

# **Design Exercises:**

**Defining and working with constraints**

## **Working with constraints isn't new.**

Neither is teaching students to meet constraints with creativity and discipline a new teaching method.

What I am experimenting with is **HOW** to do this in the context of the architectural studio...lacking other courses in which to do it.....

I have tried - with limited success - to get students to design “accommodating form” that they subsequently hand off to others to fill in....

Recently I've worked on the idea that students can enjoy working together to make the “shared rules or constraints”, and then use them individually to make design proposals...

This has proved interesting also as a method of observing and documenting the **CONTEXT** of design intervention.

Instead of each student individually documenting what they see in the context, my classes do it as a group and eventually are asked to record their **AGREEMENTS about THEMES**.

In this sense, they are asked to cooperate at a **“higher level”... e.g. as an urban design firm would in setting the conditions for design interventions by individual firms at a “lower level”....or working on behalf of the university to set design guidance constraints for separate design contracts.**

Then, students continue the game, but operate at the “lower level”, always checking what they propose individually against the constraints they had already agreed to follow.

## **This works well... in two ways:**

1. When students share a single building site (e.g. the LINK PROJECT between CAP and COB) and each student makes a design proposal for it, or

2. When students share a site containing many discrete buildings, in which each student designs one of a family of buildings (e.g. the GREEN MEADOWS WALDORF SCHOOL, or the STREET SPACE project - Montreal and Bern being recent examples)

## WHY THIS APPROACH?

**Our reason to observe extant environments is to draw out from them their governing “rules” or “themes” (principles, constraints, concepts).** To do this we need to develop observation skills (the point being not to say what we like but to find out what is really going on) as well as **methods of recording** what we observe. We search for themes evident in what we observe and where we want to intervene – systems, patterns, types, etc, and then record them...

We can't simply take photographs or make sketches (although these have their place). We have to deduce or extract information and agree among us what are “architectural principles” and what are “variants” on principles. We can do this by writing and drawing, and both are needed!

## THEMATICS

The idea is to work together, to derive and document the key **“thematics”** of a place, ON THE BASIS OF WHICH EACH STUDENT CAN ADD TO OR TRANSFORM A PART OF THE PLACE in a thematically sensitive and coherent way... which doesn't mean copying or mimicking....

The point here is to reach agreement on what is SHARED across several dimensions and categories of analysis (student involvement here is important). If this is well done, each individual design exploration will have discernable connections while finding its own expression.

There's no sense in making a number of proposals that are supposed to work together, if they don't share themes.

## **BERN STREET SPACE EXERCISE**

No case was made that the Bern “theme” is “correct” in some absolute way. I did say that it is worth understanding and working with, for this exercise. By looking closely, by seeing the elements and relationships, proportions, ways of building, ways of claiming territory, and so on, we can come to know its relative merits and problems very well.

So, students are not asked to adopt a neutral position vis-à-vis this theme. On the contrary, the explorations we did ask each designer to make value judgments and to “improve” and “enhance” the given concept as much as possible. **Each designer is expected, nonetheless, to accept the theme for what it is. One should not fight the theme, but explore what it wants to be. Thus, if the basic concepts were allowed to come into their own, one would be better able to judge them afterwards.**

## Looking into **DETAIL**

This exercise is FULL of opportunities to study small things – the fine-grain of an architecture. FIRST, in the Bern study, **we only dealt with the “façade zone”**. Yes, the overall composition of each intervention and how they relate in the large sense to the whole (represented by the “rules”) matters very much. Beyond that, there is MUCH to explore. For example, given a window opening in a masonry wall, many possibilities exist for a) the depth of the window in the wall; b) the shape of the plane of the window; c) the kind of window (casement, double hung, French door, etc); d) the details of the window frame; e) the size of window panes; f) the materials of the frame; g) the details of the window sill, jamb and head (the details of the opening’s edges); color; and so on.



## Looking into DETAIL

An arch and column configuration is also wonderful to explore: a) the shape of the arch; b) whether there is a column and base to the column; c) the relation of column to arch; d) the materials of construction; e) the dimension of each element in the configuration; f) and so on.

The stairs making transitions from one level to the other are also fascinating elements. Where are they in relation to other elements; what are their dimensions and proportions; materials; do they have sides and or railings and if so, what are they like; are the stairs covered; and so on.

**The point, after all, is to learn how to work methodically on parts (having discussed what a part is and various ways of seeing parts) and to have fun doing so.**



# BERN





3'-6" OVERHANG (NO VARIATIONS)  
W/ OPTIONAL DORMERS ON ROOF  
ROOF HAS 9/12 SLOPE

WINDOWS TO BE  
RECESSED 6"-18"

5' MAXIMUM FACADE  
DEPTH BEHIND PRIMARY  
FACADE

3' MAXIMUM PROJECTION  
FROM PRIMARY FACADE

PRIMARY FACADE IS ON  
THE PROPERTY LINE

MAX: 14'  
MIN: 10'

ARCANE IS LEVEL ACROSS THREE  
PROPERTIES, THEN STEPS DOWN

SIDEWALK SLOPES

5' FT.

3' FT.

PROPERTY LINE















## **LESSONS LEARNED from a pedagogical perspective...**

The STREET SPACE exercise - done in two studios at the same time using different thematic starting points - caused very searching questions to be asked. For example, one student could not understand how we could design without specific programmatic requirements, or a specific site. The idea of a design exercise that did not attempt to address ALL design issues at once was foreign - or at least problematic - to her and some (but not all) of her colleagues.

Students exhibited severe limitations in conceiving and graphically recording agreements on “rules” observed. This is not surprising since they never were asked to do this before, and did not easily grasp the concept of recorded AGREEMENTS.

## **LESSONS LEARNED from a pedagogical perspective...**

Doing this exercise quickly was a good idea, but I should have done it first in the semester.

In fact, when I could help the students see that studio projects are all warming up exercises, it took the edge off of the idea that all studio projects are partial in focus.

This leads me to observe that as educators we are less clear than we should be about the sense in which our studios are developmental. It seems too often that every studio tackles nearly the same issues just by a different master which students, being smart, interpret as “architectural knowledge is personal - instantiated in the individual, not the profession”. Also students can get burned out...what I see happening in the thesis year, for example, but even before...