Paper Title **a-disciplinary artifacts; un-disciplined bodies**

1

This paper approaches the polemics on (inter)disciplinarity in design from a frequently overlooked viewpoint: that of the design-artifact itself. It is, in that sense, a critique of current (inter)disciplinary discourse itself (as opposed to taking sides in the debate). Discourses on (inter)disciplinarity debate methods of constructing epistemological frameworks and procedures of practice. Interdisciplinarity may well prove to be key to encouraging learning among students from different disciplines - in fact, only sparse empirical evidence is currently available to substantiate that cross-disciplinarity was the determining factors in some experiments, and not other factors: e.g. quality of instruction [see Lattuca et al 2004]. But even if adequately substantiated, positive effects on learning / knowledge acquisition and knowledge-generation do not necessarily equate or translate into a different kind of *design artifact*. (Inter)disciplinary discourse has so far inadequately extended to qualifying the artifact(s) thereby generated (Lettuca et al, 2004). So, instead of probing issues of (inter)disciplinarity by addressing processes and knowledge bases, this paper poses the question 'sideways'; it poses the question of (inter)disciplinarity by focusing on its outcomes: its design artifacts. How do we qualify what kind of an artifact interdisciplinarity actually generates? And how do we describe that? Do interdisciplinary practices necessarily generate complex hybrids? Does discipline-centered design by default spawn more rigorous, "in-depth" categorical artifacts (building vs. furniture …etc)? How do we know, as designers and design-educators, whether (or when) interdisciplinarity or disciplinarity 'pays off'?

Posing the question from the viewpoint of the design artifact was inspired by the philosophy of Manuel Delanda – his ideas of mind-independence and form-finding, and as he, in turn, qualified Deleuze and Guattari. In an interesting and relevant example Delanda discusses the historical development of steel as a building material. As demonstrated by historian C.S. Smith and others: although developed through multiple disciplines - and although developed by reportedly Renaissance men such as H.C. Sorby - steel as a manufacturing material evolved into a 'purified' substance which mirrors, and/or scaffolds, similar reductiveness in its formal and spatial applications in design-artifacts. Its historical sanitization as a material involved excluding more complex modes of resisting loads which could have scaffolded variant formal languages.

Furthermore, the operative procedure of steel reductiveness / purification also attended to a process of de-skilling human labor.

> While naturally occurring metals contain all kinds of impurities that change their mechanical behaviour in different ways, steel and other industrial metals have undergone in the last two hundred years an intense process of uniformation and homogenization in both their chemical composition and their physical structure. The rationale behind this process was partly based on questions of reliability and quality control, but it had also a social component: both human workers and the materials they used needed to be disciplined and their behaviour *made* predictable. Only then the full efficiencies and economies of scale of mass production techniques could be realized. But this homogenization also affected the engineers that designed structures using this well disciplined materials.... Many professionals who design load-bearing structures lost their ability to design with materials that are not isotropic, that is, that do not have identical properties in all directions. " Manuel Delanda*, Uniformity and Variability*

The design artifact thus came to occupy a pivotal position between the discipline of knowledge and the social system without any of the interconnections possessing any structural predictability or logical necessity; whatever predictability there was came to be manufactured. Moreover, the induced docility of the human body (individual and social) seemed to fly against the established humanist framework, where the world is shaped around the human body.

In other words, what Delanda's work inspires is a defamiliarization of the processes of epistemological, material and social production. But while a philosophical deliberation on the above questions may be interesting, I would rather initiate and conduct the discussion from the design studio. Implicit in this method is a defensible hypothesis that design is itself a procedure of knowledge-generation distinct from other forms of reflection. Hence, philosophical pondering is welcome but during or after the design inquiry unfolds - and the material for reflection is the artifacts of design themselves.

2

The paper begins with a demonstration of an exercise given to first-semester, first-year Architecture students at SPSU last Fall 2007. The exercise was 3.5 weeks in duration and was titled: G*enerative Order(s).* As an integral component of a curriculum, some of its prime objectives included: critical manipulation of ordering systems, an introduction to form-finding ideas & procedures, and the development of representational skills. With the design studio, the students had already been exposed to multiple techniques of free-hand drawing, to an introduction to model-construction and to Orthographic drawing. In other words, they come to the exercise with skills as well as the knowledge that each drawing technique enacts its own biases and affordances – each is a way of seeing, a construction. However, the exercise was also the students' first foray into perspective, radial projection and attendant problematics.

The exercise began, explicitly and intentionally, as an exploration into the design of a-disciplinary design-artifacts. Students were challenged to draw and fabricate a full-scale installation generated from a topological order. The installation may redefine an everyday building element (wall, pinup board, window-sill, column…) and its existing order, or it may be a free-standing entity. An important element of the charge was to embed unpredictability in material-constructions and design-procedures, allowing the artifact room for 'form-finding'. Even for students who elected to start from an existing artifact (e.g. the corner), there was no specification of the typology of the artifact to be generated. This open-endedness was meant to question established typologies of artifacts (walls vs. clothes for instance), and – implicitly – the disciplinary specializations which their production over decades or even centuries has effected.

At the same time, an accompanying requirement was to investigate alternative graphic modes of visualizing and inhabiting this new order as it emerges. In other words, the exercise also questioned the typologies of known graphic techniques and procedures. A prime objective in our Foundation program is to preempt the rigid stabilization of graphic conventions that many advanced students unknowingly suffer from, and to prime the student to think of graphic procedures as vehicle – indeed inadequate vehicles – for design thought.

So, starting from a consistent, three-dimensional geometric pattern 'discovered' in a previous exercise on geometric orders, students were asked to inhabit its formal patterns by generating their first iteration of what was called the *Identity Drawing*. This is a drawing which captures how the one-eyed perspectival Cyclops may see or inhabit such a geometrical form and patterns. An informed assumption of scale attended this phase; the one condition being that the patterns may not be treated as an object much smaller in scale than the Cyclops. Inhabiting the patterns was required. Although some measure of arbitrariness was tolerated in assigning scale within such limits, this only applied

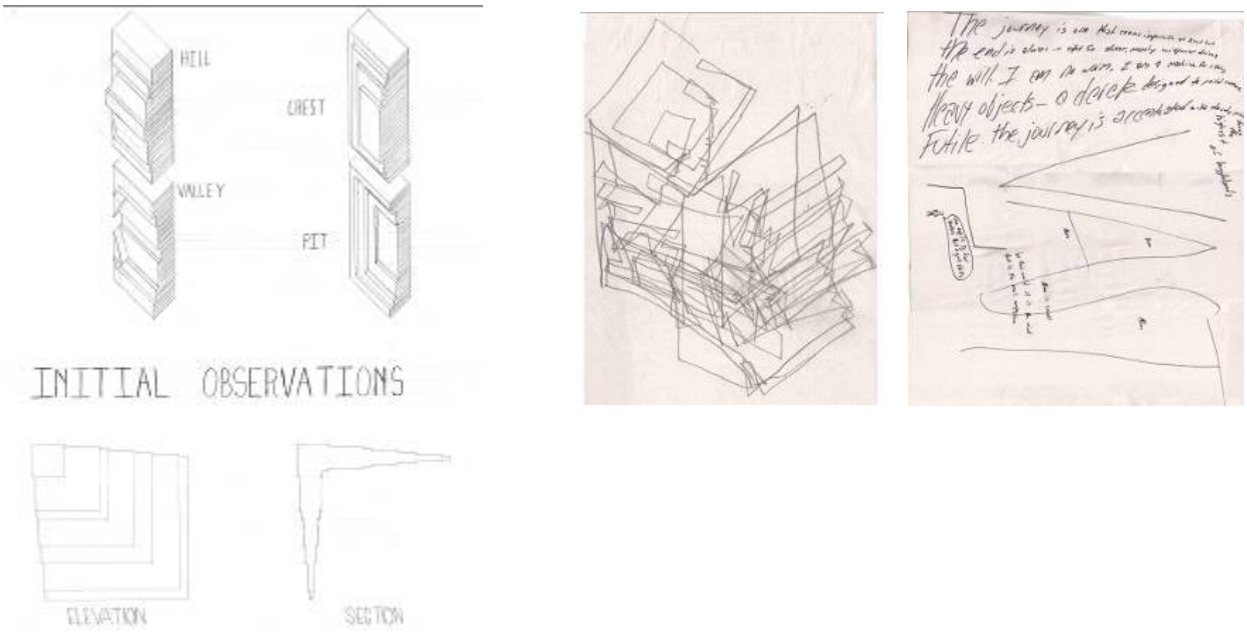

Figure 1 geometric pattern (*left*); early re-visualizations (*right*)
[students Stahl and Line]

to the opening step. Much stricter conditions self-generated out of this initiating assumption.

To brainstorm ideas about this habitation and its attendant visualization, multiple media and techniques were assigned – not without transgression in each case: semi-blind Continuous-Contour line, words (adjectives or action-verbs only), and words which morph into a Continuous-Contour line drawing. Each student was wrote a short poem which described how s/he-or-it may potentially inhabit the topological surface of the inherited pattern. The posed challenge was *not* for the student to imagine himself or herself (in person, as the human-being s/he is) in such a state of habitation, but how s/he would morph his/her own body and own eye(s) to inhabit such a terrain. In other words, the student was asked to redesign /re-imagine him/herself as de-formed – as a Monster, following literary traditions of 'monstrosity' as emancipatory deformations of our bodies. Here's one example of this writing exercise:

> I'm stuck here in this massive pit
> My one extremity is tired not fit
> I've hopped and rolled, scooched and scratched
> Can I at least have my other body parts back?
> If I jump just high, I then will see
> This large terrain encompasses me
> (student: Anatoshia Wyatt)

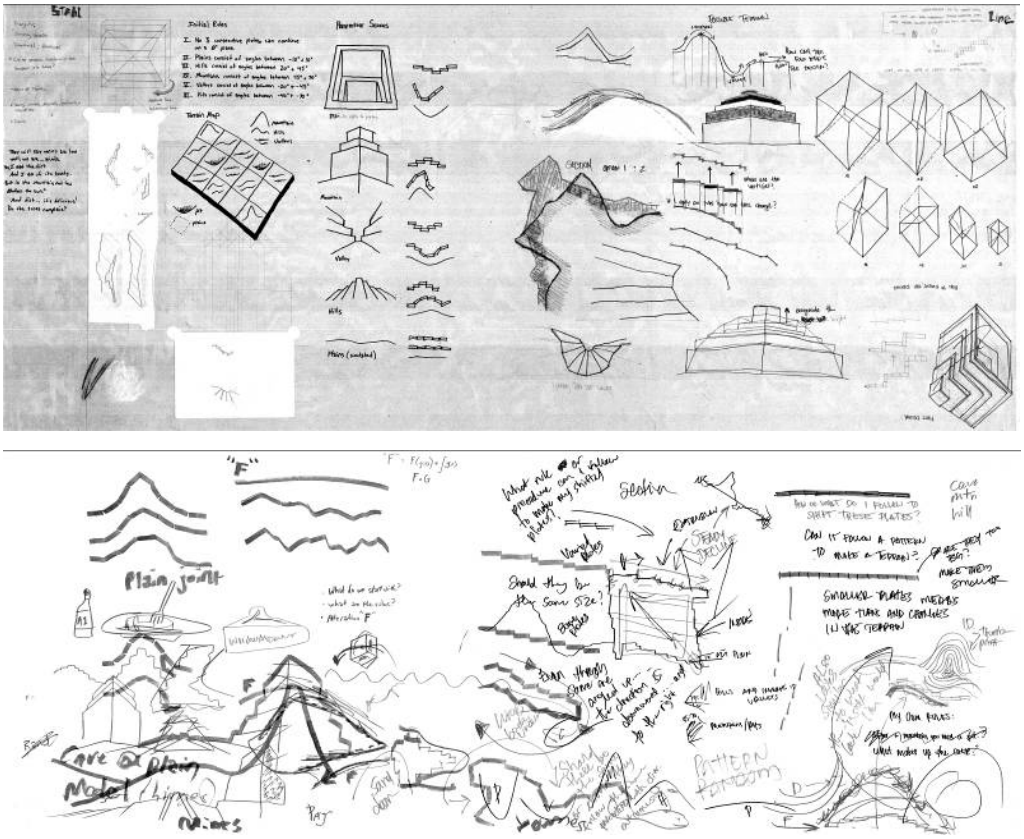

Figure 1 early 'messy' stabs at Identity Drawings (2'x8')
[students Stahl and Line]

Problems of movement and navigation were central; how many limbs did one possess and what features of the topology afforded / instigated which movements? Starting from the one-eyed perspectival monster: another crucial question became how many eyes does such a monster have? Infinite, n-eyes or none at all? What this really translates into are graphic conventions of representation: orthographic drawings correspond to an infinite number of (pervasive) eyes; blind-contour to no-eyes at all; ... etc. A composite of conventions was also possible, although on condition of being built up step by step. In the above case, Anatoshia settled on a one-eyed Cyclops, but one that hops around (i.e. its movement is not gradual, but changes elevations suddenly) since this was what the sharp-relief pattern afforded. Again, although the initial selection of creature-qualities (from a limited set) may seem not totally and rigorously unjustified, the real pedagogical issue is whether the student can reason rigorously from a *What-if?* position. Another student reached the conclusion that he (or his creature) is blind since it moves through matter; its vision is worthless – what really counts is tactility. Hence flat representations, the lack of foreshortening in depicting graphic depth. A similar blindness afflicted the imaginary creature of yet another student, not because of moving-through-matter but because his facetted terrain – accentuated by demarcating ridges – derives its aesthetic interest from the sequential experience of distinct ridges rather than from the surfaces adjoining them or from a panoramic visual survey of many ridges simultaneously.

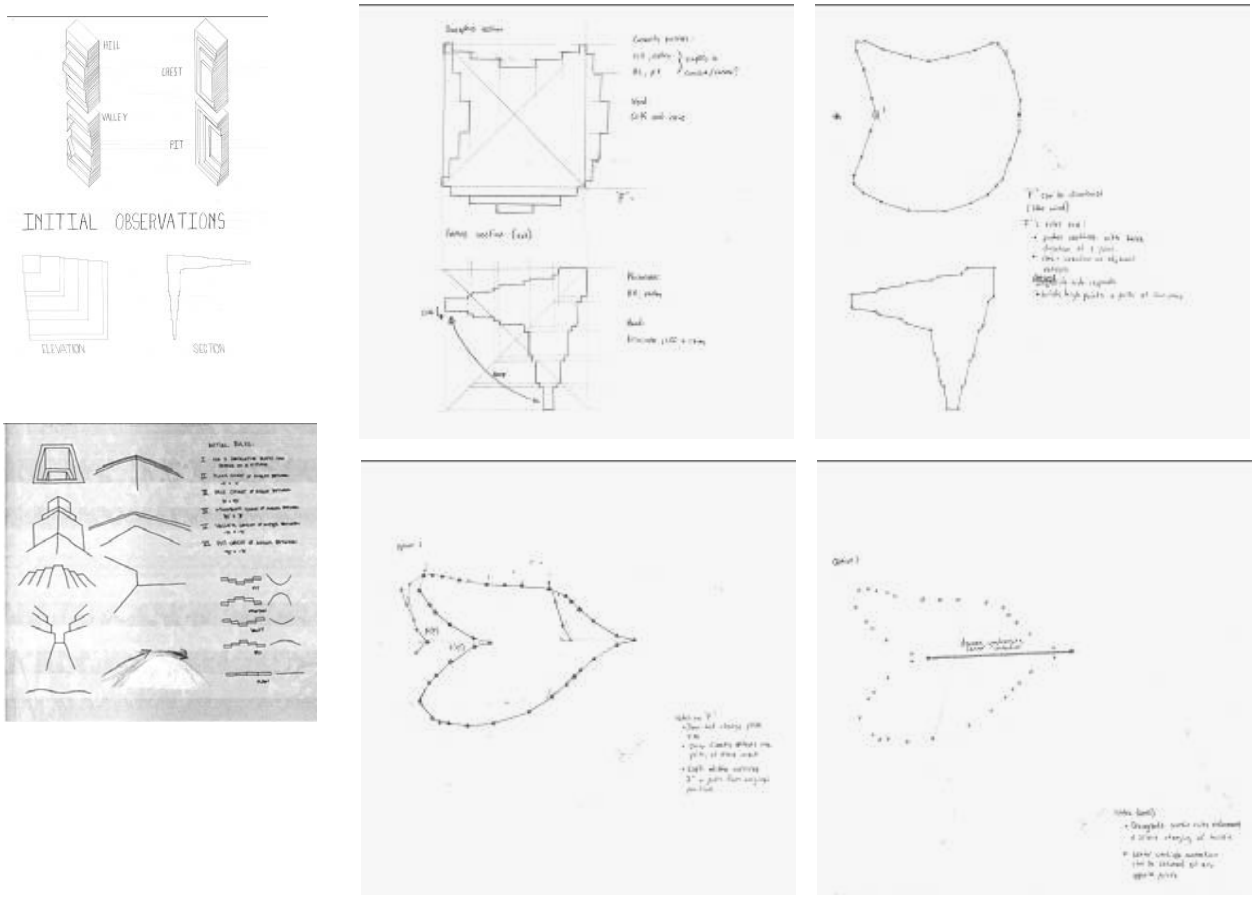

Figure 3 *(right series)* rhizome drawing in process; pattern transformed into terrain-like surface with rules of transformation(left column).

Next, students were instructed to determine the topology underlying, and scaffolding, the geometric order of their pattern - and the variations afforded by it. Topology was determined by what unchanging properties a pattern possesses if its geometric properties (length or proportion of sides; values of angles; ...etc) are taken away or rendered flexible. Here, rhizomes were set up as an example. Rhizomes (and Stolons) are plant systems (attached to trees or bush-like plants) but which grow with a more flexible format. Instead of the strict specialization of sub-parts - roots, stem / trunk, branches, leaves, flower / fruit – they morph into types as needed per location as they extend horizontally above or below ground. Depending on light, soil conditions, and/or competition they take shape differently. Some rhizomes or stolons do not actually 'take shape' entirely, but maintain an in-between morphology that approximates more than one sub-part simultaneously. For example, in some plants a brownish bulk may perform photosynthesis whole also absorbing soil nutrients. The formal implications of such systems are immense within a single plant let alone different species or across species, but so are their conceptual possibilities. For to describe such morphological performance one needs different tools of description – tools which engage the systems of order which allow such wide variations to happen.

So, students were asked to go ‘rhizome-spotting’ – as a form of demonstration and inspiration as they rethought the potential of their patterns to transform – no more. Note: This part of the exercise would have to develop substantially in coming iterations to provide more food for thought.

The outcome of this phase varied. For example: several students translated their patterns’ formal relations as variations of terrain-like surfaces – extracting rules for what constitutes a hill vs. cliff, or a flat vs. a valley, ...etc. Others became interested in how their (their creatures’) movements across the surface transforms that surface within the bounds of its topology.

Questioning body and visualization on one hand, and advancing topography on the other hand, constituted one cycle of work tackling both sides of the interface. Students worked in groups of two. Each team-member uncovered a topology, and each developed a graphic identity individually. Team-mates were assigned based on observing some affinity in their topologies from their previous exercise. At some point in the process, the team of two was asked to either negotiate their variables into one topology and identity, or work separately in distinct trajectories.

3

Working in cycles, students alternated between re-configuring variations on the topological order on one hand (the Rhizome Drawing), and designing iterations of themselves as inhabiting that terrain and experiencing its features (the Identity Drawing) on the other hand. The two composite and alternating drawings thus defined the design development. The first cycle spanned almost two full weeks of work, thus leaving time for only one other cycle (the original plan was for cycle one: about 1.5 weeks; plus two cycles of one week each allowing for the learning curve to accelerate performance). Throughout each cycle, the large (about 2’x8’) drawings were displayed on a board surface. This allowed continuous visual interaction with their content, but more importantly allowed for a more intuitive involvement. A prominent problem with first-year students is their fear of the drawing, particularly when they feel that they are not adhering to preset, long-established conventions. But in an exercise like this, questioning is the central activity – a questioning which naturally extended into the graphics. Craft paper also helped get over the sanctity that seems to accompany the white Bristol surface. It was only towards the end that clean drafting was executed.

Students worked in mixed media: pencil, ink and pastel along with photography; as well as in mixed drawing types: besides the required perspectives, they explored for themselves the genres best suited to advance exploration. Most of the early drawings were appropriately ‘messy’, with much pastel applied intuitively.

Figure 4 installation & Developed Identity Graphic (an omnipotent eye)
(students stahl & line)

Figure 5 installation : fabrication process
(students stahl & line)

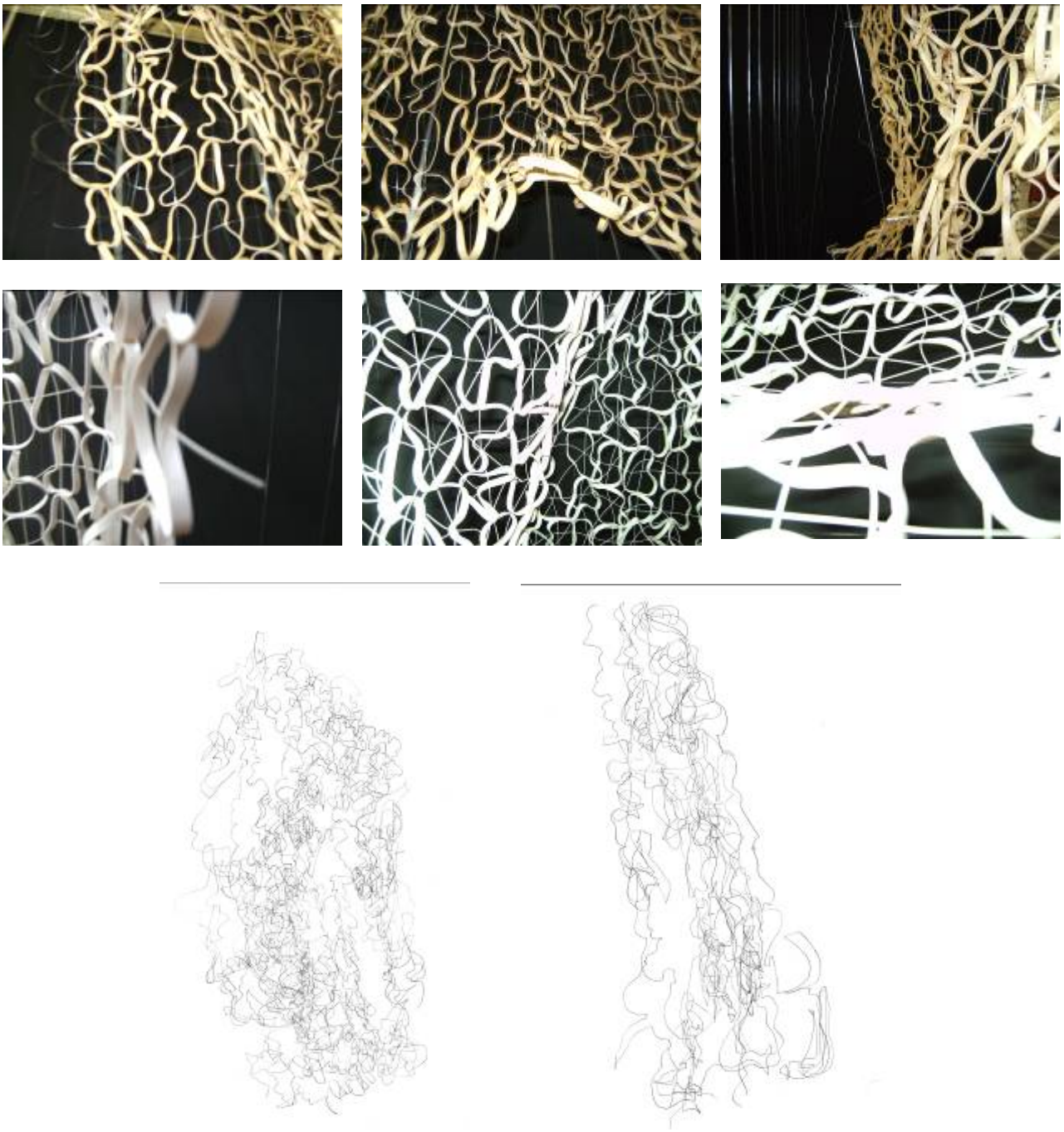

Figure 6 *(above)* installation close-ups; (*below*) attempts at Identity Drawing: a situated eye. (students stahl & line)

4

The second work cycle was accompanied by constructing the installation. Note that the installation was not strictly regarded as the 'final' artifact. In fact, it was a physical realization of the Rhizome Drawing – and the coupled ensemble of Rhizome-drawing and Identity-drawing remained, together and simultaneously, the process as well as the outcome per cycle.

5

Fundamentally, questioning the design-artifact of (inter)disciplinarity problematizes the relation between design and knowledge-generation. This paper posits that design-artifacts should be emancipated from the limiting confines of *our* preconceived disciplinary cartographies altogether. It approaches the design act while appreciating the design artifact itself and its mind-independent material, as generative of unpredictable, unclassified knowledge. Re-discovering the design-artifact in ways not totally determined by our epistemic frameworks postulates not only different kinds of artifacts, but also ventures that shifting cartographies of disciplinarity are continuously warranted.

Throughout the 3.5 weeks project, it became clear that inducing this *a-disciplinary* artifact into 'existence' warranted an *un-disciplined* body for its critical appreciation. This is the body emancipated, not only from (Foucauldian) disciplinary techniques, but also from prescriptive Humanist ideals of the self as the center of design-thought. Besides the physical artifact, the body itself became the object of design process. Students were asked to re-cast their own bodies as *afforded* by the created artifact (following literary traditions of 'monstrosity' as emancipatory deformations of our bodies). In effect, they were tasked to re-work conventions of graphic representation as would be enacted by this alternative un-disciplined body: the *Identity Drawing*. What representation does the artifact *demand* of the 'monster'?

Implicit in this design process is an assumption that design is itself a procedure of knowledge-generation distinct from other forms of reflection. So, aside from the making procedures: the construction of 'surface', the techniques of modeling that students learned and discovered, the perspective drawing techniques, and the intuitive, 'gutsy' application of media and transgressive mixing of genres – besides all this, *what did students come to know?*

This is not an exercise of application; i.e. students are not meant to glean from it how to build a wall. Even the construction of space – the exercise of empathy in the conventional sense – is too indirect here to be a prime objective. Instead, this exercise amounts to an expansion of the student's subjectivity – to what one can know through one's experience and imagination (as opposed to objective disembodied knowledge). It strives to initiate the beginning student, early on, to the realization that design is an intellectual activity and could be an independent method for 'knowing'.

They would, I hope, also come to internalize, if not explicitly know (that might be too ambitious with beginning students) that (inter)disciplinarity does not drive the design object, but that disciplinary lines are drawn and redrawn, for social convenience, after or at best during the making of the artifact and as its

corollary. I would also aspire that students comprehend that Sustainability is not only practices of energy control and materiality, but a fundamental philosophical position – a turn in humanist thought with a specific history and a range of practices that we need to re-invent. It is reinvention of our position to nature; a reinvention where design – as a form-find process- does have a role.

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Appendix: More samples from students' submissions

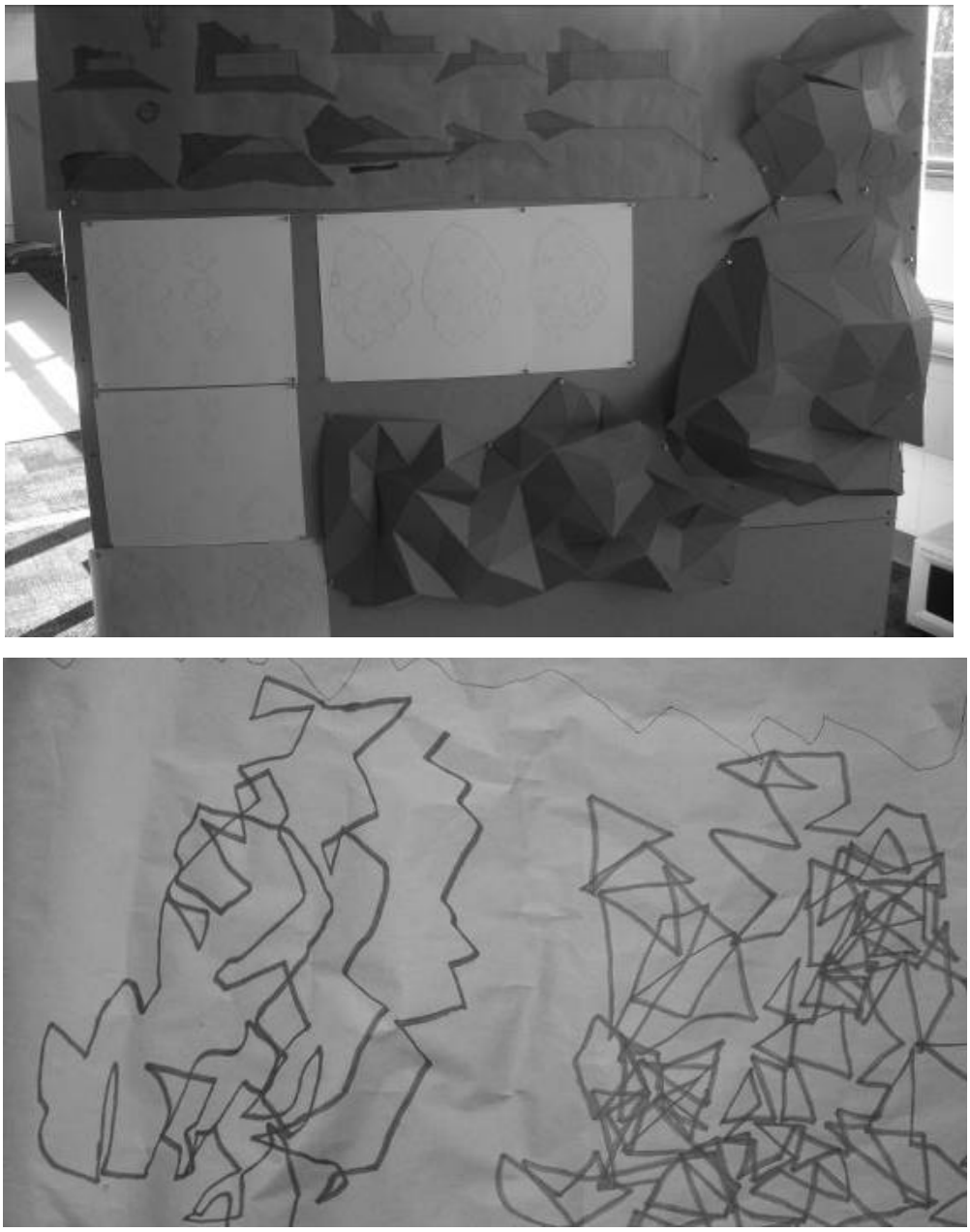

Figure 7 Installation & Identity Drawing
(student: sherrill)

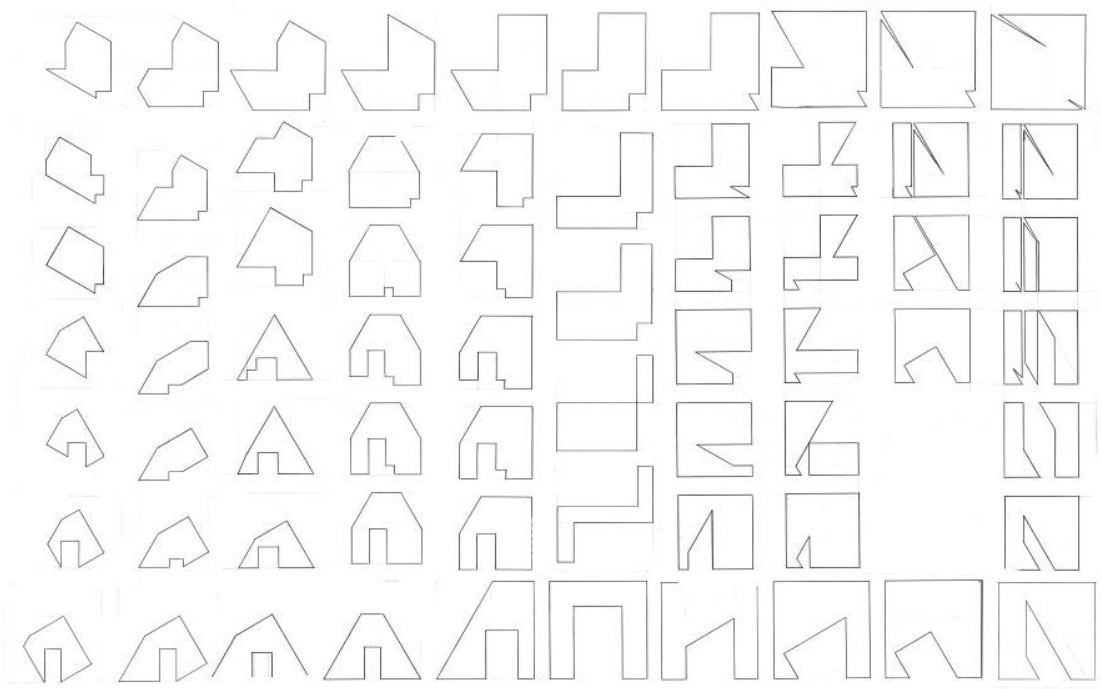

Figure 8 Rhizome Drawing (students: Crase & Weaver)

Figure 9 Identity Drawing (students: Wyatt & Jasmine)

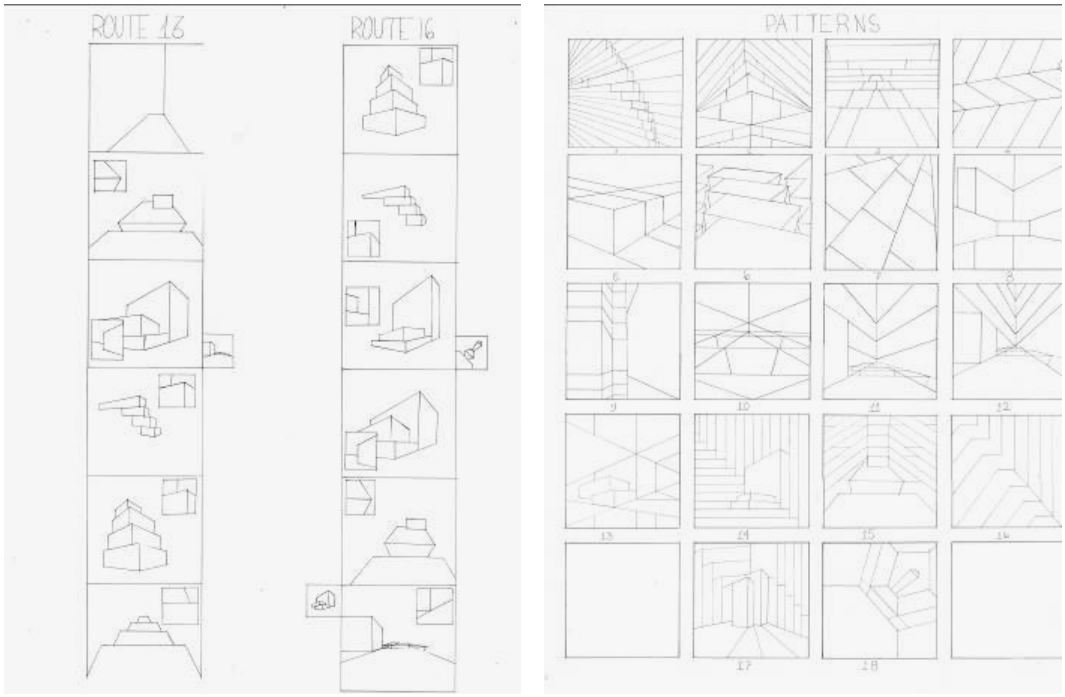

Figure 10 Rhizome Drawing & Installation
(students: Wyatt & Jasmine)