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University of Michigan  
Taubman College of Architecture and Planning  
**Architecture 516**  
**Architectural Representation**  
Fall 2010  
McCullough (coord), Hwang, Moon, Ng, Shieh, Unverzagt

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## Course Syllabus

Objectives  
Organization  
Schedule of Topics (shared)  
Schedule of Topics (parallel)  
Requirements

## Objectives

- Communicating* Visual communication increasingly influences work. Yet there are few places in the university where visual and technical communication occur so much at the core of what people do as in architecture. There are few other disciplines where students so often stand up in front of their peers and combine verbal and visual explanations. For indeed design is a communication art.
- Seeing* The educated person sees more critically. This course invites you to train your eye not only instrumentally, with respect to your own work practices, but also culturally, with respect to the character of others' media arts, and to connect these outlooks.
- Ordering* Vision abstracts. Drawing is the art of what you don't show. Indeed all representation is selective, and most of it is produced with intention. Often the goal is to reveal or establish an ordering system, and with it a process for design.
- Informing* In an age of information overconsumption, it is important to develop clear editorial control, so that data actually inform, and information sometimes turns into knowledge. This concerns level of detail, relation of form and content, and accessible narrative structure
- Documenting* So despite the studio culture's preference for inventive artifacts requiring lengthy explanation, effective communication more often demands the use of intelligibly abstracted documents, produced within a customary code of communications. Only with some shared conventions can a visual literacy exist, and so a discipline.
- Delineating* If one interest unites all participants in this school, that might be form. Skillful form-processing remains a core competency and a prerequisite for many specializations. Refined practices of measure, construction, and projection advance those skills. Problem-solving in technical documentation demands them. In each of the course sections here, you are asked to find rigor in these, and to keep your eyes open while doing so.
- Explaining* Above all else, this course should help you make sense. In a world increasingly flooded with media, education means not only generally learning how to learn, but also developing discipline at selecting, interpreting and explaining. This involves alert choices of media, thoughtful connections of data, information, and knowledge, and an ethic against pseudo- or dis-information. You might say that education develops a situational awareness of communication itself, as if you are at work not so much in an information age, as an attention economy.

## Organization

With nearly 100 participants and 6 instructors, this course is large. With only one 3-hour session per week, it must proceed quickly. In order to meet what has to be a very wide range of objectives, interests, and experiences, we must emphasize organization. In the early going, this emphasis must err on the side of strictness, but by the time of semester-end projects, it should provide more latitude for more people than we could otherwise obtain in so large a course.

All participants will share the first hour of each weekly session, and the first part of the semester's agenda. Six sections, each led for the whole semester by one instructor, will meet separately for the latter two hours each week, and will each pursue a separate agenda for the second part of the semester.

The first part of the semester will be organized by the lead instructor, and will involve a series of short weekly exercises, which each section will carry out. Much of this segment will be addressed to the overall objectives described earlier.

The second part of the semester (which is slightly longer) will be organized according to the objectives of the individual instructors' sections. This part develops a longer project, which will be the main basis for your course grade. Coordination among sections will occur in two ways: a related lecture by each of the instructors, and a shared exhibition by all at semester end.

The course maintains a miniblog on Tumblr for sharing the latest resources. It also makes extensive use of thumbnail galleries on the web for submitting work. On these, each exercise page links to each participant's university network account to find thumbnails and full-screen images uploaded there. Formats, filenames, and file sizes must match specifications (furnished with each exercise) for this to work best. Especially in the first part of the course, this gallery provides a useful resource in sections, each of which can see all sections' work. Instructors review the weekly exercises by making picks from the full set of 90+ links.

## Schedule of Topics Part 1 - shared agenda

- Week 1 (13 Sept.)**      **Introduction: Media Arts and Visual Culture**  
*concepts:*      Course philosophy, core concepts, and overall objectives.  
*organization:*      Section presentations and balloting  
*practices:*      Graphic design fundamentals  
*exercise 1:*      Graphic composition
- Week 2 (20 Sept.)**      **Information**  
*concepts:*      Information anxiety and information design  
*practices:*      Tufte's principles  
*exercise 2:*      Visual explanation
- Week 3 (27 Sept.)**      **Projection**  
*concepts:*      Spatial data, mappings, and projections  
*practices:*      Picture planes and paper spaces  
*exercise 3:*      Projection between surfaces
- Week 4 (4 Oct.)**      **Form**  
*concepts:*      Constructs, derivations, and constraints  
*practices:*      Deriving simple Euclidean form  
*exercise 4:*      Proportion dividers
- Week 5 (11 Oct.)**      **Versions**  
*concepts:*      Parameters, assemblies, composites, morphologies  
*practices:*      Placeholders and substitutions  
*exercise 5:*      Cycle of variations

## Schedule of Topics Part 2 - parallel agendas

*Topic, format, and requirements differ by course section.*

*Completed projects presented in section 6 December and exhibited 13 December.*

- Hwang **Negotiate-it.** Given the abundance of media (otherwise known as ‘tools’; i.e AutoCad, Adobe et al., pencil, video, collage...) and formats (otherwise known as ‘conventions’; i.e 8-1/2 x 11, plan, section, iphone screen, postcard...) currently available to the architect, the ability to negotiate and translate between these modes and methods is invaluable. To foster agility within this abundant panorama of representational approaches and techniques, this section will serve as the staging ground for the development of creative and strategic expressions that best leverage individual priorities. Divided into five weeklong exercises, the section will pair a specific format with a particular medium. These pairings are designed to be unfamiliar so as to foster progressive new means of articulation. With a movie as the muse, the ultimate goal is to produce a series of smart and beautiful artifacts that not only transmit ideas in fresh ways, but also clearly communicate quantifiable data. Lecture: 22 November.
- Moon **Positing.** This section will explore new techniques of documenting and analyzing architecture, employing time-based media. As a starting point, plans, sections, and elevations will be drawn and positioned appropriately in 3D space within a motion graphics and compositing environment (After Effects), and a critical analysis will begin via the reconstruction and representation of a key space or element. Each project will immediately employ a draft working document or animatic in which individual external links, composition, and other aspects of the moving medium are modified for development and discussion. New opportunities in spatial visualization, collaboration, and notation will be carefully and critically explored, while at the same time, an efficient and effective workflow based on existing familiarity with tools and provided resources will be emphasized. The object of study will be from a selection of seminal works, and will include projects of Adolf Loos and Le Corbusier exploring their central design concepts such as Raumplan (sequence) and proportion. Lecture: 1 November.
- McCullough **Placeholders.** This section emphasizes the role of substitutions in geometric modeling. A placeholder is a simple block embedded in a hierarchy of blocks with the intent of search-and-replace substitutions later. (Rhino and AutoCAD do this by block redefinitions.) The use of placeholders simplifies work on complex assemblies. It invites better thinking about levels of detail. It clarifies relationships between essential and circumstantial properties of morphed reusable geometric elements. This section practices these core competencies in standard Rhino, through a look at abstraction hierarchy in the influential 19th century pedagogy of J.N.L. Durand. Each participant will receive two drawings from Durand’s typologies as a point of departure. The project works in three stages: first to construct an assembly hierarchy, by which to abstract the type as a set of shape subdivisions in three planes; second to vary the elements of this composition; and third to substitute different, more detailed, possibly 21st century expressions. Lecture: 11 October.

## Schedule of Topics Part 2 - parallel agendas (continued)

- Ng **Assembly.** While parametric modeling and iterative transformative modeling techniques have shifted the way we look at components of prototyping, fabrication, and construction, the complex ways in which we still rely on drawing as ultimately the communicating device is still paramount. As we enter the age of global production whereby drawings are sent half way around the world, clarity to communicating design intentions and fabrication processes are key to architectural production. This section will investigate, through the production of a free standing arch, the various ways in which complex assemblies are drawn, described, fabricated, and packaged with comprehensive directions for final assembly. In teams of two, each group will select an assembly system, made up of a limited number of varied and related units, to examine communication techniques of diagramming 2D+3D and production of coordinated sets of directions for making and assembly. Final submission will include prototypes and a formatted comprehensive set of drawings. Lecture: 25 October.
- Shieh **Projective Geometry.** With the proliferation of representational tools and digital fabrication, the time is ripe for the investment of energy in the space between drawing and form, arguably the precise site of invention, the very location of design. Part of that demands we subject our ever-increasing tools of representation to scrutiny, but as architects, this necessarily occurs through practice: the use and re-use of these tools to generate unanticipated forms and architectures. Following Robin Evan's statement that "Architects do not make buildings, they make drawings for buildings," this section will examine the means by which we use drawing to describe, *in a measured way*, objects, spaces and relationships in the world. Students will be introduced to the basic principles of projective geometry and learn how to construct orthographic projections without the aid of a computer. In the final step, students will build a model by using the tools of projective geometry to develop their surface. Lecture: 15 November.
- Unverzagt **Wireframing.** This section will pursue and develop a disciplined approach to the construction of measured drawings through various drawing analogues, such as metal wire assemblies. It will do so via forms of projection traditionally used for architectural production, including orthographic and perspectival methods and seek to expand those methods through others often characterized as deviant from those of the classical viewer, including parallax and anamorphosis. It will seek to expand the domain of drawing and include digital tools (Rhino and Illustrator), hand drawing, and techniques of light gauge metal fabrication including bending, soldering, and perhaps welding(!). The subject matter will be the wire chair, a prime example of a material assembly that supports the body and engages the eye in a way that is simultaneously repetitive, economical, layered, and flattened and speaks to the capacity for systems to expand the capability of a normative element. Lecture: 8 November.

## Requirements

- Section** All participants will ballot for section assignments the first week. All sections will carry out the same work in the first part of the semester, but different work in the second part. All work will be reviewed and graded by section leaders. Your section leader is your first contact for all matters in this course.
- Online** You are expected: to monitor e-mail; to find resources on cTools; to post work to your university network account (IFS space), by means of an sftp client such as mFile or Fugu; and to monitor the course miniblog on Tumblr:  
<http://um-a516f10.tumblr.com/>
- Software** The early exercises assume some familiarity with the most widely used software in the College, such as Photoshop, Illustrator, and Rhino, and will only provide limited review of key techniques in these. Sections will develop considerably more depth in particular techniques according to their respective agendas. Several software tutorials are available at [taubmancollege.umich.edu/digital\\_tech/tutorials/](http://taubmancollege.umich.edu/digital_tech/tutorials/)
- Reading** If you wish to acquire a textbook, please start with Edward Tufte, *Envisioning Information*. Next: either Lev Manovich, *Language of New Media*, or Robin Evans, *The Projective Cast*. Each of these is among what lectures in first part of the course sometimes identify as “guides”: reliable picks from what is a very extensive literature. Beyond this, readings will vary according to the agendas of the respective course sections. There you are expected to research and interpret the theoretical basis of your project according to those shared points of reference.
- Exercises** In the first part of the semester, you will have to complete a short exercise each week. Topics and formats will be specified fairly tightly. Due to the nature of these exercises, grading will simply acknowledge competent timely postings. From these approximately a dozen will be cited for excellence of content and execution.
- Grades** Your course grade is your semester project grade. Additional consideration will be given if in the first half your work has been among the weekly picks more than once, or has been late more than once.
- Project** As a result of your participation in your elected course section, you should generally expect to develop a single piece of portfolio-quality work. The last week of the course will be devoted to an exhibit of these works.