

MY (FICTITIOUS) COMMENCEMENT ADDRESS

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Preface to the Address. This commencement address will never be delivered. It is written at the time of the year when speakers have been selected for commencement addresses at universities all over the United States of America. While I have no statistics on the backgrounds of these speakers, it is my guess that most of them will come either from the ranks of corporate or political leaders. While it is possible that a few of them will come from the ranks of academic leaders, I suppose if there are a few they will come from the administrative side. If there are any who are chosen for notable scholarship, it will almost certainly be an extreme novelty.

Again, while I have no data on the matter, it is my guess that these conditions are different from those occurring many decades earlier. I suspect that these conditions are prevalent now mainly because the top officials in higher education use these opportunities to curry favor in order to gain support, mainly financial, for their institutions. No doubt this is very valuable in the short run, and the short run tends to flow into the long run.

But as we have seen recently, those who give commencement addresses also seem to be those who have led the country and the world into a mammoth economic crisis and a crisis of confidence. We have seen consistent use of the term “rhetoric” as a substitute for the word “lie”, since leaders use outright lies to get elected, and then fail to deliver on what was promised. The reasons for such lies could be the subject of a commencement address. In fact, they could be the subject of my commencement address.

Graduates Looking Ahead

I was very surprised to be asked to deliver a commencement address to a group of graduates. As far as I know, it is not proper to ask a person to deliver a commencement address just because they have shown a remarkable record of research, developing new scientific results. Especially, it is scarcely proper when some of those results strike directly

at the core of the way higher education is carried out. Especially, it is scarcely proper when I propose to tell you today that I hope that your children will get a much better college education than you have received. Surely you did not want to hear this message today. And yet I would not be here today speaking to you if I did not have a good reason to say this to you—a reason that I hope you will find credible before I have said goodbye to you today.

The Architect's Rule

There is a simple rule given by architects called “form follows function”. Suppose you took this rule as a guideline for use in your future career. I will come back to this idea later. For the moment I am going to suppose that the university took this rule for its own operations and ask the question whether it would be different than it is. By exploring this question, I hope to shed life on your own future career. A great university should serve as a model for its students.

Let's begin with some situations in the university where form seems to follow function. In these situations, I will suggest that it does so not in just one way, but rather through **four components of form**. These four components appear in various combinations as they are integrated to assure that form follows function. The components are:

- ▶ The human being
- ▶ The surrounding real estate
- ▶ The language of action
- ▶ The technology of action

We will see how these four components of form are functionally integrated, first in music.

Music. At first, the dedicated physical plant consists of individual rooms where the performer and the teacher can meet for oboe or piano practice, learning to play the instrument well, correcting flaws, and developing a repertoire.

As the individual develops skills, a new stage becomes feasible. A new component of the physical plant comes into view, where an orchestra engages in practice playing as an ensemble under the direction of a conductor. No longer is the emphasis mainly on the individual, but rather it is on the performance of the group. The individual becomes important only when the individual somehow is not performing in a manner that is best suited to the requirements of the symphony or the tone poem.

Then as the ensemble becomes more sophisticated, it moves to the concert hall where it performs before the public, which now pays to hear it perform.

The form of the university's real estate follows the function in lock step in music.

When the musician begins to play the music is not expressed in the usual language of English. We do not see Chopin's piano music written as follows, e.g.:

"Play a 1/8 note in C-Sharp minor in the treble clef with the right hand, while playing a diminished seventh chord in the..."

You get the idea, I am sure.

The form of the language follows the function in lock step in music.

The language is adapted to the requirement that the human being's physiology should be capable of reading and reacting to it at the rate required by the composer.

The music is printed on a certain size of paper and placed on a music stand at a certain distance from the musician.

The instruments are designed so that the wind, the reeds, the strings, and the various metals that make up the instruments work in unison with the physiology of the musician.

The form of the technology follows the function in lock step with the music.

In sum, higher education is able to operate a successful music program because it enable

four components of form (human, real estate, language, and technology) to follow the functions required by the composers of the music.

Football. Precisely the same description can be applied to sports. For football, e.g., the backfield players get individual coaching in the moves that are necessary for gaining ground. Then when they scrimmage with others they are given further training in blocking and other activities associated with team activity. This time they are working on a practice field, where the real estate is chosen to enable group activity. Finally, when game time comes around, there is a stadium to accommodate two teams, with locker rooms, bleachers, concession stands, box seats, and space for the press. The technology of the sport includes the special equipment worn by the players, the balls, the line markers, the timing, and the filming for checking referee calls. A special language is used to define the plays. It is written on the quarterbacks arm wrap, and is used to call each play.

The forms of the people, real estate, the form of the language and the form of the technology, all follow the functions required of the game.

Shaping the Individual in Higher Education. Higher education is formally governed by a mission that focuses upon the individual. How fine to shape an individual being to acquire the talent to become an effective critic—one who will not accept received doctrine blindly, but instead will question it and uncover its every flaw. It is this mission re-endorsed at intervals, that enjoys the title “critical thinking”, which extends skyward on wings of song.

Ignoring the Group. It is not surprising that huge bodies of people lack the talent to function together in groups, where there is some requirement to produce collectively-generated results. This function is not one whose necessary form is recognized in higher education.

Asymmetry of learning is a phrase that applies to the distinction between analysis and synthesis. When a substantial amount of higher education focuses upon analysis, developing critical skills; with relatively little or none applied to synthesis or design talents;

it is not surprising that the ability to demonstrate insight that applies to understanding systems and to design and redesign systems would be lacking.

Yet it is in our large institutions, our government, the Federal Reserve, the giant New York Banks, the large corporation, where the ability of people to design systems is critical. Are we to assume that if individuals are good critics they are automatically good system designers? There is little or no evidence to support this assumption, and plenty of evidence against it.

The Function: Resolving Complexity with Good System Design. Suppose that the function required of higher education is to enable people to learn how to resolve complexity with good system design. What is the form required?

First of all, it is virtually obvious that higher education, with few exceptions, ignores this question. But if we can take music and football as examples, we would expect to find the following **four required components of form** in higher education:

- Individuals capable of working effectively in groups (and not falling victim to known behavioral pathologies discovered in the second half of the 20th century)
- Dedicated real estate for resolving complexity with good system design
- A language in use that is appropriate to the purpose
- A technology in use that is appropriate to the purpose

I am sorry to say that you cannot find this today in virtually all institutions of higher education. When I say virtually all, I say this because I believe that out of the thousands of such institutions in the USA, and tens of thousands in the world, there are probably ten where you can actually find these four elements of form.

The Internet. The Internet is an excellent place for learning. An example of how one organization has carried out an activity to resolve complexity in a very large organization governed by the concept “form follows function”, applying the four required elements of form, can be found by going to this URL:

Is there some reason to turn to the Internet in discussing the possible application of “form follows function” in higher education? Yes. To discuss this prospect, it is necessary for credibility to be as specific concerning the four required components of form as possible. As will be seen, this requires recourse to the Internet. **Students, start your PCs.**

Dedicated Real Estate. First an example of dedicated real estate will be observed to illustrate the working environment in which activity is being carried out to resolve complexity. For this purpose, the following URL's are consulted:

<http://mars.gmu.edu/dspace/handle/1920/xxxx> where xxxx can be any of the following digit combinations: 3185, 3187, 3189, 3190, 3191, 3192, 3239, 3387. Please note that the last one of these contains six photographs.

Specialized Language. Sometimes one will hear the colloquial expression “connecting the dots” to mean roughly “learning how the different aspects of a situation are interrelated”. If you observed carefully what was seen on some of the walls in the photographs listed under the heading “Dedicated Real Estate”, you may recall some graphics with arrows connecting boxes. The interconnected structure shown there is called a “problematique”. It is a product of the group work. It shows how problems aggravate other problems. You might want to review some of those photographs again, specifically those that show problematiques, which are:

3189, 3190, 3191, 3192, and half of the photographs in 3387.

In addition to the term just mentioned, other specialized language is used to reflect the impact of complexity, but that discussion can wait for another time, since it is thoroughly described in published literature.

The Human Being. In several of the photographs, you have seen facilitative staff managing the process that is used with the seated participants. The distinction between staff and participants reflects the highly specialized individual education that is required to develop staff who know how to operate the process that is called The Work Program of

Complexity (WPOC). This process, in an earlier time called Interactive Management (IM), was used in all of the work portrayed in all of the photographs that you saw, and in many other projects.

The participants, on the other hand, were not required to know anything about the processes, although they could learn about them before taking part if they desired to spend time apart from the expensive group work time. The participants are chosen for knowledge about the issue being considered in the group work.

The Dialogic Technology. The technology that is used in the WPOC is highly specialized, and represents the integration of two primary rivers of scientific investigation. One of these scientific flows originated around 350 B. C. with Aristotle, and is referred to as “formal logic”. It is concentrated in a software program in PC’s, which may be called “dialogic” or by a longer name: “Interpretive Structural Modeling” or “ISM”. The other scientific flow was developed largely empirically in psychology in the last half of the 20th century. Mainly it had to do with human cognition and the impact of that on human behavior, which may be referred to as behavioral pathologies leading to fallibility in working with issues. The technology is a product of systems science. It integrates the formal logic with group processes in such a way that it encourages strongly human creativity, while bypassing conditions that are favorable to fallibility.

The products of group work results from a dialog among members of the group that is sequenced by the computer which also exercises quality control on the product. Playing a strong, but secondary role to the computer is the group facilitator, whose role is large limited to sustaining the group interaction should any difficulties arise, and preventing any staff difficulty in carrying out the WPOC. The computer is responsible for exercising the formal logic which assures that the problematique represents a consistent logic. Hundreds of applications have provided outstanding evidence that the process leads to excellent insight into situations where previously only fragmented concepts could be found. In other words, the dialogic converts fragments of information into highly-connected and a strongly interrelated structure that is heavily insight-generating.

This work is represented as the Discovery Phase of the WPOC, and is further augmented by an interpretation session carried out by the staff, who have become expert in the

specialized language of systems science. It is their task to translate the products into the colloquial language of the participants without involving any of the systems science language that might obscure the interpretation for participants.

Examples of Problematiques. For those who wish to see past results from specific situations, you are directed again to the Internet, where you can see problematques from many situations at this URL:

<http://mars.gmu.edu/dspace/handle/1920/3391>

Beyond the Problematiques: Resolving the Situation

What comes after the problematique? For those who have learned of the scientific method, understand then that the problematique represents the necessary hypothesis for proceeding to attempt to resolve the problematic situation.

The same processes used to arrive at the problematique may now be applied to resolve the situation. Now instead of working with problems, the group works with options, being guided by what was learned in working with problems, and the knowledge of how problems interact. While Part 1 of the WPOC was the Discovery Phase, Part 2 is the Resolution Phase. There is very little new to be learned in the Resolution Phase, as the same four components are applied again, as they were applied in the Discovery Phase.

Higher education will now require only to preserve for staff and participant real-time use what was learned (which will require more real estate and more wall space) so that it can be taken as a resource in carrying out the Resolution Phase. But since there now exists in society only a very few places where staff are available as a resource, higher education may wish to provide the resource to serve the need for those outside organizations who will need such a resource for an unknown period of time. But some period of time will be required before the institution of higher education will have met the conditions required to enable form to follow function in working with complexity in academia!!