audio, 48:52.

²⁸ Reed 2003: 22.

²⁹ Whetstone 2017: 1.

³⁰ Reed 2003: 5.

³¹ Wiley Kestner, interview by Cathy Braasch, June 26, 2018, audio, 62:49.

³² This is the earliest roll book that listed students' first names, making it possible to determine their majors.

³³ Robert Reed, *Art 114b-1 Basic Drawing Syllabus*, New Haven: Estate of Robert Reed, no date.

interdisciplinary in nature. Various activities of the course examine the important connection between three-dimensional fact and two-dimensional illusion. It is important to note that, unlike traditional ways of learning in the classroom environment, drawing demands participatory, disciplined and creative approaches to its study. The classroom or studio becomes a language laboratory.³³

³⁴ Robert Reed, *Syllabi 1970-2014*, New Haven: Estate of Robert Reed.

Reed structured the course to provide maximum impact in the brief time available, relative to Albers's foundation sequence. The course met in a shared classroom space that did not allow students after-hours access, which became a driver for creative assignments. The class time never varied at least since 1978—Mondays and Wednesday from 8:30-10:20 am.³⁴ The early start time signaled to students that Reed was not fooling around. He famously began the class with an “admission ticket” assignment of 50 drawings to be completed over the first weekend of the school year. Students were selected based on their effort, not skill. This gateway assignment established the level of commitment demanded by the course and created a close-knit studio culture.³⁵

Reed did not write a traditional syllabus and continuously reinvented his course schedules. His “investigations”—a word that he preferred over the obligatory and finite implication of “assignment”—can be roughly grouped into typologies and a typical sequence. Based on photographs and oral histories, the following describes a typical sequence of modules of investigation: (1) Formal Exercises, (2) Structural Drawing, (3) Constructs, (4) Iterative Drawing, and (5) Independent Investigation. Formal Exercises focused on mark-making and the physicality of drawing. Structural Drawing, a volumetric method of drawing that deemphasizes surface, included the study of ellipses, constructed perspective, and “X-ray” drawings of forms. Constructs included three-dimensional material explorations, such as low-relief collages and cardboard sculptures. Iterative Drawing included methods like collage and monotypes to expand the students’ tools for approaching drawing.

The Independent Investigation was ongoing throughout the second half of the course and dominated a student’s work outside of class. Students identified a focus, like a place or object. Rather than emphasizing an originating thesis, the investigations developed a more profound visual understanding through rigorous study and variations in medium and scale. Frequent meetings with Reed and the teaching assistant helped students focus their work and identify constraints—an integral part of an independent studio process. “Students would have a central subject matter. It could have been their backpack or dried flowers, but it would quickly become about some visual problem of constructing a picture.”³⁶ The Independent Investigations produced a large and impressive body of work and often established interests that students carried forward in their later work.

Reed’s Basic Drawing course had a lasting impact on his students, whether an art major or any other field. He paralleled lessons about life with art, creating a formative experience for his students. Reed’s review of work was typi-

³⁶ Erik Gonzalez, interview by Cathy Braasch, June 11, 2018, audio, 46:34.

cally energetic, supportive, and imaginative, which exemplified Reed's teaching style—tough but generous. Reed's approach was certainly “polarizing,” and some students struggled with his demands and demeanor. For others, it was the most positive and formative course of their education.³⁷ Reed says:

I was less interested in teaching drawing—because that's easy. The difficult part is trying to get young people to think about themselves. I often think about an analogy of my teaching and that would be of a rubber band. And my job has to do with trying to stretch that rubber band to the point where people begin to realize what they are capable of. [...] There is wisdom when you find out what you can do and what you can't do.³⁸

Like Albers, he was a uniquely compelling and charismatic personality. Although these ephemeral qualities cannot be imitated, the documentation of Reed's teaching will provide art and design educators with the opportunity to incorporate his methods into their design pedagogy and curriculum.

Methodology

To document Reed's pedagogy, curriculum, and ideas about studio culture, I collected syllabi, assignments, handouts, lectures, and photographs from Reed's limited archives held privately by his estate. Given the minimal written content in existence in his archives, I interviewed Reed's students and colleagues to record memories of his assignments, the studio culture, and their outcomes from his courses. I interviewed 37 people, including 19 teaching assistants, 14 students, and 4 colleagues. Some of the people interviewed fit into several of those categories, but I identify them by their first relationship with Reed. I also have access to my notes, drawings, and recollections from the courses I took with Reed. I was in his Basic Drawing course in 1995 and Introduction to Painting in 1996.

I also studied his pedagogy by organizing two multiday events, the Robert Reed Drawing Workshops. For these events, Reed's former students and Penn State University faculty taught assignments based on Reed's curriculum. The participants were college-level art and design students from over thirty different institutions. The Penn State Workshop (February 21-24, 2019) featured 32 workshops presented by 18 instructors and attended by 172 students. The New York Workshop (March 23, 2019) featured ten workshops presented by ten instructors and attended by 100 students. I observed the outcomes of assignments, discussed outcomes with instructors, and surveyed the students about their experience and understanding of the teaching objectives.

Hyperdimensional Investigations

Reed's investigations (1) layered multiple objectives to compact content from Albers's original two-year-long foundational sequence and (2) integrated several spatial and temporal dimensions to make the content more accessible to diverse learners. These investigations were “hyperdimensional” because

³⁷ Wiley Kestner, interview by Cathy Braasch, June 26, 2018, audio, 62:49.

³⁸ Robert Reed, “Yale DeVane Award Acceptance,” Jessica Tam, Video, New Haven, CT, 0:49, 2013.

they included both multiple learning objectives and were multidimensional (several spatial and temporal dimensions). In contrast, Albers's assignments isolated singular objectives and were reliant on the cumulative and sequential experience of the course as well as the concurrent courses. The learning objectives in Reed's course layered fundamental principles of visual literacy as well as the above-stated Bauhausian goals of rigor, social equity, and process. This compaction of Albers's content addressed the limitations of the course's stand-alone format.

The multidimensional elements include two-dimensional drawings, three-dimensional constructs or low-relief forms, and temporal elements. Some examples of temporal elements include timed exercises, collaborative work, and the repurposing of drawings in collage. Reed introduced these multidimensional elements to engage the diverse learners from different undergraduate majors. Reed describes the origin of this idea in his teaching based on his own experience in Albers's Basic Design course:

It was the second term when we were working with three dimensional things [...] that all of a sudden the first term made sense to me, and I was able to identify that I really learned a little differently. So part of my teaching over the years, in any course, I'm always incorporating a three-dimensional component because I think that people sort of learn differently.³⁹

Clint Jukkala, Reed's teaching assistant and later colleague, remarks on this phenomenon in Reed's teaching:

How can we disorient ourselves enough that we start to see something with fresh eyes? [...]. If you're learning perspective, you're not going to just learn through drawing in charcoal or graphite, you're going to make a string drawing on the wall [...] if you're going to draw in charcoal, why not make it first? [...] The idea of going back and forth between the drawn thing and the sculpted thing.⁴⁰

This hyperdimensionality of specific investigations, their alignment with Bauhausian/Albersian goals, and the student outcomes will be explained and contextualized in the following sections.

String Perspectives

During the Structural Drawing section of the course, students learned how to construct perspectives. This visual literacy skill taught students to understand the geometric principles of perspective, to compare the relationship between the perception and the construction of space, and to apply these rules to both observed and imagined form. Concurrently, the investigation addresses the Bauhausian aspects of teaching rigor through methodology, social equity by making these visual skills more accessible, and process by learning tools to support experimentation. Reed's innovation in the design of this investiga-

³⁹ Reed 2003: 10.

⁴⁰ Jukkala 2019.

tion was to physicalize the teaching of two-point perspective without the use of specialized tools or terminology.

Typically, perspective is taught at a drafting table using a straight edge and a parallel rule, and students learn the vocabulary identifying the many variables in the construction. For Reed's investigation, students used strings and pushpins to create giant wall-sized perspective drawings (figs. 1, 2). Students worked collaboratively to locate *vanishing points* (the points at which parallel lines appear to converge as they recede in space) by pinning two strings at the same height on either edge of the wall. Those strings were brought together forming a "v" shape and pinned in place. Two more strings are pulled together and aligned with the intersection below to form an upside-down "v." A vertical string, extended between the points of each "v," marked the edge of two imaginary planes that appeared to be projecting forward. Students created volumes by continuing to wrap strings from the vanishing points to locations on the form. Students added more strings to create different line weights, subsequently establishing a spatial hierarchy. They tested the result of manipulating the variables such as projecting further below or above the horizon line or extending the vanishing points further in or out from the center of the wall. Rather than consulting diagrams that describe these variables, these students physically experienced the outcomes creating a deep imprint in their memories.

In the second part of the investigation, students worked individually to create devices for drawing perspectival volumes with charcoal on paper (fig. 3). Students mounted paper on the wall and created a set of vanishing points, two pins at the same height with strings tied to them. The pins were located perhaps two feet on either side of their paper. Pulling the strings towards their paper, the students traced the trajectory to create projecting planes. Then, they drew vertical lines to create the vertical edges of planes. Using the perspectival lines projected from the vanishing points, students constructed many variations and increasingly complex volumes. They created additive forms by combining rectangular volumes or subtractive forms by carving into a larger volume. Reed encouraged ambitious constructions and supplemented these explorations with visual aids.⁴¹

Rigor: String Perspectives relates to the Bauhausian pedagogical goal of rigor as found in the objective to understand a precise geometric methodology for creating the illusion of three-dimensional space. Typically taught in architectural drawing courses, this content was brought into the Basic Drawing course by Reed to emphasize the value of rigorous methodology. In Albers's curriculum, second-year students took a required Drafting course taught by the architecture program. In Albers's Basic Drawing course, drawing problems introduced the logic of projective geometries (which include perspective). In "disposing" problems like "lateral extension," students measured offsets between polygons to create a cascading effect.⁴² The outcomes of Albers's exercises and Reed's investigation were an appreciation of systematic methods for constructing space and the potential to integrate more rigorous use of geometry in studio practice.

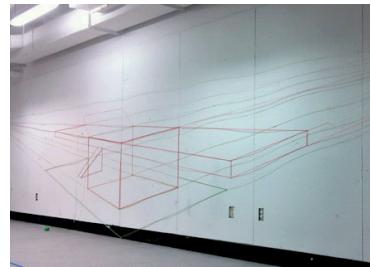


Fig. 1 String Perspectives wall drawing

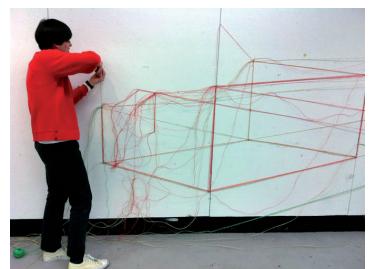


Fig. 2 String Perspectives wall drawing detail



Fig. 3 String Perspectives drawing device

⁴¹ Erin Kaczkowski, interview by Cathy Braasch, June 15, 2018, audio, 43:57. (Verified by others: DeWitt, Marques, Jukkala).

⁴² Horowitz/Danilowitz 2006: 165.

Social Equity: String Perspectives relates to the Bauhausian pedagogical goal of social equity because of Reed's ability to make this technical training accessible without the use of specialized tools or jargon. The simple materials and the physicality of the process gave a broad range of students an understanding of these principles. Typical perspective drawings, full of dense construction lines, are hard for young students to understand. Each variable introduces new vocabulary—vanishing point, horizon line, station point—and a unique method of location. It can be very cumbersome and alienating to create simple forms. Reed leaped over these challenges by creating an interactive physical demonstration. Albers also utilized affordable materials and the movement of the body to universalize complex drawing concepts. To demonstrate how an ellipse transforms in space, he drew a circle on a hinged door. By opening and closing the door, students observed the ellipse as it flattens to a line. Students drew the observations in the air using the rotation of their entire arm.⁴³ In both examples, students without any prior knowledge of projective geometries were able to learn and apply these concepts quickly. Albers and Reed used the mnemonic properties of the movement of the body and affordable materials to make these investigations accessible and reproducible for a broad audience.

Process: String Perspectives relates to the overarching Bauhausian pedagogical goal of process by demonstrating that a simple device supports the making of multiple drawings to achieve a more innovative outcome. The string operates as both medium (in the collaborative wall construct) and device (in the individual drawings). As a simple machine, the string attached to a pushpin helped students to produce multiple versions of the projected forms. The ease of this device gave students the momentum to revise and experiment, rather than just creating one single version of a form. Similarly, in Albers's physical demonstration of ellipses, he taught students to hold a stick in the air to measure and practice the rotating motion. This ephemeral rehearsal was a free and readily available tool to help accurately capture the form on the page.⁴⁴ The outcomes were that students incorporated tools for fabrication into their drawing process and learned strategies for working more efficiently.

Synthesis of Outcomes: By the end of the string-perspective investigations, students developed a working knowledge of two-point perspective and an understanding of the relationship between constructed space and observed conditions. This methodology encouraged them to learn more about geometry and its applications to a drawing process, as well as the use of simple tools in iterative experimentation. Dylan DeWitt, who helped develop this investigation, recalls, "It really worked. Two-point perspective was something they were really struggling to get [previously in observed drawings]."⁴⁵ Following these exercises, the students' drawings generally exhibited a more convincing use of perspective and demonstrated a knowledge of the principles of vanishing points and horizon line. Based on subject matter in the Independent Investigations, this assignment prompted investigations of architectural form, descriptive geometry, and drawing with dimensional medium.

⁴³ Cf. Cohen 1955.

⁴⁴ Ibid.

⁴⁵ Dylan DeWitt, interview by Cathy Braasch, June 6, 2018, audio, 32:12.

Photo Booth Portraits

Part of the Iterative Drawing section of the course Photo Booth Portraits provided a structure for drawing the human form. Both Albers and Reed de-emphasized drawing from the figure because, in their views, the many preconceptions and anxieties made it an inefficient pedagogical tool.⁴⁶ Reed writes, “Substantial study of the human figure is not a top priority, but similar drawing challenges found in other biomorphic and man-made structures are.”⁴⁷ Nevertheless, Reed was sensitive to how eager his students were to draw people, so he invented several investigations to meet this need and further the objectives of his course. The goal for visual literacy in this investigation was to study the self-portrait as a pictorial problem. Layered with these goals were the Bauhausian goals to teach rigor through methodology, social equity through the common composition and the filter of commercial photography, and process by addressing a subject matter through different mediums. It was multidimensional because the investigation includes the temporal properties of collage (visible traces of the duration of construction) and photography (image captured at a specific moment in time) mixed with the more conventional two-dimensional representation of the portrait.

For this self-portrait investigation, students were asked to take photo-booth portraits of themselves and select one (fig. 4). The photo was a $1.5'' \times 2''$ color image of the student in a playful or serious pose. Based on this photo, students were given a prescribed layout for a $30'' \times 36''$ drawing that would contain two side-by-side versions of the self-portrait. Each self-portrait was scaled ten times larger than its original size, from $1.5'' \times 2''$ to $15'' \times 20''$ (fig. 5). For the first translated portrait, the paper was painted black, and the students used white chalk pencil to identify the boundaries in the photograph between different *values*. Value is the lightness or darkness of colors which can be equated to a grayscale that spans from white to black. The closed boundaries of the areas of each value resulted in a drawing that looked less like a traditional contour drawing and more like a topographic map charting the light and dark zones.

For the second translated portrait, students created a collage-based value study of the photograph. By diluting tempera paint, students painted paper to create a full range of grayscale tones (a sheet of 10% gray, a sheet of 20% gray, etc.). The boundaries from the first portrait provided templates for collage pieces. Students translated the colors from the photograph to the corresponding shade of gray. The new portrait was then constructed beside the line drawing. The two identical compositions sat side by side, articulating the student’s face now at human scale via the filter of the photo booth and careful tonal analysis.⁴⁸

Rigor: Photo Booth Portraits relates to the Bauhausian pedagogical goal of rigor as found in the objective to translate the photograph into areas by value. This investigation required three disciplined tasks: (1) to use a grid to accurately draw the composition at a larger scale, (2) to identify zones of the same value regardless of hue, and (3) to determine the grayscale value for each zone. Value studies were part of the preliminary exercises in Albers’s Color

46 Horowitz/Danilowitz 2006: 189.

47 Robert Reed, *Syllabi 1970-2014*, New Haven: Estate of Robert Reed.



Fig. 4 Photo Booth Portraits: all the photographs from one class



Fig. 5 Photo Booth Portraits

48 Cathy Braasch, *Basic Drawing Portfolio*, (State College, PA: Cathy Braasch), photos and drawings, 1995. (Verified by Harris, Krishnamurthy, Schaeffer, and others).

⁴⁹ Horowitz/Danilowitz 2006: 202.

⁵⁰ Ibid.: 162.

course. Students constructed evenly spaced gray scales with colored paper and studied the effect of these different tones by placing a constant gray figure against each ground.⁴⁹ In Albers's Basic Drawing course, the perception of value was introduced by varying line weight and line spacing.⁵⁰ These methodical exercises with singular objectives required the careful looking and measuring demonstrated in the Photo Booth Portraits. In the compressed format of Reed's course, the students learned the benefit of applying these rigorous tools (grid, value zones, grayscale) to analyzing an image and constructing the illusion of three-dimensional form with light and dark tones.

Social Equity: Photo Booth Portraits relates to the Bauhausian pedagogical goal of social equity through the format of the photo booth image. The small scale, low resolution, and identically composed photographs established equality among the students and lowered the status of self-portrait among other possible subjects. As Reed said, other biomorphic forms can present the same drawing challenges as the figure. He wanted Basic Drawing students to understand that the value or interest of pictorial and drawing problems was not tethered to a hierarchy with the figure at the top. Albers also had strategies for creating equity for the human figure within drawing. "Albers's rapid-fire exercises did away with this labor [of Academic figure drawing] in the interest of liveliness."⁵¹ These exercises included gesture drawings with continuous lines, figures formed exclusively with ellipses, and other methods to estrange the student from surface in the service of understanding the form. "Albers's methods were designed to ensure that, however simplified, however concisely drawn, the drawings would emerge with believable volumes that were accurately positioned in space."⁵² The outcomes of these strategies were that students understood the universality of pictorial concerns and were able to develop a non-hierarchical attitude toward subject matter.

Process: Photo Booth Portraits relates to the Bauhausian pedagogical goal of process because the investigation establishes the comparison between three versions of one image—the photograph, the line drawing, and the collage. Each image had the same composition in a different medium and with different information. Students evaluated what each communicated and what they learned about the form and composition in the varied modes of production. Similarly, Albers encouraged students to work in multiples, often on the same page using color to differentiate one iteration from another:

Pages in students' drawing books became palimpsests of objects and exercises. Enlarged details, made for clarification, often ringed by more complete drawings like satellites. These pages were not works of art, but work in progress.⁵³

⁵³ Ibid.: 178.

Both Reed's and Albers's encouragement of multiple drawings placed the focus on study and the drive for improvement.

Synthesis of Outcomes: Photo Booth Portraits teaches students to approach figure drawing with analytical tools that apply to all subject matter.

For some students, these varied media and techniques mediated their anxiety about drawing people. For others, it created more equity between the figure and other subjects. Following this investigation, students demonstrated their ability to scale compositions, analyze value, and work in collage. Some students in their Independent Investigations focused on tonal collage. There is no evidence of Independent Investigations focusing on figure drawing or portraiture, but there are many who choose objects that take on a figural presence. In these investigations, students used scale or monumentalization, as related to the Photo Booth Portraits, to explore the properties of the subject.

Dinosaur Construct

During the Constructs section of the course, students learned to conceptualize, design, and build a three-dimensional structure. Concurrently, the investigation achieved the Bauhausian goals of teaching rigor through constraints, social equity through shared limitations and affordable materials, and process in the translation from two-dimensional image to three-dimensional form and back. Reed's innovation in the design of this investigation was introducing an unprecedented number of complex requirements into a Basic Drawing course assignment. Students might not have been able to excel at each task, but the cycle of a design/build project provided many opportunities to discover their strengths.

The dinosaur assignment developed out of the constraint that the classroom was shared with other courses. The room needed to be empty at the end of each class, so Reed designed the project to create a portable room-sized still life. Over the years, Reed varied the subject matter for the constructs, but the rules and goals were constant. In Reed's papers, there are four written versions of the assignment. It was unusual for him to write down anything for class, but it is likely that these exist due to the lengthy requirements for the project. For the dinosaur versions, students researched their constructs by drawing from the spectacular dinosaur skeletons at the natural history museum on campus. He emphasized that no one had ever seen a dinosaur, and that the students' investigations were based on the research and close-looking of scientists "who can project possible images."⁵⁴

The investigation required students to construct a dinosaur with limited materials (corrugated cardboard, duct tape, rubber bands, wire, string, rope) and to precise specifications based on their research:

1. The height should be your exact height.
2. It should be clearly a "360 degree walk around" structure.
3. It should be self-standing with no additional supports.
4. It should be able to be assembled and disassembled in 8 minutes [each].
5. It should reflect an understanding of the skeletal structure.
6. All components should be able to fit into the container described below.
7. Do not draw on the structures, and be sure that they can withstand the rigors of transit and manipulation.⁵⁵

⁵⁴ Robert Reed, *Requirements for W+L Drawing Workshop*, March 25, 1992, New Haven: Estate of Robert Reed.

⁵⁵ Robert Reed, *Prehistoric Structures*, undated, New Haven: Estate of Robert Reed.



Fig. 6 Dinosaur Construct studio installation



Fig. 7 Dinosaur Construct detail



Fig. 8 Dinosaur Construct drawing from installation

The container for the dinosaur was also constructed from the same materials and required to be 24”×18”×12.” The craft of the container was to be carefully considered. The students assembled their dinosaurs all together while being timed. Once they were assembled, the classroom became a forest of cardboard dinosaurs (figs. 6, 7). First, Reed had the students walk through the space between the constructs, experiencing the resulting voids. Then, Reed began a series of drawing exercises including drawings of that negative space, contour drawings, x-ray structural drawings, and others (fig. 8). In one iteration, all the structures were covered in polka dots. Students recorded only dots (ellipses in space) and watched the forms emerge on the page. The students drew the field of dinosaurs as well as their own structure, which provided “an individual ‘sentence’ within the common ‘paragraph.’”⁵⁶

Rigor: The Dinosaur Construct relates to the Bauhausian pedagogical goal of rigor as found in the strict material, spatial, and temporal constraints that govern the project. In particular, the material investigation was a new exploration for the drawing students. The dinosaur form and its size pushed the limitations of the cardboard’s durability and stability. Students investigated joinery and methods for strengthening the flimsy sheet material. In related material explorations, Albers’s Basic Design students would study one material at a time. “Students made small constructions as a way of exploring the ‘inner energies’ of various materials, i.e. their properties and character.”⁵⁷ Albers pushed students to discover new properties in banal and constrained circumstances. As Horowitz stated:

Albers tried to intrigue his students with the material by exhibiting its limitations and hinting at its (likely unsuspected) reach. Observing that paper “always lies flat or covers something [...]. Its main appearance is the plane [...]. It can’t stand up and it can’t be stretched [...]. You could stand it on its edge, even get it to support a person.”⁵⁸

The duration of Albers’s Basic Design course allowed for this methodical in-depth material exploration. In the context of Reed’s course, the complexity of the requirements drove the needs of the material exploration. The outcomes were extremely varied—the cardboard was curled, stacked, triangulated, and interlocked. Structures stood on two-, three-, or four-legged supports. In the limited time allowed for material exploration in the course, Reed developed the extraordinary constraints to drive the students’ rigorous investigations of the materials.

Social Equity: The Dinosaur Construct engaged the Bauhausian pedagogical goal of social equity in the design of a well-crafted and precisely dimensioned container. Reed laid a grid on the floor in blue painters’ tape, a spot for each student’s box. Like the Photo Booth Portraits, the box represented an equal playing field. Similarly, the materials were intentionally affordable to make the assignment accessible and maintain the focus on innovation. Albers created similar common ground in his assignments—prescribing the

⁵⁶ Ibid.

⁵⁷ Horowitz/Daniilowitz 2006: 102.

⁵⁸ Ibid.: 107.

format for drawing exercises to focus attention on the variables they specified. Materials were also constrained. “Albers’s choice of materials that were cheap, plentiful, and easy to handle permitted students to move immediately into creative work with no technical training and few financial worries,” and he “impressed upon them the idea that you would be creative with whatever was on hand.”⁵⁹ One outcome of these assignments was an equalization of hierarchy among materials. Interest lay in the surprising formal discoveries, not pre-existing cultural value placed on a mode of production—a monotype can be as powerful as an intaglio etching.

Process: The Dinosaur Construct relates to the Bauhausian pedagogical goal of process because it leads students through an expansive design sequence. The project includes conceptualization (research drawings and design sketches), material research, fabrication, and analysis (drawing from the installation). Albers also took advantage of the analytical potential of working back and forth between two- and three-dimensional exercises. In Basic Design, “students working on a wire construction might diagram them on paper, students working flat might be asked to create spatial illusions.”⁶⁰ This cycling between two- and three-dimensions, which was uncommon in a drawing course, revealed information and opportunities previously unforeseen by the student and provided a road map for design methodology in any discipline.

Synthesis of Outcomes: The students succeeded in meeting a seemingly impossible list of requirements to complete the dinosaur assignment. They developed an understanding of structural properties, materials’ possibilities, structure, and the importance of crafting. Based on the Independent Investigations, students extended their interest in working with constructs, structure, and scientific source material. By the end of the project, from the usual origin of a dinosaur, a student might have developed an interest in the weight of a cantilevered form or the compression of material at a joint. In this manner, innovative visual representations emerged. “[The Dinosaur Construct] was like a puzzle and everyone had solved it in a different way. It was open-ended even though there were so many rules, and it allowed students to work to their strengths.”⁶¹

⁵⁹ Ibid.: 103.

⁶⁰ Ibid.

⁶¹ Njideka Akunyili Crosby, interview by Cathy Braasch, June 13, 2018, audio, 35:29.

Conclusions

Reed designed hyperdimensional investigations such as String Perspectives, Photo Booth Portraits, and Dinosaur Constructs to compact the Albersian curriculum and expand its audience. These investigations have layered objectives to teach fundamental visual literacy and Bauhausian/Albersian goals of rigor, social equity, and process. They have multidimensional elements to make the content accessible to a diverse group of learners. Reed’s curriculum consolidated much of the content from Albers’s two-year foundational sequence into a one-semester stand-alone course for a general education audience. For those of Reed’s students who have become artists, designers, and educators, Reed’s curriculum informed their teaching and studio practice. His students who did not pursue art or design gained a visual literacy and disciplined creative process that became a fundamental lens for their understanding of the world.

In 2019, the Robert Reed Drawing Workshops demonstrated the vitality of Reed's curriculum and the potential for other educators to incorporate his teaching strategies. During these multiday events, Reed's students and colleagues taught versions of his assignments to a diverse group of college-level art and design students. One student wrote, "I loved the playfulness and fundamental aspects of the workshops: encouraging process, rejecting preciousness, the general open-mindedness, and the enthusiasms of the teachers and participants."⁶² Even in a short time frame, the workshop format transmitted the pedagogical goals and rigor of Reed's teaching. As represented in the teaching by his former students and documented in this study, Reed's innovations have ensured that the legacy of the Bauhaus pedagogy, and Albers's specific contributions to foundational curricula have endured for many generations of students.

⁶² Anonymous Student, *Robert Reed Drawing Workshop: Participant Survey*, unpublished survey completed on February 24, 2019, State College, PA: Cathy Braasch.

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Figures

Figs. 1, 2, 4, 6, 7, 8 Estate of Robert Reed

Fig. 3 Dylan DeWitt

Fig. 5 Cathy Braasch

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