What You Think Is What You Get: Metaphors for the University, e.g. the land grant university as a feedlot

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What You Think

Is

What You Get:

Metaphors for the University
e.g. the land grant university as a feedlot

by

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After Dinner Address,
Reasoning and Higher Education Conference
During Dinner Activities

All of us have mental images, or models, we use to help us understand our experiences, predict future events, and decide what to do next. Most of us have been trained in an academic discipline that has provided us with a whole range of models and their associated vocabulary. Sometimes it is helpful to take those professional images and words into an area of human behavior for which they not have been intended and explore what facets of that behavior they help us see in new ways.

Let me give you a specific example. The postulates of Niels Bohr in the early part of the 19th century led to a new understanding of the hydrogen atom. The Bohr model of the atom subsequently turned out to be misleading but it brought the picture of energy level diagrams into physics. Now every modern physics book is dotted with many such diagrams. While the energy level diagram was never intended as a model for the learning process, it might be enlightening to use it for that (See Figure 1). Entering students are in low energy states and leaving students in high energy states. Please take a few minutes now to think of similar models from your experiences, apply them in a new way to look at three aspects of education:

1. the individual teaching/learning process
2. classroom instruction
3. the institution

Please write on your own page (See Appendix A) first before you engage in discussions with the others at your table so each person can make an independent contribution to our later discussion.

(About 15 minutes later)

Now please read your page to other people at your table and select one that you would like to share with everyone else. Explore some of its implications for explaining and suggesting improvements. (distribute one overhead to each table)
Introduction

A well-known statement in the consumer marketplace is "What You See Is What You Get." We all know it as a statement designed to conceal rather than reveal.

We all know that statement as warning us to be on the lookout for minute defects. We all know that statement as a way of declaring a limitation to liability on the part of the seller. In fact, sometimes we say it to our friends or spouses, as a way of emphasizing the limits to what we are able to do, "What you see is what you got."

In all of these cases it is a statement of the seller, the giver, the source of what is being exchanged. But what the buyer, or receiver, actually gets is shaped more by what the receiver thinks than by what is seen. What we get out of an experience is more largely determined by what we thought rather than by what we got.

Let us take some time now to share the models we developed at each table. (A variety of metaphors were shared)

I had an advantage over you because I have had several weeks to think about this activity and I had an artist, Mary Beardslee, help me with my illustrations.

As I thought about modern physics and its successful explanations of physical phenomena I thought of three images I could use to help explain many educational practices.
The Energy Level Diagram (See Figure 1)

According to this model electrons in an atom are in low energy states. Then an external source of incident energy excites them to a higher state. By analogy the low energy states are the incoming students. The students must be in a receptive state. The source of the excitement must match the allowed transitions. Monochromatic light, a single instructional approach, might work for specific problems. White light (multi-media, multi-strategy) is less efficient with more lost energy but all students are excited a little bit, perhaps. Notice the source of the improvement is external to the student. It comes from the brilliance of the professor.

***To what degree is our understanding of the teaching/learning process described by an energy level diagram model?
The energy level diagram quite naturally leads us to think of scattering experiments. Rutherford's famous bombardment of thin gold foils by alpha particles opened the nuclear era. Today atomic and nuclear physicists around the world use collisions in scattering chambers as a way for studying physical interactions, so why not educational interactions as well.

The Classroom As A Scattering Chamber (See Figure 2)

One important aspect of physics scattering experiments is that the experimenter can never see the scattering processes actually occur. This is also true of most university classrooms. No outside observer ever comes in to study the classroom teaching. What goes on in the chamber (or classroom) is deduced from knowing the initial and final states of the incident and exciting particles, giving rise to the pre-test and post-test educational practice, no doubt. A key measurement in scattering experiments is the detection of the exiting beam (or post-test only). More careful experiments can be done if the state (such as the polarization up-down of protons) of the incident particles can be controlled. This is similar to the situation of physics majors taking an advanced physics course. The broad, diverse beam of beginning students frequently results in unusual interactions with the professor and repeatable results are often difficult to obtain.

To what degree are our classrooms described by a scattering chamber model?
To treat a university or department as a collection of scattering chambers seems to neglect the existence of collective phenomena. Again modern physics has spent much effort at studying collective phenomena especially solid state physics.

A more interesting idea is perhaps:

**The University As A Metallic Crystal (See Figure 3)**

In this model the individual departments have a specific location in the space of the university. They are connected to one another in various ways, shown as springs in this figure. Hence a major perturbation in the physics department can cause some changes in other departments. In addition to the springs the free election cloud (background sea) of the students forms a collective cement to hold the crystal together. Vacancies can arise and people can move in and out of the administrative structure with little impact on the rest of the university.

***To what degree are our universities described by the metallic crystal model?***

This is one way to do educational analysis. Take a disciplinary model and try it outside of its intended area of use. What facets of education does it illuminate in a new way? What does it suggest for improving education?
Another way to analyze higher education is to look at its cultural roots and see what the present cultural institutions can tell us about higher education.

I am a professor at a major land grant university. The land grant universities of the USA grew up out of the abundant farm land of America. They were born and grew to adolescence during the era of the homestead and the farm farm (See Figure 4). The early years of many land grant universities were like a collection of family content farms, the physics farm, the math farm, etc., all cooperating with one another in producing products for the common educational market for the graduates.

Today the family farm is rapidly disappearing and in its place, for the production of beef, and what product could more exactly represent a culture that got hooked on the question "Where’s the beef?", is the cattle feedlot. For those of you who dwell in urban settings, let me describe a feedlot for you. In my youth beef cattle were allowed to wander in a pasture and were fed grain twice a day. No more! In a feedlot operation you bring many cattle together in a relatively small space. The operator provides all the feed and water, hauls out the waste products, and controls the waste products run-off. The cattle never see a grassy pasture. What aspects of a university may be illuminated by comparing it to a feedlot? Let’s see.
Selecting the Stock (See Figure 5)

A calf can be born in a pasture. They are not born in a feedlot. Calves are selected for the feedlot on the basis of promise of achievement. Calves are graded and only the prime and choices are admitted to the lot. Only the ones of promising potential are given the feedlot treatment. Similarly you are not born in a university. You are selected. You are graded, your SAT, your ACT, your high school GPA are all examined and then you are admitted to the university. Only those of promising potential are given the university treatment.

Preparing The Food (See Figure 6)

Once the calves are in the feedlot they are completely at the mercy of the operator. The food and water they get is prepared by the operator. It has been found that natural grains are not the best food for calves, so the natural grains are processed together with vitamins and protein additives and top grade feed is prepared.
Once students are in a university they are completely at the mercy of the professors. It has been found that raw experiences are not the best diet for students so the original works are transformed by the understanding of the professor and presented to the students via the professor's lecture notes or the textbook.

**Delivering the Food (See Figure 7)**

In the feedlot the calves do not need to forage for themselves, the feed is delivered for them in feed troughs at appropriate times. Of course, they all eat at the same time. Batch processing of cattle is more efficient. The operator feels good about the way the cattle are cared for.

Once raw experience has been refined for student consumption it has been found that it is much more efficient to serve it to the students at one time, batch processing. It gives the professor a key public function as the source of knowledge and wisdom, a central role in the educational process. The students follow the professor's schedule, they study when and what the professor requires.
Managing Throughput (See Figure 8)

Of course, an efficient process like a feedlot causes an excess build-up of waste materials. It happens in such a small space that natural processes are not adequate to recycle them. So the operator has to take special efforts to handle this output. Modern mechanization can greatly help with this process.

Similarly because of the great amount of material a professor must cover, a great amount of student output is required. Usually a close repetition of what the student has been told is highly regarded and individual special projects are not encouraged. Again modern mechanization can help the professor. Multiple choice exams with mark sense answer pages or computer based exams can help handle the student output.
The Finished Product (See Figure 9)

Fortunately the feedlot does not last forever. The operator has a quantitative way of determining when the feedlot process is over. The calf is placed on a scale, when the scale points to ready, the process is over.

Likewise university life is finally over for the student. In a very equivalent fashion a university in a quantitative way knows when its students are done. When they have purchased and completed the correct number of credit hours they are finished.

Off To Market (See Figure 10)

And at the end of the feedlot phase there is the event that sends the cattle out into the real consumer society. It is the day the cattle are loaded, single file into the truck to go to market. So, too, the university has its rite of passage event where the students, in single file, are sent out into the real world, to commence their real life, perhaps to be consumed by it.
Isn't it amazing how similar are a land grant university and a feedlot? A sobering thought to contemplate...

This then is a challenge to us, each of us:

To what degree is my university described by a feedlot model?
To what degree is my college described by a feedlot model?
To what degree is my classroom described by a feedlot model?

Of course, beneath the feedlot model lies a classical view of the teaching and learning process which sees knowledge as a commodity. It is the empty vessel image of the student. (See Figure 11).

As long as our institutions are dominated by this model of learning, operate on a consumer model of education, and seek to have the market economy also shape educational institutions, then we will continue to have feedlot educational institutions. Many aspects of our present practices fit this model, e.g. the student credit hour measure of department productivity, on and on goes the list.

BUT

This conference has a dream.

It holds before all of us a different model of the teaching/learning process
It suggests a different kind of classroom learning activity.
It leads to a different image of our educational institutions.
The model that informs this conference is learning as constructing meaning. (See Figure 12).

In the words of Piaget, in this model, "to understand is to invent." This model emphasizes the transformation, not the memorization, of information. This model is based upon a dynamic equilibration or self-regulation, process of constructing new understandings. The real world experience of a lump of clay fosters the mental creative construction of a vessel of insight. This model emphasizes the features of the creative process, first exploring freely an experience or experiment, postulating, or forming, a mental model to understand the event, testing this model against the experience, and making revisions as required in a dynamic feedback loop.
The constructivists model of learning that forms the basis of this conference suggest the importance of social interaction and of direct, concrete experience of real events, the raw materials of life. (See Figure 13). In this type of classroom the students are making a variety of different meanings from the same experience while the professor is learning new ways students understand a common event, or object.

This is a different role for the professor. The professor is an organizer of activities, a co-inventor of concepts, and a director for the expansion of ideas. The professor is a fellow learner with the students. The students may be constructing understandings of apples while the professor is constructing an understanding of how students understand apples.
This model leads directly to a different kind of educational institution. (See Figure 14).

It models a university as a Japanese garden – where people and nature are in harmony with each other, where professor and students together are building a new understanding of their world.

That is the challenge of this conference to each of us - to transform our educational institution from a feedlot into a Japanese garden.

Figure 14

References For Related Reading

Academic Culture and Faculty Development by M. Freedman, et. al., Montaigne Press, Inc., 1979

Appendix A - Handout for Table Work During Dinner

WHAT YOU THINK IS WHAT YOU GET

Select a paradigm, or common experience, or model, or metaphor from your professional expertise, or daily activities, and apply it to one of the following aspects of higher education. You may wish to select a different model for each aspect. Explain how your model is like the real thing, what features it emphasizes, etc.

A model for the teaching/learning process:

A model for classroom instruction:

A model for an educational institution: