

{2008.09.22 proposal for independent study}:::

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"Independent Study Part Deux" :: To continue work begun integrating the CNC machine into the curriculum at the College of Environmental Design at Berkeley by disseminating knowledge of the use of it to others, as well as through research and development efforts in the fabrication of exemplary work.

[context] :::

My previous independent study with the CNC router was an eye-opening experience on many levels, and achieved many successes and failures. Parts One and Two of the previous proposal entitled "2008.02.20 CNC independent study proposal" were primarily achieved {please refer to this document for details} - namely the physical infrastructural improvement necessary to run the machine safely was improved, the necessary software and hardware were installed, and the precise calibration of the machine to tight tolerances was reached. Policies and procedures have yet to be fixed, and innovative deployment of the technology in the generation of exemplary work remains largely unexplored. Part three entirely was not addressed- the integration of the machine into the curriculum by training individuals/faculty interested in its use, in addition to new and unforeseen more bureaucratic complications. It may be said that the semester primarily served to elucidate the real challenges and complications in integrating this machine into the curriculum at the College of Environmental Design at Berkeley, while ameliorating some of the physical infrastructural problems and deepening my understanding of the use of the machine.

An Infrastructural Improvement Grant was generated to aid in this integration, written and obtained by Paul Morrison as Shop Superintendent and Dana Buntrock, Associate Professor of Architecture, generating some desperately needed money for wages for a Lab Assistant to generate instruction materials and resources in the use of the machine to the total amount of 8,680\$. I spent some of my time after hours and on weekends this summer and during the beginning of this semester {fall 2008} working on these deliverables to continue trying to incorporate this tool into the curriculum. May it be here stated that though the grant was written in my name [i am grateful for it having been written and obtained, however my name was used in this grant proposal without my consent], i never agreed to fill the position it created and today maintain this position. The deliverables I have worked on so far include the following ::

- the generation of a website containing general information of the facility, video tutorials {soon} in the use of the software, links and information on material resources in the area, internet resources for tutorials and bits
- a material samples wall illustrating and exemplifying milling operations, descriptions of tool paths, feeds/speeds, suggestions for modification or improvement of these operations, the physical product, and photographic documentation of the process by which each sample was created.
- safety signage on the walls that indicate policies and procedures for the safe and extended use of the machine and space
- various infrastructural improvement and identification and acquisition of tools and other resources

In order to prepare for the demand this new tool would create and begin to consider what sort of measures would be necessary to teach the use of it to the students and faculty, a "call for interest" was sent out September the 2nd 2008 to inquire who would be interested in attending a multi-week not-for-credit after-hours instructional course on the use of the machine. 63 students and 4 faculty members responded by September 5th, expressing a desire to participate in this proposed course.

[proposal] ::

This semester I would like to focus on the specific capabilities of the machine by actually using it, and straying from the myriad of bureaucratic + infrastructural issues surrounding the machine. I believe that by producing work that is exemplary in addressing the diversity of applications, aesthetic potential, range of materials, and tolerance in digital craft may better serve the school at large as well as my own education and intellectual synthesis as a graduate student.

I am however currently the only student, [faculty member, or administrative person] who is proficient and knowledgeable in the use of this machine and software. Before I can move on with my own interests it is critical that I disseminate this knowledge onto others that may be in a position to have greater influence and available time/resources to continue incorporating the CNC machine into the curriculum.

I would like to limit my involvement to the following:

- ~the temporary completion of the website i began to include all of CAD/CAM working with Julio Reyes.
- ~training those who can and will make time to train others, and possibly other dedicated students
- ~providing advice those in power to make changes in the ways in which the facility should be operated now and in the future.
- ~personal production of exemplary work

Clearly the first three bullets will demand a great deal of time and most of my focus this semester. Simply to begin a great deal needs to be discussed and completed both on a policy and infrastructural level regrettably. The suggestion of an approach called "job safety analysis" as a means of the exploration and production of instructional materials etc. suggested in the Grant grossly underestimates the demand, and new attitudes and strategies must be adopted and generated immediately to address it. As little time as possible must be wasted on this discussion but rather *acting* proactively. I hope that my involvement and actions to date will serve as a testimonial to my dedication to the project, and that others will begin to get involved to aid in this effort rather than hinder it.

I propose if the time is available to begin the "personal production" phase by completing the fabrication of a project that was designed entirely around the tolerances and limitations of the school's router. I began designing this project in a class taught by Maximilano Spina last semester entitled "Synthetic Tectonics :: [Modulating in the Digital Age]," and my project – "three + thirteen sixteenths." Please see description and representation below/attached.

Other items that must be addressed/completed with the help of others.

- ~RhinoCam software must be installed on the lab computers for toolpath generation outside of the Router room. this currently requires a hard-wire ethernet connection be run to 273b [the router room,] to set up the server necessary to serve both the lab and router, in addition to the actual software installation on the machines.
- ~Some form of access to those who have been trained must be addressed and provided, doubtful that the distribution of keys will be acceptable.
- ~A training program must be proposed, developed, and taught in order to propagate the knowledge beyond those who will inevitably graduate, in order to continue development and alleviate the pressure on students to teach other students.
- ~Departmental decisions about who can use the machine [graduate, undergraduate, landscape, planning etc.], and who will pay to maintain it must be made.
- ~How much time must be allotted to staff and provide support to students in the use and operation of jobs.
- ~How to schedule jobs in a fair way, how to limit job size and duration.
- ~How to accommodate the demand that may far exceed the supply.
- ~Will there be fees associated with the machine- is it shop or CAD/CAM alone, or shop + CAD/CAM?
- ~Website maintenance and training people to update it.
- ~How to address the other demands on the shop that this machine will generate – the need for a larger vacuum-former, lamination tables, material storage, 24 hour access.
- ~Vocational training in Rhino, other tools.

{synthetic tectonics :: [modulating in the digital age]}

instructor :: Maximiliano Spina

"Something is uncanny – that is how it begins. But at the same time one must reach for the remoter "something" which is already close at hand. The hidden "who" is in demand... there must be something to this case after all."

~Ernst Block, 'A Philosophical View of the Detective Novel'

This seminar functioned as a workshop for testing and generating tectonic studies through all forms of digital tools and manufacturing techniques. The project brief was to use CAD/CAM [computer aided design/computer aided manufacturing] to "develop formal and spatial configurations that demand the development and use of new hybrid, synthetic, or composite tectonics, in which not only the form but material incarnation is integral to the architectural expression."

This particular response was a hybrid tectonic of wood, foam, and fiberglass that forms a surface that responds to a variety of programmatic and ergonomic contingency. Developed in conjunction with building the proper infrastructure and resources to get the schools CNC machine online [an entirely separate project], this project was grafted largely around the use and fabrication limitations of our Techno IseI 4896, eventually assuming the name '3-13/16 "' for the foam thickness + mill-able depth the machine is capable of cutting, which ultimately generates the tessellation of the surface.

This tectonic would ultimately would take the test as another Ford-Econoline Cargo Van insertion, for the rather absurd and high performative + programmatic requirements: it must provide the program of a small living module such as have water and stoves, and must also be lightweight, waterproof, durable, ergonomic yet inside tight spatial boundaries and restrictions, store lots of gear, have no hard edges for safety underway, fit my limited budget, etc. Moreover, the scale is such that the project can be built 1:1 without breaking the bank or taking too long.

This proposal postulates that a tectonic can juggle the contingencies of the design + manufacturing of complex geometries and programmatic requirements through a non-linear feedback cycle engaged concurrent to one another, as well as spatial configurations and material incarnation without compromise to the integrity of the formal logic. The project aspires to work within the conventional continuity between form and construction [as it will be built,] yet not sacrifice complexity and idiosyncrasy to convenience or simplification.