Policy Design in the MPP Curriculum

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Introduction

In the following pages, we discuss the pedagogy of policy and program design. Why design, as distinct from analysis? The classic policy-analytic framework compares future worlds with different possible policies in place, and evaluates them according to relevant criteria. In Bardach's "Eightfold Path" [Bardach 2011] a canonical step is to *Identify Alternatives*–but where do these alternatives come from? Frequently they are already in play, having been proposed by advocates and interest groups, but often a *Problem* (or *Opportunity*, as the motivating challenge is often better framed) is waiting for one or more good alternative responses, and inventing these is where the design arts overlap with policy analysis. Indeed, generation of a well-designed policy sometimes manifests an opportunity not previously recognized.

Another reason to attend to policy generation as design is that public (and nonprofit) policies share a lot of properties with physical environments, so their creation might borrow some methodology. They constrain and regulate behavior (you can only leave a room where the architect placed a door, and you may only drive with a driver's license issued according to the DMV's rules), they manifest values and social order, they enable or obstruct social interaction, they conform individual behavior to common standards, and so on. It's not stretching the analogy to note that the extended figure-ground complementary principle applies: "if you didn't have an environment, you couldn't have a self". Just as physical environments demand explicit, practiced, design skills and are subject to a set of fairly common quality standards, we think non-physical environments–the alternatives compared in classic policy analysis–should be consciously designed and that policy analysts need design skills to do their best work.

In this paper, we open an examination of design teaching in the public policy context with curriculum and pedagogy examples drawn from a semester course. As policy design practice is not a standard component of policy or public administration education, the reader should keep in mind that in this discussion we have to navigate between vanishingly few examples that are on point, and an enormous tradition, extending over centuries, of learning to design in other contexts that we cannot possibly survey here. After considering the elements of design pedagogy and examples in the policy context, we review challenges and advantages of incorporating this important set of skills in a conventional MPP/MPA program.

The pedagogy of design is old, stable, tested, and well-known. It is classic Theory C (for *coaching)* active learning [O'Hare 2008]. Design (not design criticism or design appreciation) is learned in a *studio classroom*, which is a space in which several students, individually or in small groups, are working on (usually) the same assignment and often walk around to see what each other are up to. A classic example is a life class, where everyone is drawing the same model (though often from different points of view) while the instructor circulates and advises or questions the students about what they have done. The learning activities are thus (i) designing something, (ii) talking individually about work in progress with the prof and informally with other students, and (iii) talking about "finished" work more formally in plenary sessions where the students present their work and the group discusses it. Successive design tasks increase in difficulty and generate continuous learning. Occasional ancillary activities like very short lectures, background readings, and design criticism exercises punctuate and advance the main work.

The course, Program and Policy Design Studio, for undergraduates (Berkeley has a public policy minor) and MPP students, has been offered on and off for two decades at the Goldman School of Public Policy, and before that at the Kennedy School of Government. The Fall 2011 syllabus, and some examples of student work, are posted as SOM.

Assignments

What makes a good design exercise?

Assignments in a design class state a need, problem, or opportunity, and a client of some sort, indicating where the student should go but not a well-worn path there. Assignments for which the instructor knows a "right answer"–a really good solution, perhaps from previous years–become rhetorical and actually dishonest: the task presented as "invent something new and wonderful" is actually "guess what I already know and won't tell you" and students pick up on this non-adult footing quickly. A good assignment is specific enough to prevent flailing about, but open-ended enough to allow several interesting and reasonable approaches. The latter is especially relevant to the group goals of a project, which is to generate a set of designs that are illuminating to compare with each other on several dimensions.

The assignments need some background describing the context and occasionally the problem history, but this can be sketchy, as part of the work is doing relevant research as the task unfolds. As Rosemary Joyce points out[1], active learning tasks must be feasible in the time available, for students who have other courses to pass and lives to get on with. One way to contain the assignment is to limit the scope of the problem: instead of "design a tax code for Peru", "design an excise tax on automobiles for California."

Another way, inevitable in this kind of education, is to have the assignment cover only the earliest stages of a real-world project. Students in architecture school never build the

[1] The authors had the good fortune to attend a program on *How Students Learn* http://gsi.berkeley.edu/howstudentslearn/index.html in the spring of 2011 that provided several useful insights we have drawn upon in the 2011 edition of this course; Joyce was one of the speakers.

buildings they design and don't even prepare what are called "working drawings" that could be given to a contractor. Joyce recounts that in early instances of her museum curator course she asked students to create an exhibit for a museum as a final project. After she realized that that takes up to three years in the context of a museum curator's career, and students had less than three months, she now asks students to *design* a display for *one* piece of art within an exhibit in which she give a significant amount of background information.

It does not seem important that these exercises match any particular students' professional or substantive focus; as far as we can tell policy students readily engage with tasks far from their known interests and sometimes learn more from this stretch than from staying in their context comfort zones.

Deliverables (in addition to the conventional stack of PowerPoint slides) vary with each assignment, to force students to generate some important elements of policy discourse: flow charts, press releases, speeches, and the like.

Example assignments

Child Care

As part of a consulting project several years ago, O'Hare collaborated on a teaching case for a mid-career program for Italian provincial and local managers, *Nidi d'Infanzia*, which described the funding and administrative arrangements, and some of the internal political debate over management, for municipal child care in Bologna (one of the best-run cities in Italy). He translated the case and used it as background for the following:

The child care centers in Bologna are losing money and oversubscribed. Design a pricing and marketing scheme for them. Deliverables:

--a presentation

--the brochure describing your scheme

--a 60-second radio public service announcement.

It has been a reliably successful assignment, for which students regularly surprised us and themselves (it is typical of this course that, in the words of one former student, "we all reached higher than we thought we could on these projects"). Bologna has a wonderful website, almost all in Italian, but the students manage to cope with it with the help of an occasional Italian-speaker and several others whose Spanish gives them just enough access.

This project is especially useful in motivating focus on goals and users, because to make a coherent design, it is first necessary to decide whether child care is a service to mothers so they can work, to employers so they can employ mothers, to children so they will do better in school, or (as the Italians actually see it) as a service to society as a whole, particularly in making better citizens down the line. The foreign context allows them some distance from the problem and the culture, and a look at an especially competent government-citizen interface.

Citizen Engagement

The first major assignment in Fall 2011 (see examples in files attached) was

Design a system to engage Berkeley citizens in policy decisionmaking for land use.
Deliverables:

--The press release announcing the new program

--A ten minute speech for Gordon Wozniak (City Council member) to deliver in the council

--A presentation describing the system

Councilman Wozniak had previously approached O'Hare to discuss his interest in improving citizen feedback, especially from students (who vote in Berkeley). Wozniak visited the course to give background and answer questions from our students on the topic of city planning and land use, was available for consulting on the project development, and joined us for presentations and asked questions. Just as policy alternatives are often already existing when analysis begins, design assignments sometimes come in through the transom or by chance.

Startup activities

Prior to these two assignments the students had background reading on design principles in the policy context and in engineering, the latter taken from four wonderful short books by Gordon Glegg [Glegg 2009].

To signal the hands-on flavor of the course and hit the ground running (and to make it easy for students to figure out if they're in the wrong course and drop quickly), the first day offered what is called a "sketch problem":

The first words the wise will learn in a foreign language are "thank you" and "sorry". Design a means to communicate these between drivers in automobiles.

Everyone gets a large sheet of easel paper and a bunch of magic markers are put out, with advice to "draw a picture with minimal text". (Examples in SOM). These are taped up on the wall, and everyone is given six colored stick-on dots to distribute. The designs with the most dots get discussed in plenary session, comparing what each did well, what aspects of the challenge were missed, etc. Without much instructor discussion leadership, students ask essential questions which build their metacognition around designing. Students inevitably asked, "Why did you do that?" "Did you consider?" "How would certain groups react?" "How feasible is this?" "What if you did something else?" Each question prompts the designer to articulate why and how, or realize that he didn't consider that question. Several essential concepts like *policy scope*, *model of the user*, and *unintended consequences*, present themselves in this first day and can be named for later reference.

Metacognitive activities

After the first three weeks each student created a vision for the course. The How Students Learn program had emphasized that learning increases when students have ownership and control over their learning, and asking students what they wanted from the course, and what they hoped to be true by the end, enabled them to become active in their own engagement with the various opportunities it offered.

The visions covered different aspects of the course (examples in Appendix IV). A subset of students wanted to understand how the different elements of a design interact with each other, and how to make decisions among different elements. Another subset wanted to know how to create a design that addressed multiple issues, while another group wanted to understand current policy designs through the process of creating, the metacognition of designers, through designing their own projects.

The process of vision setting is iterative. Students come back to their visions and revise them with what they have learned and designed. At the end of the semester we ask students to evaluate how they performed in relation to the vision they set.

Design Process

An important design skill is the ability to know where one is, in an untidy process with stages, backpedaling, false starts, and intermediate results.. It helps to constantly draw attention to these stages as the students move–not always neatly–through them. Architecture provides a useful vocabulary for these stages:,

- Problem/Opportunity definition (and limitation)
- Blob diagramming
- *Parti* identification
- Sketching
- Design development
- Design revision
- Working drawings

Especially in the design context, where the work is to make something new rather than choose among existing options, framing tasks as opportunities has affective payoff and removes the implicit cap on performance implied by solving a problem.

The second of these is difficult to adapt to the policy design concept: for a building, it generates a picture with shapes of non-building-plan form, often circles, whose area roughly corresponds to the square footage of the building program requirements, arranged to illustrate what should be near what, what needs to be separated from what (*ie*, acoustically), and often what should be where with respect to the sun's path across the sky, or to a view. Perhaps more experience with reflective policy design will generate a good analogue to this stage.

The third, whose name comes from the French past participle of *partir* = "depart", is the underlying core idea informing the design; the idea is that when you have chosen a parti, you have started on a particular path and will not take a bunch of others you could have chosen. An example in dormitory architecture is "a block of double loaded corridors", which will not evolve into "a courtyard surrounded with stairway entries" though corridor buildings can differ from each other in many important ways. An example in policy design might be selection of one of the eight mechanisms (subsidize, tax, inform, implore, etc.) discussed in O'Hare's typology [O'Hare1989].

A *sketch* is a picture (possibly a sentence outline for a policy problem), almost always freehand, that represents the actual policy (blob diagram elements taking on real shapes and starting to fit together, for example) that captures the parti and some key decisions about making it work, but with minimal explanatory detail. An architectural plan sketch might have rooms and corridors, walls indicated with single lines, and windows where important, but not door swings, precise dimensions, or finishes. One good form for a policy sketch is a flow chart, showing who does what when, and some indications of why.

Design development is iterative; the design accumulates commitment and detail, but frequently loops back to accommodate issues not visible in earlier stages, or late-blooming ideas. Revision almost always follows presentation of design concepts to the client, and engagement with (architecture) zoning, building code, and financial realities or (policy) lobbying, politics,budget constraints, and existing regulations and practices. *Working drawings* correspond to the executive order, regulations, or legislation implementing a program. Of course a final stage, in which people are occupying a building or engaging with a policy, is where the pudding is proved.

Activities

The typical assignment is done by a group of four or five students, (some assignments are individual) and proceeds through the initial assignment (on paper, with ten to fifteen minutes of lecture introducing it); group assignments (always random); group meetings in class working on their projects (Fig. 1); consultation ("desk crits") with faculty about sketches and work in progress; meetings and working sessions outside class as the project goes through the stages listed above; presentation to the class as a whole; and faculty critique/grading. An excellent analysis and description of this kind of "coached" learning was presented by Donald A. Schön, and advocated as being worth adopting much more widely in professional education [Schön 1990].

The technology is for the most part familiar, but we urge students to force themselves to make pictures, such as flow charts, and to try the low-tech use of soft pencil and tracing paper. Layers of tracing paper as sketches allow revision to proceed without having to draw everything again and again, but early ideas fade out compared to new ones as the stack builds up. We also emphasize pushing the graphic language of diagrams and charts beyond identical boxes connected with identical arrows to use line weight, color, and size to show important differences (for example, between a flow of money and a flow of information).

The in-class working sessions have two purposes. Instructors can ask questions to ensure students are holding on to the metacognition about design that they gained from previous assignments and presentations, and to draw their attention to decisions they have made intuitively. More important, they facilitate adapting, borrowing and inventing among students. Often we see initial sketches change because one group of students talked to another group about how they were designing, which sparked a different approach to their design. During in class working sessions students often ask, "What if we…" "How did you come up with…?" "How do we….?" These open ended questions generate more information that provide more alternatives for their design, and enable them to make more decisions about their process. For an extensive discussion of the coaching process in design, see [Schön, 1990]

Grading and evaluation

Grading student work of this kind is frustrating and unsettling. Projects can excel on many dimensions, *including dimensions not anticipated when the assignments are prepared*. Fortunately the freedom granted by the format seems to motivate students to very high performance and admirable risk-taking, so it's rarely necessary to give low or even mediocre grades. Still, grades are noisy and highly judgmental, and awarded without the comfort of official right answers to exam questions. Generally, it's more important to recognize the fidelity

of a design to its parti, and its internal coherence, than to apply conventional policy analysis to judge its applicability in the real world. Designs that apply patch after patch to fix defects are generally inferior (and inferior in the political competition for implementation) to schemes that have a clear core approach (see *What makes a good design* below).

We have been using classroom response systems ("clickers", e.g. www.iclicker.com) in other courses and use them here occasionally in project introduction discussions, and for all students to "vote" on three key evaluative questions about each presentation, for example rating the design on "Implementation potential: A. Very easy B. Moderate C. Very challenging". We report these results to the groups, but don't count them strongly in grading.

As the prior discussion indicates, the studio environment and group projects make students responsible for a lot of each others' learning. Class participation is 40% of the course grade, and is assessed through a confidential survey by the students, who grade each other on the criterion, "X's contribution to my learning in this course", mainly because we know no other way to observe this than asking the students. The form reports attendance data, which the students are invited to use as they wish, and includes two lists of names, with grades given to students the grader was in a group with weighted more heavily. We do this three times, the first two don't "count" but the results are published alphabetically within terciles so no-one is at the top or bottom. After the last round, the faculty grades the person at the bottom of the list and all other grades go up from there to A+, so it's in everyone's interest to raise the performance of people at the bottom and this devious incentive structure is emphasized throughout.

This scheme risks personal score-settling and even collaboration, but O'Hare has been doing it for many years and the central limit theorem, along with students' basic decency, seems to take care of those problems. No single student can trash another's grade, and as far as we can tell, the data (which we have no other way of collecting) seem reliable. Additional advantages of this grading scheme are that it devalues students' highly practiced skills at massaging the ego of the prof, and greatly suppresses air-hogging, and web-surfing or playing games on laptops during class. To help this process, we post without particular endorsement a memo developed by students over the years describing qualities that seem important to being a good citizen in a course like this, or a discussion course (SOM), nag them to bring and display double-sided name cards, and put thumbnail photos on the peer grading spreadsheet they use.

Core design process concepts

Good designs of all kinds have some enduring common qualities, and good designing has known tricks and heuristics. Frederick Brooks' reflections in (Brooks 2010) are a wonderful guide to the actual design process in different contexts, and if a course like the one we discuss here has a text, this might be it. Telling the students about them, however, seems to have little value, except perhaps for establishing a vocabulary, but catching them when their work has these different kinds of merit, and making a fuss about it, has real payoff. Here are some of the things to lie in wait for.

Adapting, borrowing, inventing

The last real innovation in architecture (as distinct from engineering), a field so reliant on innovation that it doesn't have or need copyright protection, was the dome, invented about

sixteen centuries ago. Since then, new and different buildings have been made by reassembling the same elements (door, wall, floor, column, window, etc.). We encourage students to look for something that worked in a different context, and in each others' designs, that they can adapt for their own projects. This practice, essential to art and design, is a little crosswise to university plagiarism conventions, though entirely consistent (for example) with the mashup music that students love and some make.

Model of the user

It is essential to good design that the designer have what we call a "model of the user", a conception of how and why people will act in the proposed environment and–especially in the policy context–how others will cause the policy to take effect. Obviously a good or accurate model is better than an erroneous or romantic one, but the most important thing is to articulate, and be conscious of, what that model is. What incentives are we depending on? What do users know when they meet the policy?

Students often begin to understand the model of the user on the first day after designing for car courtesy. However, it doesn't come naturally. All posters in that project are designed from the view of the receiver of the message. We see the outside of the car, or we see the hand signal they created. However, we rarely see students consider or indicate why drivers will use their design. Nor do we see much about implementation by the Department of Motor Vehicles. Students tend to begin the design process focused on a result that an unspecified, assumed, process will generate, and see the result as an object rather than someone using something: one of the principal pedagogical aims of a studio course is to put use in place of object, and process in place of outcome.

An analogy to the design task of attending to the user rather than the policy is the instinct of higher education faculty to discuss courses in terms of curriculum and content. It's a reach to move this discussion to pedagogy, and a longer reach to focus it on what students do instead of what the prof does. Another is the unhappy experience of "urban renewal" that implicitly focused on the new buildings proposed for a 'slum' instead of the experience of the displaced residents. More experience with user models would improve policy analysis generally, and design exercises are a good place to get it.

Use of failure

Design, like baseball, is in large part a series of failures. This is hard to reconcile with students' implicit idea that each assignment has a right answer, like an exam question, and they just have to find it: a program that satisfies all the explicit and implicit requirements of the assignment. In fact, all designs fail in one way or another, and most design process steps fail to advance the project in the obvious way. The only solution to the automobile courtesy project known to us that completely "solves the problem" is a box on top of the car like the news crawler on the New York Times building, that can scroll the words "thanks" or "sorry" for all to see, but it obviously fails a fitness and appropriateness test; no-one would have such a thing on his car.

We push students hard to see failures as successes in illuminating the problem and in building their repertoire of design elements. Our second large project (design a scheme to limit the carbon intensity of California vehicle fuel that appropriately accounts for enduring uncertainty about what a given fuel component's (especially biofuels') real carbon intensity is) was so difficult that no group really put the animal on the ground (we repeatedly warned them that they might find it impossible, and not to be discouraged). But it generated a group of designs whose partial successes and intrinsic failures supported a really good comparison of incremental approaches and Gordian-knot-slashing attacks.

For the citizen engagement project, some students built an initial scheme around regular email to all students at Berkeley with land use updates. However, they realized that multiple privacy policies make it effectively impossible to do this, and that if all students at Berkeley should get regular emails, land use debates in Berkeley are not the reason such spam should be privileged. Granted, the group of students could have designed a campaign to change the privacy policy, but decided that abandoning the email design would be a better process because they valued implementation and feasibility, and went back to the drawing board.

What makes a good design

In addition to the metacognition of design, which students develop through questioning others and designing themselves, we find that students also develop an understanding of more abstract elements of good design through the process of designing and discussion. After students discover these elements they seem to implement that knowledge to improve their next exercise (this implementation is neither tidy nor linear nor transparent).

Intrinsic user manual

Good designs present their own instruction manual. We expect to see how to enter a building quickly when we look at it from the street, and without reading a sign or map, and how to pay sales tax right at a cash register. The iPhone is famous for this quality: people can pick up this very complex piece of equipment and be guided through swipes, taps and the like by actually executing the next obvious action.

Much public policy is damaged by being opaque to the user: British roads occasionally display the warning sign "Offside ramps": visitors to the sceptered isle have no idea what to expect, or where, though a graphic would probably work perfectly. We push students to think about what background and experience the user needs to engage with their designs.

When asked, a question like, "how does [the applicant] know what to do, or why?" a design group becomes conscious that the design itself may not illuminate that information. As students begin to explain how their design works, they realize, importantly, that the more effort it takes from the designer to describe the function of their design, the less intrinsic a user will find the design's purpose or practice, and they realize they will not accompany their design into the hands of their user. In fact, they might not accompany their design into the hands of the producer, or process enforcer.

Policy Scope

Good designs embrace the right amount of their potential substrate, which is rarely all of it but always more than a tiny bit. The automobile courtesy example nicely puts this criterion on the table, as different schemes can operate on all cars immediately, or new cars as the fleet turns over; they can operate in daylight only or also at night; and the signal can reach to the front, sides, and/or behind the car; however, every extension of the desired policy scope entails a compromise or increasing marginal costs of the program.

Bird-stone ratio

Many elegant designs accomplish several different things by the same means, or a single action: obligatory consumer separation of solid waste into recycling streams not only economizes on municipal disposal costs but also helps the planet and teaches citizens an important way of thinking about resources. However, trying to do too many things can also lead to a confusing explosion of frightened birds going off in all directions and wasted stones, or a Swiss Army knife assemblage of unrelated elements, none really very good at its job, like a tax code with multiple special-purpose exemptions and credits. In an attempt to make their designs bulletproof against criticism, students often slap on features to accomplish unrelated objectives or to make them look like a bigger "bargain."

Like policy scope, the proper bird-stone ratio is different for different partis and different problems. The teaching objective is not to tell the students the optimum, or a rule, but to make them more likely to get it right by being more skilled in considering the criterion explicitly.

Manifest merit

The great designs (graduated income tax, differential calculus, the common law, *La Traviata,* Notre Dame de Paris, etc.) are obviously wonderful in an integrated, holistic way. We look at them and say, "wow!"even though they have defects, mistakes, and incomplete features, and even when we are not expert in their respective fields. Students understand this, but as their designs develop they tend to fall into a defect-patching mode that doesn't always help them proceed. Perhaps because so much of their education has been in defect-finding, take-off-points-for mistakes, excellence-beyond-A+-is-invisible mode, they often seek refuge in more precise problem definition, an expectation the faculty has to continually frustrate. They also tend to offer the history of their design process to justify their result: "First we tried A, but that didn't work, and then we tried B, so now you have to agree that C is the best possible design."

In the Citizen Engagement exercise, students were torn about how much information to include for users, and what the policy scope should be, and asked faculty to tell them, for example, whether they should show the history of land use at a project site. They wanted to know if the problem was that citizens were not informed, or if information was not available, or if the problem was citizen apathy. This dialogue of course leads to infinite regress, so it has to be turned back with "well, what do *you* think?" non-answers. We want them to research those elements and make a decision about who the user is, and choices about the functionality of different elements themselves, without a stricter problem definition to guide their decision

making. As the course proceeds, students develop more confidence that they can generate designs that explain themselves and show their own merits, and why trying to show that the B minor mass is a masterpiece because of all the mistakes Bach didn't make is wrongheaded (and not because mistakes are unimportant).

Process, honesty, complexity/coherence), meaning

The policy design literature is rich with recommendations for policy features, and informed critiques of existing designs that infer elements that seem to work well. A good example that still holds up is [Weimer 1992]. We do not pretend to survey this literature here or in a studio course, partly because the task is enormous; partly because, rich as it is, it is almost completely innocent of attention to design process (as distinct from design elements); and partly because that tradition needs to be a source of solutions to problems students know they have and not another 'problem' that feels like a didactic course about things other people have done. Learning to design has to be focused on the student's task at hand.

In an earlier work, O'Hare described four abstract qualities that good environments have–qualities that increase the value created when people interact with them (O'Hare 1997). These are

- Complexity/coherence
- Evidence of process
- Meaning
- Honesty

Briefly, complexity/coherence is a pair of complements (on the figure/ground complementarity principle): rewarding environments are complex (not the same as "complicated") and worth attention, but have an underlying coherence or organizing principle, and each quality makes the other possible. Good environments usually show a process or change in progress, whereby the future will be different from the present and better for it. They are about something bigger than themselves, like a graduated tax being about justice and not just revenue collection. And they correctly represent what's going on: a gasoline tax that charges for the externalities of driving is honest; subsidized gasoline misrepresents the real costs of consumer behavior and is not.

We share the paper with the students, but with uncertain effect as there is no final exam on which they can repeat back its insights. However, when we can point out that a design approach students have undertaken has one or another of these qualities, it seems to create learning they can use in the future.

Challenges

The design studio does not translate effortlessly from its origins to the policy school context. One challenge is finding an appropriate workspace: architecture and art students have permanent workspaces like drawing boards in a room together, where they spend most of their time. Few college classrooms are suitable for a course like this, or actually for any learning in which group work is important. Because colleges are inexcusably undercapitalized, even these are not usually available for students to use for the time the course demands (we assume about

12 hrs a week). We hope to schedule this course in the future for the same four units, but with four hours a week for discussion, desk crits, and presentations plus four more hours work time together, all in a tables-and-chairs classroom, and four hours of independent preparation/reading out of class.

In an architecture studio, everyone's work is out on a drawing board to look at and schmoose about, and students are constantly wandering around doing that (this is less true as actual drawing is increasingly done on a computer, but there are still paper sketches and models around and about). Policy design is usually embodied in text, and a page of text on a computer screen does not invite the same interaction as a picture on a large sheet of paper, or a model.

Design in its normal homes occupies most of (for example) an architecture student's waking hours. In engineering, the design curriculum component is at least a semester, often more. It is not likely that MPP or MPA programs will devote even a semester of a required core to design (though it might be justifiable), so apart from electives like ours, an important challenge for this content is to make it a useful part of existing core courses. A suggestion of what this might look like is the "Economic naturalist" exercise developed by Robert Frank, in which students actually use the core ideas of economics to explore something new and puzzling rather than to rehash set-piece problems and exercises [Frank 2008]. In the spirit of advocacy for this diffusion, we note:

(1) Design pedagogy is a classic example of active learning and the "flipped classroom" [Bergmann *et al* 2012], ideas in growing currency in teaching practice and advocated early on in (for example) [Schön 1990]. If these ideas have the value claimed for them, design exercises can be a mechanism by which they can diffuse into a conventional lecture/section program.
(2) Students love design projects. Teaching this way is much more fun, and no more demanding of faculty time, than lecturing and grading problem sets.
(3) Better-designed programs and policies create real value in the world; training analysts and managers to design will generate more of them.

and by way of caution,

(4) we have very little real evidence about how much learning, of what kind, alumni of this course actually use. That this is true of a large part of the policy curriculum is fairly cold comfort and indicates real value potential in developing research-based evaluation mechanisms for the whole enterprise.

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