“GETTING STARTED”-
TEACHING IN A COLLABORATIVE
MULTIDISCIPLINARY FRAMEWORK

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1 Introduction

I have led and taught collaborative, multidisciplinary, semester-long studios on large and complex landscape planning and design problems for more than 40 years at Harvard, and sometimes in collaboration with other universities. I also have organized and taught many one-to-five day workshops. I have written about the framework within which I organize most of my work (1990, 2003) and about teaching strategies. In this paper I want to focus on the most difficult stage, “getting started” on the change-designs which will be proposed as the main “product”. I consider this stage to be the most important of any academic or professional project because if the beginning is unsatisfactory, then the ending must also be.

The reasons for my teaching in a manner which requires students to work in teams, and frequently in large multidisciplinary teams, are many but normally center upon the scope and complexity of the problem around which the workshop or studio is focused and the need for many individual tasks to be coordinated. Sometimes teams have been as small as three persons, and sometimes they have involved a studio class of 12 to 18 persons acting as “a team of the whole”. I would generally characterize these experiences as being successful and positive ones, both from my perspective and those of my students (though I concede that these experiences are not without pain). I would like to share with you some of the issues which I raise and some of the techniques which I use to ensure a higher probability of success than failure.

An initial field trip is indispensible. It is always an intensively scheduled working period with both group and individual responsibilities. The tasks associated with becoming familiar with issues, geography, and people are of prime importance. There are presentations by knowledgeable persons, and these are frequently in conflict with each other. The entire group meets every evening and there is a high level of debriefing and other communications. Of critical importance during the field trip is the absence of any collective attempt to define the study. I make a major point of telling the students that we are on the field trip to observe and ask questions, not to decide anything. I do not want the students to informally negotiate the scope and responsibilities of the project.
2 But what then? How does one start?

I teach my students that there is no such thing as "THE Design Method" or "THE Planning Method" (and I consider a plan to be a design). Rather, there are many methods and they must be chosen and adapted to issues and questions raised by the problem at hand in the second iteration of the framework. Every landscape design regardless of size or scale has three groups of influences which should be considered: the history of the place and past proposals, the "facts" of the area which are not likely to be changed, and the "constants" which should be incorporated into any proposed alternative.

There are two fundamentally different ways of getting started on a design, and choosing wisely is especially important when making a large and complex landscape plan that has serious spatial and temporal consequences. These two paths are "anticipatory" and "exploratory" and they can be seen in Figure 3. Both approaches are vulnerable to the uncertainties about the fundamental assumptions and contingent choices that we recognize at the beginning of our design processes.

Fig. 1: Two paths into a design (and then several different ways through them)
The anticipatory approach embodies the idea that the designer is expected to make a heroic leap forward in time and implicitly make correct choices among the many assumptions and contingencies inherent in the situation. The designer then will represent and present a proposed future change—the plan. This anticipatory method then requires the use of deductive logic in order to figure out how to get from the desired future state back to the present. This is relatively easy to think about if the present circumstance is based upon a "clean slate" but if the present circumstance is large and complicated this approach frequently faces the problem of implementation. It is too often difficult or impossible to connect the future back to the present. And an early wrong decision can be fatal to the plan.

The alternative exploratory method requires the explicit development of a scenario, a sequence of the assumptions which will shape the plan. It requires the use of the inductive logic. Again, this approach is relatively easy if the problem is a simple one but if it is large and complex, and if each single assumption has several options to be considered, this combinatorial approach can also fail in that it cannot achieve a sufficient level of precision and detail. There are too many combinations to consider. There are too many risks of taking the wrong path. Therefore, the essential initial steps must be to “sensitivity-test” the combinatorial sets of the most important assumptions…and not worry too much about the details.

Most frequently, one skips back and forth between these extremes. But which way should we begin? Here the issues of “size and scale” and “risk” must be considered. Scale matters. In my view, the smaller project types such as a residential site plan present fewer real risks of being wrong than do the larger design projects and regional landscape plan studies which involve enormous cost, large numbers of people, many unknowns and a longer time horizon. The smaller projects are easier to change while the larger frequently require fundamental institutional change. The smaller projects end in working drawings and constructed physical change, while the larger regional projects rarely are directly built. Rather their aim is to influence the way society values and changes its landscapes, including aspects of water and land use. At the extremes these varied scales require different initial strategies. For the larger size and complexity of the problems given in my studios, exploratory methods are the more appropriate starting strategies. These exploratory methods using diagramming methods can result in one dominant design strategy or they can produce several made by smaller teams or they can produce individually differentiated designs.

Technically, the methods which I most frequently have the students use rely on the making of simple and clear diagrams to represent ideas, be they physical changes or policies. ALL ideas, whether invented by the students, proposed by local persons, derived from historic examples, etc. and included, without pre-judgment as to their value. These diagrams are used in several ways, often via variations on the anonymous Delphi assessment technique. A core concept is making a distinction between the generation and “ownership” of ideas, and their use. The diagrams are presented anonymously; the process of selecting, combining and interpreting diagrammed ideas into a design is available for any group or individual.
3 Bermuda

The diagramming methods and their organization derive from a studio which I taught in 1982. Bermuda had recently achieved independence from Great Britain. The first Prime Minister, John Swan, requested a study of the future of the garbage dump of that small island nation. There was a plan to build a new waste incinerator but it would take three years (and, in reality, many more) for that project to become operational. The garbage dump was surrounded by civic institutions, a large wetland, the well fields which supplied drinking water to most of Bermuda, and important play fields. It was in the midst of the residential area of the poorest people in the country. A promise had been made as part Mr. Swan’s election campaign to transform the dump area into a central park for Bermuda. I offered to teach a studio which would illustrate different assumptions regarding what kind of park and ancillary facilities might be developed for the site, and this offer was accepted and the studio was financed. Students volunteered for the studio knowing that it would be organized with some aspects of a design competition and that not all of their individual designs would be carried forward to the end.

![Fig. 2: The Bermuda dump study area](image)

The studio traveled to Bermuda and visited the study area (Figure 3). There were several presentations and several open meetings for interested persons during which records were kept of the issues which were raised, and ideas for program elements, physical designs and policies which were presented to the students. Each evening I met with the students and had
them list and categorize the issues which had been raised, and also to prepare simple diagrams of every idea and proposal which they had been offered or which they themselves had. These diagrams were all simple line drawings to a standard scale. They were anonymous and were intended to be shared, and all students knew this.

Upon returning to the University, and in the first working session of the studio, the students agreed on a final list of about 20 issues which had to be resolved in any design. These were of two kinds: the constants which had to be incorporated into every design, and the variables, for which there might be alternative diagrammatic solutions. Pairs of students were assigned by their choice to the variable issues and were asked to produce between two and five alternative strategies regarding each issue. There were approximately 80 diagrams each drawn with permanent black marker on thin clear plastic so that they could easily be selected, overlain, and looked at together as a set or, as the students called them, “a sandwich”.

Fig. 3: The array of the constants and the variables and their options

The next exercise was to rank order the issues and alternatives, and this was done using a modified Delphi technique. Figure 4 represents what was actually the laying out of the small diagrams on a very large table. The constants all are in the left most columns. The variables are listed along the top row, but they are in the rank order of their perceived importance, with the most important being to the left. The alternatives diagrams are below their heading and are also in rank order of likely success as the judged by the class using Delphi methods. Thus one can interpret the positions of the diagrams on the table in the following way. Every constant diagram must be included and in addition, the most likely successful design strategy would be to select the top row of issue alternatives starting from the left. If compromises were to be made, they could be made the two ways: first, by choosing to ignore the less important issues, or, by dropping to second or third best alternatives for any issue but preferably not the more important ones. This process was completed at the end of the third studio class.

In the next phase of the studio, each individual student was required to prepare an initial design by selecting an appropriate set of the diagrams. A lottery was held and the number one winning student had first choice among the variables diagrams. Each subsequent student in the lottery ranking was required to choose a different set from all previous
students. Thus, there were 14 substantially different initial diagrammatic designs and these were available after the fourth studio class, at the end of the second week.

A special issue of pedagogic ethics had to be discussed with the studio students in this phase. Even in the most organized or faculty led studio, there is an absolute right for a student to explore his or her own ideas, and in his or her own way. This is an issue which must be discussed openly and the students must understand that an objective of the faculty member is the teaching and testing of a method which is expected to be of interest and use to the student. The priority in this studio is not the encouragement of the students’ idiosyncratic creativity. I am well aware that some colleagues and some students do not agree with this position but it is the one which I hold. The ethics of being a teacher require this to be openly stated, openly discussed, and somehow managed within the social contract between student and teacher.

Each student then prepared a physical model of his or her initial design. At the end of the sixth week, these were presented in a standard scale using standard and mass produced materials, and in a representational style organized by a student subcommittee. Each model could be segmented and placed in a shipping carton.

**Fig. 4: Preliminary designs**

Fourteen designs were flown to Bermuda along with three students who presented these designs to the group of persons actually responsible for the redevelopment of the site. After careful consideration, the Bermudian committee decided that three of the designs should be moved forward to the next stage.

This was reported to all in a presentation and discussion by the students who went to Bermuda. The students whose designs were not chosen to go forward then had to join the team of one of the three designs which would be presented at the end of the semester. The teams were of approximately equal size and were organized on a volunteer basis, and the studio continued with three very different design strategies.
At the end of the semester, a presentation of these three designs was held at Harvard with Mr. Swan and other representatives of Bermuda present. The entire class was then invited to return to Bermuda to present the three final designs. Bermuda at that time had a population of approximately 90,000 persons and about 10,000 persons saw at least one of the several presentations made by the students. The committee and Mr. Swan then decided to place the choice of one of the three park concepts before the electorate in a special election. The intent was not to build one of the student designs but rather to identify the preferences of the general public for the strategies which were embedded in the design options. This election was held and it is interesting to note that the winning design C, figure 7, was the one which most closely conformed to the upper row and left hand section of the diagram layout with which the studio got started. A version of that student design was eventually built.
4  Tepotzotlan, Mexico

The following example, Tepotzotlan Mexico, is an application of the diagramming method to a problem at different scales and with different products, but using a digital adaptation of the basic approach. This was a graduate-level studio which I taught in 2004-5 at Harvard with Juan Carlos Vargas-Moreno, and in collaboration with a faculty/student team from the Universidad Autonoma Metropolitana (UAM) in Mexico city led by Professor Anibal Figueroa, and with the full cooperation of the municipal government.

Tepotzotlan is a municipality at the northern edge of what may be the largest city in the world. It is facing enormous development pressures, as it is on the main highway to the north of Mexico. It has, and is surrounded by, considerable amounts of 'social housing and distribution warehouses. There are increasing amounts of 'informal housing'. The untreated sewage of the entire Mexico City area flows via Tepotzotlan, some in canals and some in a broken pipe system under Tepotzotlan. Yet the municipality retains the character of a group of relatively small settlements, with some agriculture and large adjacent National Forest lands.

The main attraction of the town of Tepotzotlan is the church and monastery of St. Francis Xavier, founded in 1584. This extraordinary complex is now the national museum of colonial art, and a major Mexican tourist attraction. The sponsor, FUNDEA, is the leading
Mexican environmentally-oriented NGO. It has a large landholding in the municipality, and this area is partly developed and operated as an environmental-education park. Tepotzotlàn has been identified by the Mexican Ministry of Tourism as one of 10 national priority areas for tourism development.

Thus the several potential conflicts needing resolution: housing, transport, water, sewage treatment, tourism, conservation, and recreation, and all in a rapidly changing, environmentally degraded, politically complex and relatively poor economy. There were issues and "projects" ranging from metropolitan-regional to very detailed scales, and always the need to play a constructive part in helping the municipality to shape its future.

During the five day visit to Tepotzotlàn, Mexico; the students participating in the studio created a list of projects and policies as reactions to the daily meetings, discussion, visits and information that had been gathered. Each project was proposed by one or more students and presented in brainstorming sessions that were held at the end of each day. But they were not edited or rejected. By the end of the eight-day field visit, the students had identified around 200 projects.

The project proposals had a specific protocol in order to be considered and entered in the system. The technical process had been designed by Juan Carlos Vargas-Moreno. The projects were first entered in a “project list” composed in EXCEL spreadsheet and then diagrammed by hand on a large regional map of 3 by 6 meters size that was placed in the studio work space. The table-map was a large print of the most recent high-resolution orthophotography and several layers of transparent plastic sheet. While the orthophoto allowed the students to locate and describe the geography of each proposed project, the plastic sheets allowed the sketching of projects over the orthophoto in independent sheets. In the EXCEL spreadsheet, each project had a number, the name of student who proposed it, a classification that determined if the project was a spatially specific physical change or a policy. Furthermore each project had to be classified in one or more of eight color-coded categories: national or municipal government related, neighborhood related, transportation, industrial, ecological (including hydrology), heritage, utilities or wildlife restoration.

During the last day of the site visit, students were divided in groups corresponding to each category, and were asked to act as experts by selecting up to 20 of the most significant projects in each category. This limit certainly focused the students on the issues of strategy and priority. A new short-list of around eighty projects was selected for further development. These projects were then digitized as diagrams in a GIS employing ESRI ArcMap 9.0. Each project diagram was digitized as a separate layer in the color code of its assigned category and the full spectrum of attributes entered in the EXCEL spreadsheet. With this electronic data base of individual projects, and by simply selecting the number of wanted layers via the spreadsheet, the students created different clusters of projects as overlays in a 3-D visualization generated by ESRI’s ArcScene. The visualization featured the orthophotography draped over the digital elevation model and covered by the individual project layers in inverse order of presumed importance. Different clusters such as tourism or ecological-related projects were created as initial explorations. This allowed the students to visualize the cumulative effect of different projects and categories in the region of study. Later, the through class discussion, three scenarios were developed by combining different projects. The three scenarios were: tourism, ecological and economically–driven
alternatives. Each scenario was presented in a 3-D visualization and coded as a group of project numbers (e.g. projects: 2, 6, 26, 54, 55, 43). These visualizations were presented to the local collaborators and government representatives, and discussed for future refinement. This had been accomplished within the site visit.

Later, several more scenarios of more complex objectives were prepared and compared before the studio team decided to focus on one. This was developed further into an alternative municipal plan, and several projects developed at much more detailed scales. Note the sequence of project 55, the conservation of riparian “green corridors” located between the village-scale settlements of the municipality.

Fig. 7: Making diagrams

Fig. 8: The base map
Fig. 9: Project 55, green corridors

Fig. 10: Environmental scenario, note project 55
Cagliari is the capital city of Sardinia, a region of Italy. It has about 160,000 residents, and about 500,000 people live in the metropolitan region. Sardinia has a substantial tourism industry, with millions of visitors annually.
The international workshop "Alternative Futures for the Metropolitan Area of Cagliari, Sardinia, was organized by Prof. Emanuela Abis, Claudia Palmas and Stefano Pili, University of Cagliari, and Professor Christina von Haaren, University of Hannover, Germany, and Christian Albert and Daniela Kempa, Leibniz University, Germany. It was held in Cagliari during five days in March 2009. The participants were 20 architecture and engineering students from Cagliari and 12 landscape architecture students from Hannover. The teaching team for the part of the workshop in which students had to develop alternative proposals for the study area was led by me (Carl STEINITZ), with Juan Carlos Vargas Moreno and Christian Albert. All activities in the workshop were to be undertaken by mixed teams of Italian and German students (some of whom come from different countries) and that all publicly accessible work would be conducted in English, except for the final presentation which would be conducted in Italian because of the persons who were invited to review the work.

The workshop began with two intensive days devoted to a general orientation to the study area, its history, its current characteristics and future projections. The format for this orientation was a series of lectures, each taking approximately 20 minutes and followed by questions, and a well organized, half day, guided bus and walking trip throughout the study area.

Fig. 13: The Cagliari study area
Despite the fact that Cagliari is a well studied city with a modern system of planning, very few data which were likely to be needed by the workshop were actually available in digital form. This is not an uncommon circumstance and one must always adjust expectations to the available resources. We had access to good data on current land-use which we generalized into a simpler classification, a terrain model, several sector plans and in particular the applicable section of the Sardinian Regional Landscape Plan, a large number of photographs taken by the students on their site visit, and Google Earth.

There is a necessary distinction which must be made between a short workshop and a semester long studio and it relates to both the time available for the activity and the freedom of students to define what they are exploring. In a workshop many more decisions must be made by the organizing faculty whereas in the studio an important part of the education of the students relates to the definition of the problem itself and methods which should be applied. In the Cagliari workshop, and because of the constrained time schedule, the faculty decided on the scope of the problem, its methods and its expected products.

It was decided that there would be 10 teams devoted to evaluating processes which were deemed central to the future of the region; habitat, the visual landscape, the cultural and recreational landscape, residential development, tourism, transport, hydrology, and because of a special interest on the part of the German students, geothermal energy, solar and wind energy, and biomass energy. Each team was to produce two things. The first was a map in two colors where green represented highly valuable elements which sustain that process and which should be protected and wear red showed areas of problem or threat to that process and which should be improved. The second product was a set of diagrams which represented ideas for projects to change that process, either via the protection of valuable areas or the improvement of problem areas. These were to be drawn on thin plastic sheets, color-coded with a different color applicable to each of the 10 evaluation teams. They were to be rank ordered in terms of their importance and efficacy edge as judged by the team.

Fig. 14: Potential project and policy diagrams for habitat, visual and transport

I cannot emphasize enough the importance of standardizing color codes graphic scales and styles of representation. In a workshop but also in a semester long studio it is very important that students and visitors rapidly comprehend each other's work and a shared
graphic language is essential to assure this task. The reader will also note the crudeness of the initial diagrams. This is a normal outgrowth of speed in production. It has little to do with the thinking behind the diagram and everything to do with time and the technologies of data management and representation.

Each of the teams made a concise presentation of how it understood its assigned process, how it defined the priority areas of conservation and change, and the initial rank ordered set of potential projects. The audience was the entire workshop group because each participant knew that the teams would be reorganized for other stages of the workshop and that they would be required to integrate all of the process assessments and evaluations. In addition all of the local experts who had made preliminary lectures to the students were invited, and they met with the student teams to present their critiques, proposed revisions, and additional potential projects. A second and brief presentation was made of all changes and additional projects and I cannot overemphasize the importance of having instituted a standardized representation process. This enabled students to understand what was happening without extensive discussion.

At the end of this stage in the workshop, all of the proposed projects were uniquely numbered by the team and the rank ordering number and systematically placed on a long table organized. This long table was set up to enable many additional potential projects to be added in the next stage of the workshop.
The faculty team decided to organize the students into six larger teams each representing a different "stakeholder group" with interests in the future of the Cagliari metropolitan area. These "change teams" were 1-conservationists, 2-residential commercial and industrial developers, 3-regional planners emphasizing the Sardinian Regional Landscape Plan, 4-a foundation for the support of renewable energy, 5-the tourism development board, and 6-the several local governments in the area each seeking reelection.

Each change team had to come to an internal agreement as to the policy objectives of its stakeholder client, it had to make a proposal for changes which would support those objectives over the next 20 years it had to accommodate a 4% growth in population and its concomitant land-use changes and it had to be as self-sufficient in energy as possible. The resulting design would be based on a selection of the projects presented by the process evaluation teams and any variations or additional projects proposed by the change team. The new or varied projects were to be drawn in the same graphic format as the prior sets: they were made known to all other students via an announcement and then numbered and placed on the long table so that they were available for use by anyone else.

Each change team then had the difficult task of selecting no more than about 10 of the available projects which numbered approximately 150. In some cases change teams grouped projects related to a particular process, read through them and thus limited the number of plastic drawn sheets which they had to overlay and combine. The process of overlaying and combining the drawings was rapid and easy, using an overhead projector as a light table and a digital camera for recording. The projects selected by each change team had to be rank ordered so that the most important were most clearly and graphically represented.

Each team then made a concise presentation to the rest of the class. The students knew that they would be reorganized into their original process evaluation teams for the purpose of comparatively assessing the impacts of each of the proposed designs.
The impact assessments consisted of each process evaluation team evaluating each of the six stakeholder change proposals in a simple six level scale but one which required thoughtful internal discussion and judgment: +3 represented a much better circumstance for that process, +1 meant a better situation, 0 meant no change, -1 meant a worse situation, -3 meant that it was very much worse, and -5 meant that the process was “lost”. An example of -5 would be if the resident flamingo population of Cagliari was no longer present. The evaluations were then placed on a chart where a green circle meant the team was doing relatively best and a red circle meant the team was doing relatively worst among the six alternatives.

This impact assessment was not subject to public discussion but rather private consultation between the change teams and the impact assessment teams with the intent that the designs would be improved in a second stage.

An important technical byproduct of this first round of design and comparative assessment was that some projects were clearly more significant either because they were central to the change proposals of one stakeholder team or they were recovering in the designs of several teams. A small group of students, one representing each process evaluation team, then digitally redrew these projects in a manner similar to that of developed for Tepotzotlan studio.
A second design cycle was then begun with the teams again reformed into their stakeholder change teams. Each team could rapidly drop or add projects. Many of them made variations and new projects which again were brought to the attention of the entire group, numbered, and placed on the long table for common use.

A second presentation was held of the designs, but this time it was entirely silent because of everyone's having understood the graphic conventions.

A second round of comparative impact assessments was then made. At this time all work was assumed to be finished except for a very few last-minute changes that could be made within the briefest of time. Each change team then delegated one person to make a digital representation of each project that would be combined into their alternative future for Cagliari and to make a set of digital graphics for a final presentation.

![Fig. 17: The stages of the six designs](image)

The graphic product for the final public was specified by the faculty. It would consist of

1. 3 to 5 images presenting the team’s principal policy objectives in order of importance,
2. an image of the accumulated projects for each process with the processes presented in rank order,
3. the existing conditions and
4. the proposed changes,
5. the future alternative for Cagliari (the existing and changed conditions) and
6. a summary graphic for comparative purposes that showed the process-projects and the
proposed alternative future.

Each team was then asked to organize a presentation in no more than 10 minutes which
would be given to the entire workshop group, all of the local experts, who had participated,
and many additional faculty and students from the University of Cagliari. This entire
presentation would be conducted in Italian. The following are the graphics from two of
these presentations.

Each presentation was followed by a period of questions and answers and sometimes
argument, and the entire set of presentations was also followed by discussion. Each of the
local experts was invited to judge which of the six alternatives best met his or her
expectations for the future of the Cagliari metropolitan area. In some cases people chose to
reflect their institutional stakeholder interests and some chose a broader personal
perspective.

Juan Carlos Vargas Moreno then led a discussion related to the question of whether one
should choose among the six alternatives, thus seeing the exercise as a zero sum game, or
whether it was possible to be selective from among the alternatives and generate a new plan
which compromised the interests of the stakeholder groups. Christian Albert had made a
frequency assessment of the number of times each of the projects had been selected for
integration into the change proposals and we did a very rapid exercise in real time. We
selected the most frequently used projects from those proposals which the local experts had
praised the most and overlaid their hand-drawn plastic diagrams the overhead projector.
Juan Carlos then created and displayed a composite digital image from the selected project
graphics. In a following discussion it was generally agreed that this was a very good
proposal.

This was the end of the working sessions of the workshop. It was followed by a reception
and a very fine party/dinner for all participants, and especially for what I believe to be a
very satisfied and tired group of students.

7 Discussion and Summary

I have illustrated several variations of the application of the framework to a workshop or
studio's beginning phase which relies on a mix of diagramming and Delphi methods and of
judgment. I have several times led similar workshops as part of the beginning of a semester
long studio, and also as a beginning phase of a large research program. In all cases, the
participants were made fully aware that workshop was intended as an exploration with the
objective of identifying the issues and needs for a more thorough use of the framework over
a longer period of time, with better data and with application to projects at different scales
of design.

I cannot claim that this approach and its several teaching methods will always work
efficiently and well. I fully acknowledge that they are potentially open to diagrammatic
exaggeration and errors of judgment, and that they are dependent upon the participants having sufficient comfort in working together and in making rapid diagrams and judgments. At worst, they can raise questions for further research, data development and alternative design strategies. However, in my experience and at best, they provide clear, rapid and robust ways of “getting started”.

In making assignments people should recognize that there are normally two reasons for undertaking a task (other than project needs). The first is that you can do something, enjoy it, and want to do more. The second reason is that you can’t do something and want to learn how to do it. Even though project efficiency and effectiveness may favor the former reason, the latter is a better rationale for an educational institution and it is usually highly respected by student self-managers. Learning from other students in small group tasks is clearly an advantage which students find in this organizational style.

A crucial social paradigm is that your word is your bond. If you say you are going to do something you’d better do it, and if you realize that you can’t you have to let others know as soon as possible so that they can help. And people should help. The project belongs to the students as a group. Credit is shared by the team in alphabetical order. There may be internal tasks in which certain pieces are broken down under individual authorship. Indeed it is expected that every project have some component in which each student can say, “I did this.” But these situations are known in advance because of the study design. Everything else is “we”.

The space which the studio occupies is organized for group activity, with one very large central table for meetings, and smaller individual work spaces. All classes start at the table, and all important discussions and presentations, including reviews of individual work, take place there and are public.

It is obvious that one of the individual costs of this highly organized team-based studio structure is that each student cannot and does not do all tasks even though each student participates in each phase of the study. Because of this students are encouraged to make presentations to the class meetings of things which they are doing and which may be of interest to others. Final presentations have always included the need for a relatively nervous group of students to clearly explain their work to an interested and critical audience of peers, local experts and citizens. This is not an easy task when expectations are high (and the expectations are very high).

A considerable amount of innovative and high quality work gets performed during this type of workshop or studio, despite the fact that students are placed in an unfamiliar situation for which their previous education has not fully prepared them. The major reason for this is the self motivation and the peer pressure associated with the fact that it is “their problem”, with both the credit and the blame to be part of their own sense of accomplishment and self confidence.

And what about the faculty? The faculty roles are varied and challenging. Clearly there is the role of producer – of organizing the situation in which the studio project can occur. It takes a long time. It carries a certain personal interest and commitment and it is not always fully successful. There is a considerable consultant-in-chief role in which advice is sought
both teams and individual students. It must be either given, or students directed to other
expert consultants, frequently other faculty members. Without doubt, there is a substantial
“hidden hand” role, in which constant observation is necessary to ensure against disaster.
Students are often overly ambitious. They frequently underestimate the impacts of
problems which are unforeseen but which experience knows may occur. There are also
important mediation roles, frequently around social questions and issues of organization.
There is the real responsibility of ensuring that the individual educational needs of
individual students are met within the scope of the team organization. There is the faculty
role as “critic”, but only after the students have reviewed and discussed the work in
progress. Finally there is the legal responsibility of oversight, ensuring that the project is
not a disaster and that it is completed within the constraints of time and money available.
Yet the most difficult faculty role is that of purposefully abstaining from controlling the
many difficult managerial and design decisions and letting the group learn by experience.
After all, it is these experiences which are among the critical educational lessons to be
 gained by the students.

Finally, a caveat-A framework is not a theory. It can be a useful aid to the organization of a
complex design problem in a workshop, studio or in an applied research program. It is only
as useful as it is seen as useful by the user(s). This framework has been adapted and used
many times and in many contexts, and it seems to be useful and robust.

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