

A New Perspective for Architectural Education: A Performance Art

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After trekking up a gradually inclined, winding hill, through a fresh blanket of snow, past a few campus buildings I made my way to McKinney Studios, a small, disconnected annex to the School of Architecture's main building, McKinney Hall. McKinney Studios contains four or five studios spaces and a number of offices for supporting faculty as well as the laser cutting room and a small computer lab with eight computers. After stomping the brown slushy snow off my boots I venture inside to find studio number 110. This will be where I begin my initial investigations of a "hands-on" architecture studio (Studio 401), a design studio for third year architecture students. (fieldnotes, January, 16 2009)

And so began my participant observation of a "hands-on" architecture studio at a university in the Midwest United States.

INTRODUCTION

The 2000 ACSA West Central Regional Meeting titled "Designing/Building/Learning" examined the issues of incorporating design-build pedagogy in architectural curricula through paper sessions, workshops, keynote addresses, and panel discussions. An article summarizing the results of the conference by Jori Erdman and Robert Weddle tells us that although design/build approaches to architectural education in the form of full-scale construction have emerged in schools across the country, as a whole, they resist theorizing.¹ In response to this lack of theory, this paper is part of a pilot study developed to more thoroughly understand hands-on studios and their relationship to the current state of architectural education with the goal of moving towards a more comprehensive theory of hands-on (design-build) studios.

In his paper "Craft and Innovation: Serious Play and the Direct Experience of the Real," Nils Gore explains that hands-on studios, "develop projects using real materials for a real purpose, in real time at full scale."² Joseph Bilello explains in his article, "Learning from Construction,"

"the term 'design/build' is a slight misnomer for these courses, which are intended less as surveys of the popular alternative delivery method than as hands-on clinics to teach students about sites, structures, materials, and joinery. Academic design/build programs remove design projects from the studio vacuum and push students to reconcile their drawings with real structures they can build, weld, wire, and plumb. They encourage students to work as part of collaborative teams, resolving conflicts, managing finances, and communicating with clients."³

In contrast to the fully haptic connection between the object of design, the representation and the designer's mind that are formed in hands-on studios, Gore describes the more orthodox architectural design studios that dominate the majority of architectural education as a setting in which "students work primarily in paper and pencil, cardboard and glue, making representations that stand for other things, typically a building, to be fabricated by others, in another frame of time, at a different scale than the representation."⁴ I would also include the now dominating use of computer modeling over pencil, paper and cardboard, further distancing the student from the realities of the project being designed.⁵ At first glance, the idea of teaching architecture through construction appears to conflict with David Leatherbarrow's accurate description of the fundamental realm of contemporary architects as that of "representation," stating "architects handle drawings and

models, not bricks and boards."⁶ However, Samuel Mockbee, Brian MacKay-Lyons, and Nils Gore regard their student's hands-on projects as educational tools that are meant to compliment representation and infuse it with knowledge of construction processes and culture, not replace it entirely.⁷

To study a phenomenon that is highly focused on learning through direct experience I chose a research method that does the same. John Van Maanen (1988) explains that field observation,

"reflects a bedrock assumption held historically by fieldworkers that 'experience' underlies all understanding of social life. Fieldwork asks the researcher, as far as possible, to share firsthand the environment, problems, background, language, rituals, and social relations of a more-or-less bounded and specified group of people. The belief is that by means of such sharing, a rich, concrete, complex and hence truthful account of the social world being studied is possible."⁸

For this structured field observation I attended the hands-on studio Monday, Wednesday and Friday for roughly three hours each day. When appropriate, I would participate in class discussions, critique the project, or lend a helping hand. My primary method of research was participant observation. As part of this method I would take descriptive "scratchnotes," as well as, photograph and/or videotape what was being said and done. Next, I would type-up these "scratchnotes" and turn them into a formal "field-note" text that included my thoughts and more elaborate descriptions based on the scratchnotes. For analysis, I would code the fieldnotes using a key terms developed from a theoretical model that I discovered during the research. By the end of the semester I had observed this group over the course of 46 separate visits, totaling approximately 144 hours of participant observation. I also employed the technique of member checking by conducting semi-structured interviews with 7 of the 15 students to improve the accuracy, credibility, and validity of the study.

This paper will outline issues of concern in architectural education at the beginning of the 21st Century followed by a description of a new perspective for architectural education. I will then explain Studio 401's relationship to this new perspective and how these relationships contributed to the studio's abil-

ity to positively address a number of the outlined concerns in architectural education.

STATUS OF ARCHITECTURAL EDUCATION AT THE BEGINNING OF THIS CENTURY

Writing in 2000, David Nicol and Simon Pilling outline many current issues of concern in architectural education including the following: isolation of the design studio; primacy of the individual; communication and interpersonal skills are not systematically developed; design as product rather than process; lack of structure for the development of self-responsibility in learning; student's minimal sense of control over their own learning; and few opportunities to appraise the processes of learning.⁹ Dana Cuff suggests that the internal focus of the design studio, and the student's long hours at the drawing board, produce students who become isolated from the outside world, learning only how to talk to architects.¹⁰ Design studios in most schools of architecture remain, for the most part, geared towards developing individual architectural designers, as opposed to cultivating team players. This is undoubtedly an end result of the dominating social rapport in schools of architecture—one that is primarily forged through a studio instructor critiquing a student that is working on "their own" project. This is what Cuff terms "**the primacy of the individual.**"¹¹ In stark contrast to this emphasis on self, Cuff refers to the architect's role in the profession as that of "translator," while John Worthington, "describes the role of the designer as an 'integrator,' drawing together people, process and place in order to create a coherent working environment."¹² Lawson and Pilling, in "The Cost and Value of Design," recommend that schools of architecture "should engender a more client-centered approach in the educational process and develop the necessary skills of listening, extracting the brief, negotiating agreements, making presentations and managing client relationships."¹³

ARCHITECTURE EDUCATION: A NEW PERSPECTIVE

Thomas Fisher, dean of the College of Design at the University of Minnesota, also denounces, "The attention paid to star designers....and the tendency to polarize education and practice."¹⁴ He reminds us that Johann Wolfgang von Goethe wrote in 1829, "I have found among my papers a sheet ... in which I

call architecture frozen music." Although this anecdote is typically interpreted from the visual standpoints of rhythm, order and proportion, Fisher is interested in the statement from a different perspective that has received little attention, which is to consider design as a performing art and not as simply a visual one.¹⁵ He explains that,

"unlike the notion of an individual creation prevalent in most of the visual arts, the performing arts offer a model of an inherently interdisciplinary, collaborative art form. Buildings or landscapes, as we know, never arise from the mind or hands of one person. In that sense, they are not like a painting or a sculpture, but rather more like putting on a play, involving designers, contractors, consultants, and clients much as staging a drama involves writers, performers, lighting/set/costume designers, and a receptive audience."¹⁶

Fisher goes on to discuss the implications of instituting the idea of design as a performing and a visual art and suggests that as educators, "we should attend to how students communicate to various audiences, how they work together *on* projects as a cast, and how they address the performance of what they do as well as its form."¹⁷

During the analysis of my fieldnotes, a striking correlation between the educational process of Studio 401 and Fisher's idea of architecture as performing art began to emerge. I will now outline these similarities and will then describe the activity of Studio 401 in more depth, while pinpointing how the studio operating through this new perspective begins to address many of the issues of concerns outlined earlier.

Studio 401 moves through various processes of design and reflection during the course of the semester and each one slowly moves closer to full-scale, built reality. The studio begins with a period of **material experiments or play** that is akin to **improvisational** exercises of the performing arts, then it moves on to **designing a structure** for a "real" client that resembles the **script writing** process. Next, the studio begins to **rehearse**, much like a cast prepares for theater production, by fabricating full-scale pieces in the shop to better understand their design and further inform the script writing process. Following preparation of shop drawings that represent the completed script, the group is ready to begin **construction** or the **architectural performance**. In conclusion, the group presents the completed project including descriptions of

their design process to a jury that includes: the client, invited members of the architecture faculty, and peers. This phase is similar to a **reception** following a theater performance in which the actors celebrate completion of the performance, reflect on the production, and await critical reviews.

The roles the students take on in this hands-on studio can also be compared to the performing arts. First of all, there is a **client** or **producer** who commissions the work and in this case it is a researcher at the university's biological field station & ecological reserves. The student's and professor's roles can be divided into 5 categories including **designer's** which I equate to the **writer** of a script. This position is first filled by each student designing individually, then everyone working as a group, and finally, a select group of students that choose this role. There is also a **director or architect** that oversees the day to day progress of the group and offers advice when appropriate. This role has been filled by the instructor and a student with extensive construction experience. A few **assistant directors** emerged as the students who typically took the responsibility of keeping the group organized or on task. From there, the group can be split into **lead actors** and **supporting actors**. Lead actors take on various leadership responsibilities such as refinement of the design and construction of specific parts of the projects, or completion of the shop drawings. The supporting actors are typically active fabricators during the rehearsal and construction process and take on other responsibilities when needed.

I will now describe the activity of Studio 401 in more depth including: the first day of studio, introduction to the workshop, experiments with real materials, meeting the client and introduction to the site, designing, fabricating, and the constructing.

FIRST DAY OF STUDIO

After the instructor arrives and lets the students into studio to claim a desk, he asks everyone to move back out into the lobby and gather around a large trapezoid shaped table. He explains that they "will be doing this often," pertaining to meeting as a group around a table. The instructor begins by placing a selection of cups and mugs on the table, and explains that this is a "making" studio. The instructor then asks the class, "What differentiates these cups?" Although the students appear to be hesitant to speak up at first, after a few seconds someone suggests that the "uses differentiate the mugs" and the instructor agrees that the uses

are one point of differentiation. As the discussion continues, the group covers topics such as "personal taste," "handmade vs. manufactured," "cost/weight/strength," and "materiality" and the instructor offers simple cues to continue the conversation by asking, "okay, what else," or telling stories that lead to tangent discussions about making. By the end of the discussion a female student named Sandy emerges as the main discussion leader, once she takes the role as speaker the other students sit back a little and wait for her to comment first. In conclusion, the instructor asks the students, "Why are we talking about cups in architecture school?" Sandy quickly comments, "the issues discussed so far are common to all designed objects." The instructor agrees and elaborates by saying that the point was, "to bring design motivators to the table." (fieldnotes, January, 16 2009)

Following this initial discussion the instructor tells the students that there will not be a lot of "desk crits" this semester. He tells the students, "that is not really how I teach," and then explains that, "there will be a lot of group discussion to allow tangents and design motivations to emerge." He then has each student introduce themselves and talk a little bit about why they chose this studio. The studio consists of seven female students and eight male students, with minimal knowledge of construction techniques. Fourteen of the students are between 21 and 23 years old and one student with considerable construction experience is 40. During introductions seven of the fifteen students specifically mention being interested in working as a "collaborative," or "working in a group." Eight of the students mentioned an interest in "learning about building," "understanding how things go together," "making things," or gaining "real life (real world) experience in place of just designing."

Following introductions, everyone moves into the studio and the instructor slowly flips through thirty projected images of different surfaces. As he scrolls through the images a second time, the instructor asks "What kinds of verbs describe each of these images?" Various students respond to each image with words like, "peel, paint, distort, rust, glow, and reflect." The instructor then explains that the first project is for each student to take ten photos of differentiated surfaces and assign each one a verb that describes it.

INTRODUCTION TO THE WORKSHOP

A few minutes before the beginning of the next studio session many of the students are "pinning-

up" their photos in the hallway outside of studio in preparation for group discussion and critique. In many traditional studios pin-ups might typically happen around the midway point of a project and at the end. However, pinning up acts as a critical time of discussion and interaction in Studio 401 and will continue to occur during most studio sessions well into the fabrication stage.

Following the pin-up discussion of the students differentiated surfaces; everyone leaves the studio to meet at the workshop which is located a few miles away in a tilt-up concrete warehouse. The workshop space is an expansive, unheated, 64 by 46 feet of exposed concrete and gray cinder block walls with an approximately 30 feet high ceiling with exposed steel roof joists and punched with a few sparse skylights. When the students arrive at the shop, Mark, a student that is much older than the others, gets started helping the instructor. Mark is familiar with a shop setting, based on his experience as a construction worker and superintendent. As the instructor cuts a piece of MDF on the table saw he explains some shop safety to the class. He then explains that the students will be making forms in order to make concrete slabs and quickly makes part of a form to show them the process, but leaves it incomplete letting the students discover the rest of the process on their own.

EXPERIMENTS/PLAY – IMPROVISTION

R. Keith Sawyer explains that, "in improvisational theater, a group of actors make a performance without using a script...These performances emerge from unpredictable and unscripted dialogue, on-stage and in front of an audience. In a similar way, an effective classroom discussion emerges from classroom discourse, and is not scripted by the lesson plan or by the teacher's predetermined agenda."¹⁸ Many researchers have declared the presence and promise of improvisation in the arts, teaching, therapy and athletics.¹⁹ Spolin refers to it as, "playing the game; setting to solve a problem with no preconception as to how you will do it; permitting everything in the environment to work for you in solving a problem."²⁰ Studio 401's instructor also refers to this process as "play" and assures the students that they may "try something that is a failure, but that's good. Learn from it, don't do that again, and just be open and willing to see where the experiments lead you." The student's first eight

inch square by two inch thick concrete slabs were to be used as experiments with the mix of sand, cement and water and resulted in various strengths and textures but looked like typical concrete slabs. Although the slabs were done by individual students they were all arrayed on a long work table around which everyone gathered during each studio session to discuss the progress of the group.

Students improvised by beginning with a descriptive verb and then applying that action to the concrete. Many students began with the tools available in the workshop including: screwdrivers, grinders, or wood stains. However, after the initial experiments and reflection on the results they began to find specific elements or tools from outside of studio. Sandy, was interested in the word "fuse" and instinctively decided to put colored sand on the concrete slab and cover it with rubber cement to hold it in place. Grinding this mixture created a beautiful red patina that fused the sand to the concrete. Brad was interested in the word "splatter" and constructed a simple framing device so that he could drop ink and/or acid from different heights to control the various splatters. Following the discussion during each class period, the group regularly broke into informal discussion groups and it is often in these smaller groups that the idea for the next step in experimentation emerged. The large group discussion served as a time to loosen up the student's minds, bring ideas to the table and served as a time for the students to get to know each other before working in a collaborative effort.



Figure 1 - Improvisational Concrete - Colored Sand, Rubber Cement, Grinder

MEETING THE CLIENT – INTRODUCTION TO THE PROJECT SITE

Before designing the project (script writing) can begin the students are introduced to the client to learn about the interests and/or goals for the semester's project and introduced to the project site. The instructor encourages the students to take notes and pictures because, "what we do needs to respond to what they want and need," he tells them. The client, named Sal, is a researcher at the university's field station & ecological reserve. Sal has a presentation prepared that introduces the students to the history of the field station, the different prairies that they manage, and the numerous experiments that they are involved in. Following the presentation, Sal tells them that he would like them to design a trailhead structure to anchor a parking lot that welcomes the public to the prairie. Following this introduction, the client takes the students on a tour of the prairie guiding them along a dirt path that will connect their trailhead project and an overlook project constructed by the instructor's previous studio.

DESIGNING – SCRIPT WRITING

Having heard the client's needs and wishes and analyzed the site the students are now ready to begin designing the project which can be compared to the writing of a script for a play. In this sense, the playwright is like an architect, "concerned with the way spaces are arranged, vistas perceived, and how people can negotiate these."²¹ The instructor begins the design phase by discussing the site with the students and giving them the weekend to come up with individual design proposals. "Think Big, we can always reel it in later," he tells them.

After designing over the weekend, the class begins with a pin up discussion of the designs done by individual students. As the students presented their ideas it became apparent that there were two distinct options for the location of the structure on the site. One option was directly adjacent to the parking lot and the other was somewhere along the path away from the parking. During the group discussion, the instructor writes down the common principles being discussed which include: create focus on the prairie, react to the overlook design from previous semester, connect to nature, maintain indigenous culture of place, preserve views to the North, shield



Figure 2 - Informal Group Refining Design Ideas

parking lot, keep handicap accessible, screen and filter sun, and multi-sidedness; and tapes it to the wall in studio. He then tells them they will need to split into two groups, one to continue designing the prairie trailhead and one to begin working on their craft/building skills in the shop.

The group designated to continue designing meets in the studio during each class session to refine the design principals and begin to explore the forms and details of the trailhead structure. There is still no decision on the location of the trailhead and the team decides to continue to explore the two locations. Near the end of each class session the design team brings all the work they have done (sketches, images of computer models, and list of design principles) to the workshop for a group pin-up and discussion session. During these times the design team briefly explains what they had done and why and then allows the craft team to comment. Again, this would often result in a number of concerns being brought to the table by individual students but these concerns would rarely translate to final decisions. After these concerns were voiced, the large group discussion would often slowly dissolve into smaller group discussions and then these groups would voice their opinion to the larger group. It is the discussion between these smaller groups that often led to design decisions being made final. These interactions illustrates that Cuff's "primacy of the individual," is slowly being trumped by "**primacy of the group.**"

After a week of designing and then discussing with the craft group the design team presents two

schemes to the client, "to let them decide." The client assures them that nothing they presented "has been inappropriate," and that there are, "elements in both that are appealing." He also tells them that he likes the idea of the gathering and information area "right at the parking area," solving a debate that the students could not resolve on their own. "It's great to get all these ideas, they're cool. I would never have thought of all this," the client tells them.

Following the presentation to the client, all the students meet to discuss the next step and the groups switch places, one picking up on the design with a new direction delivered by the client and the other group moving to the workshop to work on craft skills. Before fabricating full scale pieces for the designed structure students learn skills like how to cut steel with a horizontal band saw they call "the green monster;" how to weld steel, and the importance of making "jigs" (device constructed to maintain correct positional relationship between multiple parts) for the replication of identical elements. These techniques are learned by making tables for the shop, steel hooks for hanging extension cords, or by building a steel rack to display the concrete experiments from earlier in the semester. This offers the students their first chance to address one of the common student interests voiced the first class period which was to learn "how things come together." In this case, by making and putting the things together themselves.

Meanwhile, the design team continued to refine the form and details of the trailhead structure by designing three options as three small groups. These options continued to be discussed as a class at the end of each studio session. Over the course of the week the three design options were combined into a final design proposal which was presented to the client. Sandy and Chip presented the project to the clients by explaining the "design principles" that the group formulated during the first design round and had since further developed as the design progressed. The presenters would go on to show a series of renderings of the project from various angles. The students also built a full-scale mock-up of a column and roof section for the clients to comment on. The clients had minimal comments and were excited to see it completed.

FABRICATION – REHEARSAL

Robert Leach refers to a rehearsal as an investi-



Figure 3 - Rehearsal

gation, stating, “if all the answers were obvious, there would be no point in rehearsing.”²² Now that the design is finalized and approved by the client a team is formed to finish shop drawings for the project and the rest of the students form a team of investigative fabricators to rehearse the construction of the trailhead. Armed with their newly learned skills of fabrication, the students are eager to begin. Following the shop drawings, and direction from the elder student Mark, the students begin to fabricate the individual pieces often adjusting the fabrication process along the way and in return representing these changes in the shop drawings (script). As the columns and beams are made, the floor of the workshop is marked out with tape in the actual dimensions of the structure and the elements are laid out as they will be in construction (performance), much like a rehearsal floor would be marked out to show locations of windows, doors and actors blocking locations.²³ Upon seeing the entire structure laid out the students are surprised at its size, “its huge,” someone yells. Obviously the students hadn’t anticipated the scale of the trailhead despite having designed it in computer models, physical models and full-scale pieces.

CONSTRUCTION – PERFORMANCE

When all the pieces have been fabricated and laid out in the workshop to be test fitted, the structure is dismantled, loaded on the client’s trailer and driven to a nearby city to be galvanized. While the steel is gone the group prepares the site for the architectural performance of erecting the steel. This



Figure 4 - Performance - Raising Steel Columns

process includes laying out the geometries of the project in full-scale in order to dig holes for the concrete foundations for each column and placing anchor bolts at precise angles. This proves to be more complicated than the students expected but led by the experienced director, Mark, the anchor bolts are prepared just as the concrete truck arrives.

Following the pouring of foundations and the return of the steel from being galvanized the students began to erect the structure. They found that many of the pre-drilled holes no longer lined up and that the structure took some persuading to connect all the structural beams and columns. Within a few days the structure was all set and leveled and the group began building the wooden deck, attaching the wooden shading elements on the roof and walls. The group developed a construction schedule for working outside of studio time and found themselves spending any extra time outside of studio working on finishing the structure by finals week.

“This is nerve racking,” Chip exclaims after helping his classmates pour concrete into eighteen, six

foot deep by fourteen inch wide cavernous holes to make foundational piers for a steel structure. The columns that will be placed on these piers must be at exact angles or the steel roof structure will not fit together properly. "We've built all these pieces in the shop to be exact. If the foundations are off, I'm afraid that we will come out here and the columns won't fit right and the beams will miss by that much," Chip tells me as he gestures with his hands about eight inches apart. "It's like music. I like to compare architecture to music because I am also a musician. You know Ansel Adams, the photographer," Chip asks me rhetorically, "He said that photography was like classical music, the negative is like writing the score but the printing process was the performance, it can be printed many times and each time featuring subtle differences not in the original score. I think of architecture in the same way," Chip explains, "the construction is the performance, you can do a drawing in the studio and if it doesn't inform someone how to build it, it's just a pretty thing." (fieldnotes, April 24, 2009)

Thomas Fisher agrees with Chip, arguing in his book "In the Scheme of Things," that the "performing arts give us a model and a body of theory that show that the multidisciplinary aspect of design need not deny "art." In fact, collaboration *is* the art of design."²⁴

CONCLUSION

Why is the performing arts analogy important to architectural education? It simply offers the students a change in perspective. A change from the view that architectural education is about developing individual skills to design "our own" creations, to the view that architecture is an inherently interdisciplinary and collaborative form of artistic expression. It also serves to educate architecture students in a way that is more akin to the thinking and social interaction they will likely experience in



Figure 5 - Completed Project on Jury Day

their professional lives.

The dominant themes of Studio 401 were certainly collaboration and communication. On a daily basis students were expected to communicate with each other in order for the collaborative project to develop. The development and integration of thinking in three distinct settings (studio, workshop, and construction site) addresses Nicol and Piling's concern with "isolation of the design studio."²⁵ The studio's series of semester long group discussions lead to the replacement of the "primacy of the individual" with "**primacy of the group.**" As the student's incorporate lessons gained from their newly learned fabrication skills into their design the concern of "design as product rather than process" is replaced by "**design as process influences product.**" The concern for the "lack of structure for self-responsibility in learning" is resolved through group activity. I discovered through student interviews that the students did not want to disappoint their peers and in response developed more responsible tendencies. The processes of learning were addressed by a reflective jury presentation following completion of the project and a debriefing questionnaire administered to the students by the instructor at the end of the semester to encourage reflection on the learning processes. During the jury presentation it was confirmed that the concern that student's had "minimal sense of control over their own learning" was addressed through the laissez-faire teaching style of the instructor which allowed the majority of the decisions to be made by the students.

"This studio allowed us to learn from our own experiences and mistakes, the instructor did a good job of standing back enough to **let us learn,**" a Studio 401 student proudly explains to the jury. (fieldnotes, May 13, 2009)

ENDNOTES

1. Jori Erdman and Robert Weddle, "Designing/Building/Learning," *Journal of Architectural Education* (February 2002), no. 55/3 (2002).
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3. Joseph Bilello, "Learning from Construction," *Architecture* (August)(1996).
4. Gore, "Craft and Innovation: Serious Play and the Direct Experience of the Real."
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- Embodied Wisdom in Architecture* (West Sussex, United Kingdom: John Wiley & Sons Ltd., 2009). pp. 59,96,97
6. David Leatherbarrow, "Architecture Is Its Own Discipline," in *The Discipline of Architecture*, ed. Andrzej Piotrowski and Julia Williams Robinson (Minneapolis: University of Minnesota Press, 2001).p. 87
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 14. Thomas Fisher, *In the Scheme of Things: Alternative Thinking on the Practice of Architecture* (Minneapolis: University of Minnesota Press, 2006). P. 70
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 22. Ibid. p. 133
 23. Ibid. p. 137
 24. Fisher, *In the Scheme of Things: Alternative Thinking on the Practice of Architecture*. p. 75
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