Write Your Dissertation First and Other Essays on a Graduate Education

M. David Merrill

Professor

Utah State University

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Prologue

After a search I finally located the seminar room on the top floor of the psychology building. In length and breadth it was not a large room, however the ceiling was perhaps 25 feet above the floor. High on the outside wall a dormer window allowed the warm Midwestern sun to stream into the upper corners of the room. In the center of the room 12 wooden chairs surrounded a large conference table. The hour to start had arrived and 6 students were already seated around the table.

At 5 minutes past the hour the professor entered and seated himself at the head of the table. He immediately removed a pipe from his inner coat pocket and from his jacket pocket removed a tool resembling a Swiss army knife on steroids and a packet of tobacco. Being a nonsmoker I found the ensuing ritual of scraping, cleaning, and tapping fascinating.

Movement in the corner of my vision distracted my attention from the ceremony at the head of the table and my gaze scanned around the table. To my astonishment each student around the table was holding a pipe and intently engaged in scraping, cleaning, and tapping with their own set of shinny tools.

At the conclusion of the cleaning ritual the professor carefully placed a pinch of tobacco in the bowl of his pipe. Each student in the room placed tobacco in his pipe like reflections in a house of mirrors. A lighter ignited the professor's pipe and six lighters flashed in response. Large spirals of blue smoke rose lazily toward the streaks of sunlight in the upper portion of the room. Soon the room was engulfed in a fog of blue haze. Odors both sweet and pungent permeated the air.

The professor tilted his chair and placed both feet on the table. Six pairs of shoes joined his. As I starred at the soles of the shoes a voice from the haze intoned, "Welcome to Experimental Psychology."

My first class in graduate school had commenced.

Four decades have passed since I entered this seminar in Experimental Psychology. Hundreds of seminar sessions have come and gone. I've participated both as a student and, more often, as the professor. (I'm happy to report, however, that I never took up smoking a pipe and was delighted when smoking was finally banned from my seminar rooms.) In these 40 years there have been some occasions to observe activities that seem to significantly enhance the graduate study experience. In this short collection of essays it is my intent to share a few lessons I've learned. Hopefully, you will find some of these lessons of value in your own graduate education.

ADVISOR

1 A Fable

One peaceful summer day, while strolling through the forest, a fox bumped into a little rabbit. Smiling to the rabbit he said, "Hi kid, what are you up to these days?"

"I'm writing a dissertation on how rabbits eat foxes," replied the rabbit.

"Come now friend rabbit, you know that's quite impossible," gasped the astonished fox.

"Come along with me, and I will show you."

Both animals climbed down into the rabbit's burrow, and after a while the rabbit emerged with a self-satisfied little smile on his face.

Presently, along came a wolf. "Hello rabbit," said the wolf, "and how are we doing these days?"

"I'm well into the second chapter of my dissertation on how rabbits devour carnivores, "said the rabbit smugly.

"Are you crazy? Where's your academic honesty?" howled the amazed wolf.

"Come along with me, and I will show you."

As before, the two animals went into the rabbit's burrow, and after a short while, the rabbit came out with the same self-satisfied little smirk on his face.

Finally, a look into the rabbit's burrow will reveal what you probably should have guessed by now: there sat an enormous, fierce-looking lion next to the furry remains of the fox and wolf.

The moral: It's not the content of your dissertation that's important, it's your Ph.D. advisor.

(Author unknown)

2 Don't Do Someone Else's Dissertation

I had just returned to the university after a year away as a visiting professor. It was very early in my career and only my second year at this university. I had not yet established a program of research. A tall good-looking young man, RT, came into my office one afternoon. The first words out of his mouth were "I came to this university to work with you. Will you chair my Ph.D. committee?"

"Why?" I queried. I had previously chaired only two graduate students and had left that university before either of them finished their degree.

"I've talked to the department chairman and the dean. They told me that you are a very active researcher and that is why you were hired. I want to do research. I want to be your assistant. I want to help you with your research program." was his reasoning.

"But, " I protested, "I don't have any research money, I can't hire you as an assistant."

"That doesn't matter. I'll work for you without pay. I want the experience of doing research."

Well, how could I say no. RT had complimented me, he had expressed an interest in my research, and he volunteered to be a research assistant without cost to me.

"Have you ever written a proposal?" I asked.

"No, but I'm sure that I can." he confidently replied.

I had been working on a proposal to do some research in concept instruction, had gathered together some research reports, had outlined some ideas, had written a few paragraphs, and had diagramed a research design. I retrieved my materials from the file drawer and laid them on the desk between us.

"Here are some ideas I've been working on." I reviewed my jottings and discussed the ideas for a project.

RT expressed real interest. He indicated this was the type of research he would find very interesting. It paralleled his own thinking. "In fact," he said, "the reason for coming back to school was to pursue research of this type." We briefly discussed the requirements for a proposal. He took the materials and said he would return in a few days.

I wasn't particularly optimistic about his work. Other students had offered to work free, but then find the press of activities, classes, and the

need to provide for their families prevented them from dedicating any real time.

What a surprise when three days latter RT came to my office with a draft of a proposal written. It was awful. Clearly he had never written a proposal before. But, it was a document. We reviewed his work. As he seemed genuinely interested in learning what to do, my critique and suggestions became more frank and detailed as our conversation progressed. After more than an hour of discussion he took the materials and his notes and indicated that he would return in a day or two.

Two days later he appeared again. The draft had improved significantly but still left much to be desired. We again had an even more open discussion than before. In this conversation he began to express his own opinion more and more. I was impressed with his reasoning. We revised our plan and modified my original ideas to account for the input RT had provided.

The discuss-argue-revise cycle repeated itself four or five times before both of us were satisfied with the proposal. At this point it was submitted to the funding agency. A few months later it was funded and the money supported RT for his entire graduate career. He was one of the few graduate students with his own secretary.

For the next three years RT and I worked closely together doing a number of concept research studies, funded by the research funding he helped acquire. We wrote and published a book on concept instruction. RT finished his degree. He went on to conduct many more concept instruction studies and became a leading authority in this area of investigation.

Perhaps the most important decision you can make in graduate school is the choice of your major professor. In most universities this is the person who must first approve your courses and must first approve your thesis or dissertation project. This is the person who will help you leap tall regulations and catch impossible deadlines.

When it comes to selecting an advisor there is a four-part strategy that will insure a productive graduate student career. First, select a person who exemplifies the kind of academic professional you want to become. Second, find out his or her passion, interest, or current driving force. Third, determine how your passion can compliment, expand, and elaborate the passion of your potential mentor. Fourth, propose to work for your potential mentor and then do it, whether or not there is monetary compensation for your involvement.

RT certainly understood this formula. He decided after talking to other members of the administration and faculty that he wanted to work with me. While he was not yet aware of all of my research interests he expressed or developed a keen interest in the research I was pursuing. He approached me and offered his services. He then followed through by helping develop the ideas via a proposal. Very importantly, he did not just follow my directions, but inserted his own ideas, modified my ideas, expanded my ideas, and became a colleague and valued collaborator. During this period of intense collaboration it is difficult to say who was the author of the various details of our work since there was continual give and take and constant revision of all of our ideas.

Not all graduate students are as proactive at RT. When a graduate student solicits me as their chairperson, I go through the following steps:

At our first meeting I outline and summarize my research interests, often suggesting several papers for the student to read. I invite them to come back after they have read the papers.

At our next meeting I ask the following: "What do you intend to do for your dissertation project?" This usually requires a second period of thought and writing.

At our next meeting we discuss how their dissertation idea correlates with my research interests. If there is no correlation I suggest that they may want to consider another committee chairperson. When there is no other faculty member with interests consistent with the student's passion, I have sometimes agreed to chair the student's committee. BUT, I point out that they may have a difficult time gaining my attention. I honestly admit, "When what you are doing compliments my own work, I am very interested and it will get my immediate attention. However, when what you are doing is unrelated to my work, attending to your work is a distraction and a chore. While I may provide some guidance out of a sense of duty, you will not get my full or focused attention."

Once in a while, when a student approaches me about chairing their committee, they have done their homework. On these occasions the student really gets my attention. CR came to the university because of the work we were doing in developing a computer-based-learning system. He had read much of the published reports of our work. He came to interview me concerning our work to determine for himself which of the several investigators on our project best represented his interests. We had a discussion for over an hour as he asked detailed and insightful questions about my work. Following this delightful exchange he then suggested how

what he wanted to do complimented my work. He was very tactful and suggested that if I was already pursuing the ideas he suggested that he did not want to impose himself. Quite to the contrary, I welcomed his ideas and over the next four years we worked as the closest of colleagues. His work extended and expanded my own. We published several papers together. Following his graduation he continued the work we started together. He went far beyond my own work on the research problem we pursued together. Working with this student enhanced my own career and his career was launched by our collaboration.

Did CR give up his own passion to work on mine? To some extent yes, but as we worked together it became very clear to me that he had represented his ideas in terms of my ideas. By so doing it was easy for me to be influenced by his ideas. He certainly got my attention. In fact, our relationship was much more as collaborating colleagues rather than as faculty and student.

I have also known students who have taken the opposite approach. They come to graduate school with only a vague idea of what they want to pursue. They are assigned to work with an advisor who later becomes the chair of their committee. The faculty member is working on a research project and invites or hires the student to assist them. Eventually the student does a piece of the faculty member's research and it is labeled as a dissertation. After completing their degree the student pursues other interests and never again visits the area of research that was their dissertation because it was not their dissertation, it was not their passion.

The selection of your committee chairperson is the most important decision you will make in graduate school. Select your advisor or committee chair with care. Select someone whose research interest is complimentary with your own. Study this person's work. Figure out how his or her work can enhance your own. Think about how your work can enhance the faculty member's work.

Take a proactive approach to your potential advisor. Take the initiative in suggesting how you can work together. If you have done your homework well you will really get the attention of your potential chairperson.

Advisor Strategy Number 1

Don't do someone else's dissertation.

1. Select a potential mentor who represents the kind of academic you want to be.
2. Determine his or her passion.

3. Recast your own interest in terms that are complimentary to your potential mentor's interests.
4. Find a way to work for (with) your potential mentor with or without monetary compensation.

3 *NO* is NOT the Right Answer

I was invited into the office of the Associate Vice President. My tenure at the university was only a couple of years old and I couldn't imagine the reason for my visit.

"Would you be willing to join the Learning Resources Division of the university and start a media research department?" was his surprising request. "I'll provide the money for two full time positions, a full time secretary and some initial operating capital."

I was stunned but recovered enough to replay, "I don't want to run a media research department. I'm interested in instructional research." And I stammered out the difference.

"Okay, then start an instructional research department."

This was an opportunity beyond my wildest imagination so I agreed to accept a half time appointment and launch this new research unit.

For the next several years Darrell Monson, the Associate Vice President in the above scenario, proved to be the most valuable mentor I have had in my entire academic career.

Shortly after we had launched this department, he suggested that there was some research funds available from the university and that we should write a proposal to obtain a portion of these funds. He proceeded to tutor me in the process of proposal writing. I worked very hard for three weeks researching, writing, and reviewing the proposal. We met every Thursday morning to review my progress. On the third meeting he indicated that he thought that we were ready and that he would take the proposal to the Academic Vice President for his approval. The next Thursday seemed weeks away as I awaited the results of my efforts and the receipt of my first major research funding since starting the new department.

On the following Thursday as I entered Mr. Monson's office I blurted out, "Did we get it?"

"No!" came the reply. "The vice president said no, he was unwilling to fund our proposal."

I was devastated. After all I had had excellent tutoring, the idea was sound, and in my naivete I felt that the proposal was outstanding. How could it have been turned down?

I turned to leave the office with my tail dragging between my legs.

"Where are you going? We have work to do."

"What do you mean? I thought that you said that he was not going to fund the proposal?" came my weak response.

"I merely indicated that he said 'NO', I didn't say that we weren't going to do the work."

"I don't understand", I stammered. "Where are we going to get the money?

"From the university! You and I both know that *NO* IS NOT THE RIGHT ANSWER!"

No is not the right answer. *No* is not the right answer. The concept was confusing to me.

"We have work to do." he continued. "Sit down and lets talk about how we are going to revise the proposal."

So, for the next several weeks I was back to rewriting, doing more homework, finding additional data, rewriting, rewriting, and rewriting some more. Finally, after a much greater effort than went into the original proposal it was decided that we should take it back to the vice president a second time.

I was much more skeptical this round. I didn't anticipate a positive response. After all he turned it down once, why would he approve this revised proposal. I approached the office the morning after the presentation to the vice president much more subdued than during my previous visit.

After saying good morning and chatting for a minute I finally got brave enough to ask how the meeting went.

"Oh! He was thrilled with our proposal. He said that this was more like it. That this was a much better idea than our first proposal. He is going to fund it."

"But … ?" I started to wonder since it was really the same proposal but my confused musing was interrupted.

"Remember, when it is right, ***NO* IS NOT THE RIGHT ANSWER!**"

What a great slogan for life. It has become my guiding mantra. Whenever I get discouraged and feel that others are conspiring to prevent me from accomplishing what I feel is important, right, and necessary I repeat over and over those words taught to me in my youth by Darrell Monson, NO IS NOT THE RIGHT ANSWER.

But, I sometimes forgot. Twenty years later, after receiving hundreds of thousands of dollars in research grants and contracts I found myself at my present university. We had prepared a large proposal, several hundred thousand dollars with a government agency. The project manager at the agency and I had worked together on several previous contracts. One morning he gave me a call and said, "Your contract is approved, go ahead and start the work. The contract will follow in a day or two."

I was happy, hired two full time research associates, purchased some necessary equipment and launched another project. I had no trouble assuring my department head that the contract would follow and that there was no danger for his guaranteeing the contract with the university.

Days went by, then weeks. I was in contact almost daily with my project monitor. "Is the contract coming?" was my almost daily question. Yet, I had no concern knowing the government bureaucracy moved very slowly.

Then the fatal day arrived. My project monitor called me. "We have decided not to fund your contract." was his almost too bland comment.

"What! You told me the paperwork was on its way. You told me to go ahead. What do you mean you have decided not to fund the contract? I have been working for over a month with two full time people plus the equipment we purchased. You can't not fund the project!"

"Well," he offered, "We really didn't have a written contract."

"Wait! You and I have known each other for several years. We are men of honor. You said to go. A written contract is just a formality. Don't use this lame excuse on me now." My words may have been a bit more emotional than is conveyed by this account.

"Well, I'm sorry!" And our conversation ended.

I was in a panic. I had expended several tens of thousands of dollars. I had two full time employees who had families that depended on me for their support. I had a department head who had guaranteed this project because I said there was no possibility it wouldn't go. I was in big trouble.

I went for a long walk, but no solution came to me. I anticipated looking for another job. I was very depressed and worried. I lamented to a fellow faculty member friend about my predicament.

"Have you talked to Bart?" was his suggestion.

"Who is Bart?" I asked.

"You know, the research vice president of the university, Bartell Jensen."

That was the last person I would have thought to talk to. It was my assumption that he would be very upset and I wasn't certain I wanted him to know that I had committed significant university funds without a written contract. But my friend convinced me to risk it.

At our lunch meeting I was greeted with the following by Bartell Jensen, the research vice president for the university. "I understand that you need some funds, how much do you need?" were his first words.

I had not anticipated this response or question. I stammered something about I hadn't considered asking him for money.

"Well meet in my office tomorrow and we'll solve this problem" he suggested.

I did. After a friendly greeting where he complimented me on my research record and expressed his pleasure at my being at the university we got down to business. I rehearsed the situation to him indicating the assurances that I had received and the good faith belief that I had that we would get the funds. I also expressed my concern about the lack of good faith on the part of my contract monitor.

He picked up the phone and started to dial.

"Who are you calling?" I queried.

"Senator Hatch." was his reply. "I thought that we would send someone over to the agency to investigate the situation."

"Wait! This is a very small world." I observed. "If I get this monitor, who is a friend of mine, in trouble, or even possibly cause him to lose his job, I may never get any more contracts with this agency."

"Good thinking." he said as he cradled the phone mid dial.

He then suggested we call the project monitor and reason with him, which he did. He argued that they should fund the work to date plus an additional month, the time necessary to give fair notice to our employees. He didn't exactly threaten the project monitor but his discussion was sufficiently persuasive that the funds necessary to cover our work to date were forthcoming.

After settling this part of my problem he gave me a budget number to use until I got another contract to fund my research personnel. "We can't have you losing your staff and making your next contract difficult to get." was his reasoning. Fortunately I found another contract before having to use his funds.

While still pursuing his Ph.D. with me, TE went to work for a very large corporation. This was in the early days of the personal computer and this corporation had not yet seen the vision of a computer on every desk. TE was a very accomplished programmer on the personal computer. His responsibility was to oversee a billing department in the corporation. The summary reports were prepared by hand and submitted to the officers of the department and eventually to the officers of the corporation. It seemed to TE that a computer program would significantly simplify and improve the accuracy of the report preparation. He approached his immediate supervisor about the possibility of preparing such a program. His supervisor said "If it ain't broke, don't fix it." He felt that since the current system had worked for years why change it?

TE wasn't satisfied with this response, so on his own, at night, using his own computer, he wrote a program that could be used to prepare the reports. He then took the data, which he had access to as a result of his current job, and used it to prepare a report. He presented the report to his supervisor who rejected it as confusing. The supervisor speculated that his boss, Mr. B, would be very unhappy if he submitted this newfangled report that was not the same as what was in current use. Nevertheless he said that he would present the report to his supervisor, Mr. B, but he just knew that he would not be happy with the new report.

A few days later TE was asked to meet with Mr. B. He was nervous since his supervisor had been so negative about the new computerized report form. However, Mr. B complimented TE's supervisor for finding such a talented young man. He asked a few questions about the report, which TE answered. Then Mr. B said, "I want you to work for me as my special assistant. I will arrange it with your supervisor. Can you start on Monday?"

TE received this promotion with a significant increase in salary. His responsibility was to supervise the creation of a computerized report system for the company. The results of his efforts in this new assignment resulted in another promotion up the corporate ladder. His success in the company continued to be based on his conviction that there was a better way. On several occasions he found it necessary to prepare a report or a program on his own before his supervisors were able to understand his ideas. But, he never gave up and as a result was able to make a significant difference in his corporation and his own career.

As a university professor I've observed that too many administrators view their role as gatekeepers. "You don't seem to understand how a bureaucracy works." a dean once told me. "We must follow due process." Interpreted this means we have lots of rules and my job is to be sure that

we follow all the rules. It seems to me that most rules were created because some problem occurred that required a difficult decision. To avoid the problem in the future a regulation is created. However, the same problem never seems to occur again, but the rule is then applied to a number of other situations that were not problems previously but because of the rule they are now problems. My favorite book on management is titled "First, Break all the Rules."[1]

When Darrell Monson hired me to form an instructional research department I approached him about creating a department based on synergy. I suggested we hire professionals for the two positions he had authorized who had credentials qualifying them both to teach in the university as well as do research in our research department. He thought that was a wonderful idea.

My dean was less than enthusiastic. He indicated there were no teaching positions available in the college. Approving new classes would take several years to clear the curriculum committees of the university. Furthermore, instructional research was not a recognized academic area. He was convinced we would be unable to place our students even if we could get a curriculum approved and find students who were interested.

In years past a number of courses in educational research had already been approved in the college. At the present time these classes were not being taught, no students were currently enrolled in these courses, and no faculty were assigned to teach these classes. My previous experience working with a curriculum committee had taught me it was nearly impossible to get new classes approved because committees feared course proliferation. On the other hand getting the name or description of an existing class changed was much easier.

I hired the first of my professor/researchers. During the recruitment process we discussed the idea of a new department of instructional research and my new colleague was as enthusiastic about the idea as I was. Because he was hired to work in the new research department Darrell Monson interviewed him and an interview with the dean was unnecessary.

Together, over the next few months, we took the educational research courses that existed in the curriculum and proposed changes in titles and

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[1] Marcus Buckingham & Curt Coffman. *First Break All the Rules: What the Worlds Greatest Managers do Differently.* Simon & Schuster, 1999. This book is based on in-depth interviews by the Gallup Organization of over 80,000 managers in over 400 companies.

descriptions. We took the requirements for the educational research program and modified them to meet our needs. We recruited another professor/ researcher for our instructional research department and he joined our efforts at curriculum revision. After many meetings with Monson and some or our associates at other institutions we felt that our modifications were ready to go to the curriculum committee.

The first barrier was to get the Dean's signature. Our research department was not an academic department. If we were to offer degrees we had to be under an existing academic organization. We had many discussions about how to best present our proposal so that the Dean would not reject it. We already knew that he was not very favorable to our efforts.

Finally we made our presentation. The Dean, as deans often do, appointed a committee of faculty members to evaluate our proposal. We met with the committee several times. We pointed out the advantage of a combined research and academic program. We argued there was no cost to the college since our salaries would be paid through the research department. We waited. We hoped. We prayed. We were very fearful that we would never get to the curriculum committee because we would be unable to get the signature of the Dean. We feared for a time the proposal had been buried in committee.

However, after much cajoling on our part the committee finally made their recommendation to the Dean. They recommended the program be tentatively approved and be reevaluated after a year. We forwarded our curriculum changes to the curriculum committee. Even though there was no resemblance among the original titles and descriptions and our revisions, since we proposed no new classes, no new program but only modifications in titles and descriptions, it was approved.

A member of the committee, in a private conversation with me sometime later, revealed that the committee had serious reservations about our proposal. First, our entrance requirements were so high they would eliminate many of the students currently in the existing graduate programs in the college. Second, there were no students in our program and they seriously doubted we would be able to recruit students. Third, they could not find another program resembling what we proposed so they doubted our graduates would be able to find jobs. Someone on the committee suggested they tentatively approve the program since it would never fly anyway and after a year it would go away for lack of students. This revelation of the committee's thought process was somewhat disconcerting but did not deter our efforts to make the program succeed.

We were able to recruit students, but a different type from those already in the graduate programs of the college. Our students, because

they were in a dual department one part academic and one part research, all were actively involved with our professor/researchers in real-world research projects. All of our students were able to publish research findings. When our first students graduated they soon became leaders who helped define the new field of instructional technology. Today, some of the outstanding leaders in this field are graduates of this program.

I suspect if you are a college or university professor you have encountered the "They won't let us," argument. Administrators often anticipate the wishes of their superiors and hesitate or refuse to present proposals up the chain of command because they fear rejection. But who are "They"? It seems to me that professors work **at** a university, not **for** a university. In fact, historically, professors **are** the university. Too often the bureaucracy seems to take over, rules upon rules are created, clerks and assistants are appointed to enforce the rules. Occasionally these rules insure a quality education for the students. Too often the bureaucracy and due process get in the way of quality education.

Hopefully, you are blessed, as I have been, to have an administrator who understands his or her role is to remove barriers, to provide opportunities, and to help you accomplish your research, teaching goals, and service goals. Hopefully, you have an administrator who knows the best ideas often require him or her to break the rules.

It is more likely that you will encounter manager-administrators who see their role to protect the institution from change, to maintain the status quo, and to make sure that the rules are followed. Creative thought and diligence can usually find a way to accomplish that which is right, good, and will provide a quality opportunity for students and faculty.

From experience I have learned when it comes to getting any proposal approved there are three requirements: First, identify the decision maker. Second, find out his or her passion. Third, couch your idea in terms of the goals or passion of the decision-maker. If you meet all three of these requirements your proposal will almost always be approved. However, it isn't easy to meet these requirements. In the process you may encounter "*NO*". You may have to identify a different decision-maker, you may have to reevaluate his or her passion, and you will surely have to revise your presentation to make it consistent with the goals of the decision-maker.

But you are a graduate student. Being a faculty member is down the road. Being an effective administrator is even further down the road. How does this principle of gaining approval apply to you?

I've often told my graduate students, "If you can figure out how to jump all the hoops, fill out all the forms, and meet all the deadlines then surely you have the intelligence necessary to get a Ph.D."

Universities are full of regulations, rules, and procedures. The bureaucracy surely concerns students far more than professors. Professors, after all, have tenure. Except for the vilest of infractions, professors are seldom dismissed for not following all the rules. However, you are a student. Your diploma depends on following the rules. If you don't someone will surely make you pay another semester's tuition, take another course, or fill out another form. How does this essay apply to you? Don't you have to follow all the rules?

Remember the rabbit and the lion. Perhaps the most important decision you can make is the choice of your major professor. In most universities this is the person who must first approve your courses and must first approve your thesis or dissertation project.

You have a great idea for a dissertation and when you present it to your advisor or your committee they say *NO*. What to do? Many students punt their idea and then do something their advisor or committee suggests. But then, they are doing some else's dissertation. Remember the requirements to gain approval for any proposal. What is the passion of the decision-maker? Your advisor is usually your main concern since if he or she is supportive the rest of the committee will usually allow the thesis. Of course they will insist on giving input and requiring you to make modifications. How can you recast your idea and approach to be complimentary with his or her passion? If you can find a way for your dissertation to further the passion of your advisor or other committee members, then their approval is usually assured.

Advisor Strategy Number 2

***NO* IS NOT THE RIGHT ANSWER!**

COURSEWORK

4 Don't Let Coursework Limit Your Education

As we gather for our client briefing, my graduate class in Project Management has a most unusual appearance. Everyone is dressed in business best: suits, ties, dresses, rather than the usual graduate school casual: jeans and tee-shirts. Sitting in the front of the room is a vice president of a major corporation. I make a brief introduction of our guest. He then outlines the requirements for a proposal to develop some on-line materials for promoting one of the company's product lines. The class pays rapt attention and asks many questions following his short briefing. They attempt to understand in detail the project he envisions for his company. This starts the clock on a simulation of real-world problem solving and proposal preparation.

Finding a real-world client is no problem. Most companies welcome the opportunity for free consulting from 20 plus bright graduate students. One of the requirements I impose on the class is that the proposal they make and the prototype they build will be given to the company without any strings attached to do with as they choose. This is sufficient incentive for most companies to invest the time and expense of sending an executive to our class to participate in this project.

Following the client's briefing I organize the members of the class into teams of approximately five persons each. Students are not allowed to self-select their team association. Based on my previous experience with the students I make the team assignments. A team leader of my choosing is appointed to manage each team. The teams are composed as they might be in a large company, but perhaps with a little more attention to balance. So that each team has the necessary skills to accomplish the prototype, students with needed skills are assigned to each team. Minorities, international students, and women (who are in the minority in our program) are distributed among the different teams. I deliberately select women to head some of the teams and sometimes assign a more chauvinistic man to a woman-led team. Students with special problems such as those living in a distant community or those who have full time jobs are distributed among the teams.

The class emulates a design and development group in a large company. The teams are selected and organized in a way similar to the way ad hoc design and development teams are often organized in a big company that is tasked to do a project. A project is an activity with a

distinct beginning and end. At the end of a project the members of the team return to their usual assignments.

Our teams represent competing groups from several different companies. The challenge for each team is to write a proposal and prepare a prototype product for the client in an attempt to be awarded a contract to do the project. At the end of six weeks the client will again visit to hear formal presentations and receive formal written proposals about the proposed approaches for each group. Each group has a limited time to present their proposal.

Each team operates under a set of rules that attempt to replicate the conditions that may characterize a major company. Each member of the team must complete a time sheet reporting his or her activities for each week of the project. Because team members have other assignments, in this case other classes, they are limited to 15 hours per week. We stress that the company is unwilling to pay overtime so any overtime, effort in excess of 15 hours per week on the part of an individual team member, is strongly discouraged.

Each team is given a budget that they can use for communication, for materials required for the prototype, and for other incidental expenses.

To relieve the burden on the client each team must designate one person who will be the liaison with the client. The teams are restricted to a certain number of contacts with the client. The number of contacts varies with our different clients. Some clients want a lot of interaction and some want only one mid-project report.

It is not unusual in a graduate program, especially for classes that require major projects, for students to fail to complete a project by the end of the semester. In this situation students often take an incomplete for the semester and finish their work in the following semester. When research projects are involved, where there are many uncertainties, such schedule overruns are not uncommon. However, in our proposal-prototype preparation scenario such schedule overruns result in a failure to obtain the contract. If the proposal and the prototype demonstration is not ready when the client returns to hear the presentations and receive the proposals, then the team is disqualified and they are not awarded the contract. As in real-world situations, schedule for proposal preparation often result in failure to obtain a contract.

For several weeks prior to the client briefing the class is engaged in formal instruction. This instruction reviews a number of ideas related to project management. These include: suggestions for effective team collaboration, a discussion of the pros and cons of different management

styles, and techniques for scheduling, budgeting, estimating costs, and assigning resources.

Once the simulation starts, immediately after the client briefing, the assignment of individual roles within the each team is decided by the team manager in consultation with the members of the team. Team managers are free to select their preferred management style as they feel may be appropriate for the effectiveness of their team. Together the team prepares a schedule and resource allocation for their proposal and prototype preparation.

I'll never forget the first time we attempted this simulation. One team found that one of their members was disruptive to the group and was ostracized by the group. This student had a very unpleasant experience and still blames me as the instructor for his unpleasant experience. In another team the leader, who was a very capable student, decided that she could do the proposal and prototype better without the team and did the project by herself with only minimal involvement of the members of her team. It was evident after this first experience that more intervention was needed on my part, as the instructor, if this was to be a meaningful experience for all of the students.

We introduced a number of activities to facilitate a meaningful experience for the students. I assume the role as the vice president of the corporation doing the project. A coordination meeting is scheduled with each team each week. The team leader is required to attend but the team may choose to attend as a group or with selected representatives. The time spent in this meeting is billable time and must to be reported on their time sheets, so the team must decide if the time commitment is worth having multiple members of the team attend the meeting. The team leader is required to submit a schedule and resource allocation at the first meeting. This project plan is reviewed and used in subsequent coordination meetings. At each meeting we review together the accomplishments of the past week and the planned activities for the next week. The team then indicates any problems that have been encountered and how the team intends to solve the problems. If necessary, the team may ask for suggestions from me as the vice president. My input is limited to procedure rather than content. The proposed solution to the client's problem is left entirely up to the members of the team. Only suggestions for how to arrive at a workable solution are given in these management meetings.

About mid way through the experience we hold a team meeting with each team. At this meeting each member of the team is asked to express what they think are the most positive aspects of their team activity and what problems they see with their team's activities. Again the emphasis is

on process not the content of their proposal. A discussion follows the expression by each team member. The problems that are identified are explored and team members suggest possible solutions.

About mid way through the experience a team leaders meeting is held. The team leaders are asked to put aside the spirit of competition for the duration of the meeting and to frankly discuss any problems that they are encountering with their team. They are asked not to identify individual team members that may be the perceived cause of the problem. The other team leaders discuss the problems and try to provide suggestions as to how a particular problem might be solved. It is in this meeting that many leaders discover their own inappropriate leadership styles that may be contributing to the problems.

When the deadline date arrives each team is assigned 20 minutes for a formal presentation of their proposal and prototype. These presentations are made primarily to the client but also to the other teams who are members of the class. Guests are sometimes invited to participate in these formal presentations.

Each member of the class is asked to provide a confidential ranking for the presentations. The client is also asked to rank the presentations along with the formal proposals and indicate which of the proposals their company would accept for a full project. As the instructor, I also rank the presentations and the proposals. With only one exception (over 7 simulations) the client, the mean ranking of the class, and my ranking have always agreed on the best presentation, proposal and prototype.

As a concluding experience, each member of a team is asked to provide written evaluation of their team leader and to rank the relative contribution of the other members of the team. The team leader is asked to rank the relative contribution of the members of his or her team and provide a written evaluation of each member of the team.

The reaction of our students to this experience is very positive. Feedback from students, after they are employed in the real world, often cites this experience as one of the best preparations they have had for their work in the real world. When they have finished their program some of our students have found employment with our clients.

Why is this experience valued by our students? What is it about this experience that facilitates learning?

Too much of our academic education is decontextualized. That is, the individual skills are taught in an abstract way rather than in the context of real-world problems. When the student encounters a real-world problem they are unable to recall or apply their decontextualized knowledge, either because it is difficult to retrieve from their memory or because they have

never had any experience in applying the abstract skills to real problems. When our students our assigned to development teams in the work-place they often find that the conditions are very similar to their experience in class. They immediately recall the discussions, solutions, approaches that were used in the class simulation and can then apply these skills to their work-place problem.

"But," I can hear you, as a graduate student, object, "I don't have any case-based or problem-based courses in my program!"

How can you make your course experience "real-world"?

Many graduate courses often assign projects, either individual or for teams of students. These projects often have real-world characteristics but may not have all the properties of a real-world project. When you engage in such a project, whether alone or with fellow students, you can easily convert the project to a more real-world like experience.

First, locate a real-world client. Find a company or institution that represents the type of organization where you will eventually be employed. Approach an employee of this company who represents the type of client for whom your skills will be applied in the future. Offer to share your work with this client in exchange for their critical evaluation of your product. If the project is flexible enough so you are allowed to define your own problem, query the client for his or her problem. If you work on your client's problem you will certainly gain their attention and your problem is by definition a real-world problem. Unless restricted by your university, offer to provide the solution you find or the product you create to your client. Establish a regular system of reporting and critique where you meet regularly with your client for feedback on your progress.

Second, establish a project plan including a schedule. You probably have a deadline but you can improve on the schedule by establishing mile-stones for the phases of the project. After determining the total effort that will be required to complete the project apportion your time in even blocks over the duration of the project and then discipline yourself against procrastination. Complete every phase of the project according to your schedule.

Third, complete the project. Bring it to a final form. If it is a research report prepare and submit it for publication in an appropriate journal. If it is a product, bring it to a form ready for use by its intended audience. If it is a prototype, again complete the parts of the product or process demonstrated so that the client can use it to demonstrate to others.

Converting your project to a real-world project will significantly increase your incentive to do your best. You will obtain feedback from a real-world client in addition to the feedback received from your instructor. You will be challenged when these two forms of feedback do not agree. It will push you to compromise, to modify, and to adjust your project in ways that are more consistent with the challenges you will encounter in the work-place. In the long run you will be better prepared when you encounter a similar problem after leaving school.

What if you don't have a class where projects are assigned? What if your classes are primarily theory but not application?

Almost Every graduate program has "Independent Study" or "Independent Research" courses. After completing a theory class signup for one of these independent courses. Find a faculty member who is willing to monitor your work. Find a real-world client. Query the client for one of their problems. Offer to provide the solution or product to the client when you have completed the project. Establish a schedule. Religiously stick to your schedule and meet your milestones. It will be one of the most valuable experiences of your graduate education.

Coursework Strategy Number 1

Don't let your coursework limit your education.

Identify real-world clients and use your newly acquired skills to solve real-world problems.

5 Submit Yourself for Creative Exploitation

Serendipity has played a major role in my career. It has often been my good fortune to be in the right place at the right time. Entering graduate school was no exception. Upon entering the University of Illinois, Larry Stolurow was assigned as my temporary advisor. It would be better if this choice had been a result of my homework about his work prior to my entry in Graduate School. But alas, it was not. But what a great opportunity was provided to me by Dr. Stolurow, providence, and an excess of good fortune.

An application for graduate school resulted in a NDEA Fellowship. The fellowship was my reason for choosing to attend the University of Illinois. It paid all of my expenses for my entire Ph.D. program including a small living allowance. Unknown to me, Larry Stolurow had written the proposal funding this program. Three of us were in the first contingent of NDEA fellowships. Because of the fellowship we were each assigned offices in the Training Research Laboratory under the direction of Dr. Stolurow.

Entering the laboratory for the first time was a surreal experience. The laboratory was located in the psychology building. But there was no number for the office, merely the designation *basement*. It took some time to locate the stairway to the basement. "This certainly can't be the correct stair way." I thought. It looked like the way to a storage room. Descending the stairs I was confronted with an unfinished basement with heating pipes overhead only about 5 1/2 feet above the floor. "Surely I've come down the wrong stairs." I returned to the main floor. But a long search revealed no other stairs descending to the basement. It is not a male characteristic to ask directions, but overcoming my natural inclination I went into the psychology office on the main floor and inquired after the Training Research Laboratory.

To my surprise the secretary at the desk directed me to the same stairway that I had recently explored. "But," I protested, "this stair was leads only to an unfinished basement."

"Oh," she explained, "you must walk across the unfinished space to the South side of the building. There you will find a door that enters the Laboratory."

Once again I ventured to the dark space at the bottom of the stair. I bravely ducked under the heating pipes and made my way across the basement. There, as she predicted, I found a door with a small sign that said *Training Research Laboratory*. Timidly I opened the door and was

warmly greeted by the secretary of the Lab. To my surprise the laboratory was nicely finished and furnished. There were no windows, but the lab was large with a number of offices and working spaces[2]. The secretary directed me to my office where I was to spend the next three years.

I don't remember very many of my classes. Some of the professors are memorable, but the content of the classes has faded with the years. On the other hand, the memories of the Training Research Laboratory are as clear as if they happened only yesterday.

My fellowship forbade my being employed as a research assistant. This requirement had the great advantage of my being able to pick and choose those research activities I desired. At an early meeting Dr. Stolurow described a proposal for the National Science Foundation to obtain a computer that we could use for Computer-Based-Instruction. This was 1961. Computers were still very new on the scene. Computer-based-instruction was unheard of. Together with my fellow students we reviewed the proposal. We had lots of brainstorming sessions about how to present our ideas so the reviewers at NSF would not reject them as crazy. It was a significant learning experience. Needless to say we all had a vested interest to see if the proposal would be funded. It was.

I learned a great deal about writing proposals and formulating research ideas from this experience in TRL. Later in my classes, when we talked about writing proposals, developing research budgets, and planning research schedules I found that these formal ideas made sense because of my early experience in proposal preparation. Over the next 3 years I was involved in several more proposal efforts. Each had unique challenges. Each tuned and modified my mental model about proposals and research funding. Not all of them were funded. I don't remember much about the classes on research design, but I do remember my proposal preparation experiences in TRL.

From our basement "dungeon" the fellows of TRL were involved in some of the most innovative work in instruction then underway in the world. We surely didn't realize the pioneering nature of the work we were

[2] I have since occupied many strange locations for my own research laboratories (under a football stadium, in an old house, in a deserted army barracks building). University space is always limited and soft money labs are often constructed in space thought unfit for ordinary faculty offices or classrooms.

doing. We didn't appreciate the significant entrepreneurial efforts of Dr. Stolurow. As a matter of course we read, visited, and reviewed the work of other laboratories that were engaged in similar work. Many of these other researchers were invited to our laboratory to present seminars to us and to review our work. From experience I learned to write reviews of other research, to review and describe other projects and products related to our own. All of the TRL fellows learned the importance of putting your own efforts into context. I believe that I must have written a research review for some class during my program. Surely the professor of this class reviewed the criteria for an effective research or product review. But I don't remember these formal abstractions, what I remember is the discussions among the fellows, the meetings with other entrepreneurial investigators, and our attempts to place our own work in the context of other research programs and products.

There are few things I find more exciting than collecting and analyzing data for a research study. After spending days trying to define a research question, more days trying to devise treatments that test your hypothesis, and yet more days devising measures that will provide valid and reliable data, it is with some fear and trepidation that you watch experimental subjects engage your treatments. What a feeling of reward when the data reveal that your hunch was correct and that they are supporting your hypothesis. What depression settles in when you can't distinguish the data among your experimental and control groups. My program included many classes in research design, statistical analysis, and measurement. The formalisms taught in these classes have stayed with me, such as how to determine when data reveals only chance differences and when it reveals a significant probability that the differences are real. But it was in the conducting of actual studies, the observation of experimental subjects involved in your carefully devised treatments, the struggle trying to make sense of the data, and finally the triumph of writing a report of a significant study where I learned to do research.

There were a number of classes in teaching methods and learning theory. I read many papers and several books in these areas. In TRL we were pioneering the design of instruction for delivery by computers. No one had ever done this before. We were among the first. There were no authoring systems or other tools for creating computer-based-instruction. What a challenging learning laboratory? The fellows spent hours brain-storming ideas, developing pieces of instruction, trying them out, revising them, trying them out again. We critiqued each other's work. We collaborated and experimented. We even attempted to provide rationale for our work by appealing to the theories we were learning in our courses. We explored alternative theoretical approaches and explanations. Most importantly we developed instruction, lots of instruction, in many different subject matters, for different populations of students, and always exploring

new and innovative ways to develop and deliver our instruction. I learned a significant amount of information about learning and instruction from my classes. But, I learned to develop instruction in collaboration with the fellows at TRL. We learned to have an open mind, to explore new approaches, and to never be satisfied. We learned to attempt to explain why some instruction worked and some did not. By hands-on experience I became a research/theory based instructional developer, which is much more than a teacher.

When Darrel Monson hired me to form an instructional research department, I approached him about creating a department based on synergy. My recommendation was to hire professionals whose credentials would qualify them to teach in the university as well as do research in our research department. He agreed.

We had the opportunity to create a new academic program in a new subject area, Instructional Psychology. Dr. Harvey Black was the first person I hired. Together we spent many happy hours brain-storming what we hoped would be a successful new department. Many skeptics in the college were sure we would fail and approval was granted only on a trial basis.

We both agreed our best experiences as students were doing research and developing instruction. We both felt courses often provided *information about* the subject matter but did not always provide an opportunity to *do* the subject matter. We wanted a curriculum that would allow students to *do* not just learn *information about*. We wanted an experience-based curriculum.

We imagined our students following their graduation. What type of jobs would they accept? In what settings would they work? What problems would they be called upon to solve? How could we get them engaged in real-world activities as part of their graduate training?

Both of us remembered the professors who had influenced us most during our own graduate education. These were professors that provided the most significant coaching. These were professors that engaged us in scholarship rather than merely talked about scholarship. We both agreed they were those with whom we worked rather than those from whom we had had only courses.

How could we provide an opportunity for our students to have this same apprenticeship experience? How could we provide opportunities for students to be mentored doing scholarly work rather than merely being taught generalizations about such work?

We determined to have a project-based curriculum. We envisioned our students in two types of employment: academics, usually at a college or university and professional instructional developers working for the government or corporations. In both of these potential jobs students would have to engage in several types of important problem solving activities including: writing proposals, reviewing other research or products, developing instruction or experimental treatments, and designing, conducting, and reporting research or evaluation.

The core of our curriculum would be five problem-solving experiences. These problem-based courses would be independent study where the student worked with in individual faculty member, preferably on a project in which the faculty member was involved. We envisioned a scholarly apprenticeship where the student learned skills by doing rather than merely learning about.

The university catalog description of these courses is as follows:

Funding Proposal Practicum. Preparation of project funding proposal for submission to a funding agency.

Instructional Product/Research Review Practicum. Development of a professional paper for publication, providing a systematic critique and synthesis of related research papers or ID products.

Instructional Product Development Practicum. Development of a functional prototype of a tool for use in developing an instructional product. Product must include a sample instructional product showing evidence of systematic design and development procedures.

Instructional Evaluation Practicum. Design and evaluation of an instructional product or process. Acceptable empirical evaluation methodology must be used. Must include data collection, analysis, and a written report for publication.

Instructional Empirical Investigation Practicum. Investigation of a general question or hypothesis related to instructional technology. Students must design, collect, and analyze data, and write a report for publication.

The practicum guidelines for the student included the following:

1. The semester prior to enrolling for a practicum identify a faculty member with whom you will collaborate. Meet with the faculty member to solicit their cooperation. Prepare a brief proposal for the practicum and submit it to the department.

2. Each practicum should result in a formal paper or product that is submitted for publication in a professional journal or, in the case

of the instructional product, is a prototype product ready for production and distribution.

3. It is not anticipated that you will be able to complete the practicum in a single semester. You will be allowed to register for continuing credit until the practicum is completed. Credit will not be awarded until your practicum is completed as specified by your collaborating professor.

This practicum approach to the education of graduate students has been implemented at two different universities. Over the years that we have been involved with this problem-based curriculum we have encountered some challenges and some wonderful opportunities.

The practicum is the mutually beneficial **creative exploitation of graduate students**. They have the advantage of collaborating with an established researcher and to be mentored in their learning while doing research and scholarship. At the same time they further the career of their collaborating professor. For me a practicum is one way to get a graduate research assistant without having to pay wages.

Some faculty members view the direction of individual research activities as an increase in their faculty load. It is easier, they assume, to stand before the class, lecture, and grade exams or papers than it is to meet individually with a student and engage in collaborative scholarly activity. This is particularly true if a faculty member is not engaged in a program of systematic research.

Faculty members often complain that they do not have sufficient help to engage in the research activities expected of them, especially in a research university. The practicum provides a way to engage in the mutually beneficial exploitation of the graduate students for this help.

At its best, there is a healthy competition soliciting students for collaboration. I often post a list of research or development projects that are of interest to me, or that will further my own research agenda. This deliberate recruiting often results in an opportunity to work with some of the best graduate students in our program, even when some other member of the faculty is their advisor.

In the "publish or perish" atmosphere that permeates many research universities the practicum provides a significant boost to a faculty member's resume and to the resumes of the students involved. During one particularly productive period it was my privilege to collaborate with a large number of students. Among us, during this two-year period, we were able to publish over 40 professional papers. My policy for publication credit is to insist that a student be listed as the first author when he or she has had a primary role in conducting a study or developing a product and

when he or she has been the primary author of the final report. When a student has served as an assistant by supervising data collection or doing data analysis, but has not played a major role in the design or writing of the final report then he or she is included as a second author. This publication policy significantly enhances the student's career while also helping my own.

"But", you, a graduate student objects, "our program does not involve a set of such practicum courses. What can I do?"

Every university program contains courses in "Independent Research" or "Independent Readings." These courses are included to enable students to become involved with an individual professor in ways that may not be available through the formal coursework of the curriculum. Create your own practicum. Meet with the professor of your choice. Propose that you do some collaborative research or development. If you are proactive and if your proposed collaboration facilitates the professors research agenda, he or she will be only too happy to have you as a collaborator, especially if they do not have to find research funds to support your activities. You can engage in the mutually beneficial creative exploitation of the faculty as well as having them engage in the creative exploitation of you as a graduate student.

Courseware Strategy number 2

Submit yourself for creative exploitation.

6 Write Your Own Comprehensive Examination

My anxiety was at an all time high. Rumor had it that the fail-rate on the comprehensive examination was close to 50%. Three to four hours of sleep per night had been the norm for several weeks as I tried to read and review everything I had studied during my graduate career. In spite of all the preparation I still felt woefully unprepared.

The comprehensive exam was a very formal affair, supervised by the graduate school. Graduate students from many departments came together in a classroom. A proctor from the graduate school monitored the examination. We were instructed to sit in alternating chairs facing the front. We were allowed to bring only a pen or pencil into the room. (This was before the advent of personal computers.) About 30 students participated in my exam. As we sat down we were directed not to converse with one another but to sit silently until we received directions. Further when we received our packet we were not to open it but to lay it on the desk in front of us until the proctor gave the signal to begin. The proctor called each name in a solemn tone and handed each student a manila envelope containing the examination questions and a blue examination notebook in which to write our response.

After all the examinations were distributed the proctor said "You may now begin and started a stop watch."

I opened my envelope and read the first question. It had something to do with the history of education in Europe and America. I was stunned. This first day of the three-day examination was scheduled for our minor area. My minor area was experimental psychology. I read the remaining questions. They were also related to educational history. None of my coursework was in educational history. I struggled for some moments trying to find the connection between the questions and the courses I had completed in psychology. I could find none.

I raised my hand. The proctor politely, but firmly told me that there were to be no questions. I got out of my seat and approached the proctor. I was told even more firmly to take my seat immediately or my examination would be nullified. (This proctor took his responsibility very seriously.) I tried to explain that there must be some mistake that this could not be the examination I was scheduled to take. The proctor would not listen but again directed me to take my seat and complete the examination.

Not being able to reason with the proctor, I took my examination and headed for the exit. The proctor, in a very threatening tone, informed me

that if I left the room I would receive a failing grade and would not be allowed to repeat the examination. I ignored the threat and headed for my advisor's office.

My advisor was involved in an interview. But, my anxiety was so high I ignored the secretary's command that I not interrupt. I don't believe that I was very polite, but walked over to his desk, laid the examination in front of him and demanded "What is this?"

He looked puzzled both at my demeanor (he had never seen me that upset before) and then at the papers lying in front of him. Then he remembered that this was examination day. "Isn't this your comprehensive examination?" he inquired.

"Yes it is! Look at the questions!" I demanded.

"This looks like educational history." he observed. Aren't you supposed to have experimental psychology today?" Then, as if struck by lightening, he came to a sudden realization. "Oh! I'm so sorry! I forgot to submit the examination questions from the psychology professors to the graduate school. They are still here on my desk." I was not pleased with my professor. (Since, I've become much more understanding having made similar blunders myself on more than one occasion.)

He suggested that I take the rest of the day off and continue the examination tomorrow. He assured me that the rest of the examination had been submitted and that he would arrange for me to take my psychology examination the following week. I went home. My wife was very surprised to see me. I explained the situation as calmly as I could, considering my state of frustration and anxiety. We took our two small children and went to a Disney movie, "The Sword and the Stone" as I recall. I don't remember anything about the movie.

I completed the two following days of the examination. On the following Monday a private examination session allowed me to complete the psychology examination which should have been administered on Wednesday the week before. How fortunate, I passed. After a few weeks my emotions finally settled down.

In most Ph.D. programs the comprehensive examination is a rite of passage. Often professors argue , "I had to do it so my students should also have the opportunity." In my case the examination consisted of six three-hour examination periods spread over three days, one session in the morning and one in the afternoon. During my career there have been variations on this theme with the examination sometimes being shorter and sometimes taken in sections at different times separated by days or weeks.

Does this cram-and-regurgitate approach really accomplish its purpose? While it may motivate intensive study and review, does it really enable us to determine the qualifications of a doctoral student? Is there any real-life experience in the future of an academic or career Ph.D. that resembles this intensive brain-dump?

When Harvey Black and I were brain storming our new curriculum we both had reservations about the comprehensive examination. Our experiences had been different in our own careers but we both had a strong distaste for this rite-of-passage. We both agreed that there had to be a better way.

What is it we wanted to learn about our students? What would satisfy us that they were qualified to receive a Ph.D.? What would they be required to do after they received their degree? How could we get some data that would enable us to predict success in these real-world activities?

After some thought we determined that academics would be required to do research and publish their findings in referred journals. For most of our students who went into academic careers this research/publication activity would be the most critical activity in terms of their own advancement and promotion. How could we get information that would enable us to predict their performance?

Career Ph.D. students, those who go into the business world or into government careers, would be required to develop and evaluate products. How could we get information that would enable us to predict their performance?

The best predictor of success in future classes is performance in previous classes. The best predictor of success in future research activities is most likely to be success in previous research. The best predictor of success in future product development is most likely to be success in previous product development.

We had already determined that we wanted a project-based curriculum[3]. Couldn't we use these experiences as a way to determine the future research and product development potential of our students?

We devised a three-stage comprehensive examination procedure. Stage 1 was to complete the projects defined in our curriculum. These included a proposal, a product or research review paper, conducting and reporting empirical research, product development, and product evaluation.

[3] See Essay 5 Submit Yourself for Creative Exploitation.

Stage 2 consisted of a take home examination in which the student was required to put each of their products in context of the current theories, current research, and other product development activities. They were to write an essay about their activities that went beyond the product itself.

Stage 3 was an oral examination with their Ph.D. committee. The committee would previously review the products and the essays putting these products in context. Then the committee would ask questions concerning these activities to determine the breadth and depth of the student's understanding about the research or product development activities in which they had engaged.

The result was that the students were much less stressed than is the case with a sit-down, tell-everything-you-know type of examination. The take-home essay requirement had the same motivating effect as the sit-down examination in that students found it was necessary to review what they had studied and to integrate this information in terms of their project activities. Furthermore, as a take-home essay they had more time to organize their thoughts, to reflect on their interpretations, and to provide a much more insightful and comprehensive explanation than is possible in a one-time, tell-all examination. The oral examination allowed the members of the faculty committee to probe areas of potential weakness and to suggest revisions in the essay or products.

"But," you object, "I'm a graduate student in a university that uses the sit-down-tell-all type of examination.

You may have no choice but to cram and pray, like thousands of graduate students before you. Your comprehensive examination may still be a hurdle you must leap over in your run for the goal.

However, you will be better prepared for the academic or professional world if you engage in activities similar to those we have described. Use independent study and independent research classes to engage in real-world research or product development activities.[4] Don't stop when you have completed the research report or developed the product. Write an essay about your experience. Put the project in context of all you have been studying. Look at each of the theories your have learned. Are your research findings related to the theory? How? Why not? Look at the procedures you have learned. Did you use these research or development procedures? Why? Why not? Could you have improved your research or

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[4] See Essay 4 Don't Let Coursework Limit Your Education and Essay 5 Submit Yourself for Creative Exploitation.

product development by using these procedures? Look at other products and other research reports. How does your research report or product compare? How is it better? What unique features does your product have that are not found in other products? What new information does your research provide that is not found in other research studies?

If you engage in real-world projects and if you take the time to write an essay about your research or development activities you will be more prepared for a regurgitation comprehensive. But more importantly, you will be more prepared for a career as an academic or professional in your chosen field.

Coursework Strategy Number 3

Write your own comprehensive examination.

PUBLICATION

7 Scholars Publish[5]

Why is such overwhelming stress laid on publication at so-called "Prestige Schools?" Isn't teaching as important as writing?

They are equally important because they are one and indivisible. Recently the U. of C. made a year-long study of the "Research Function of the University" and came to the not-surprising conclusion that the best teachers always do some research and the best researchers always do some teaching:

A man who brings only talent and enthusiasm for teaching with him from graduate school (says the study) may well be seen as a second-rate member of the local academic community … within a decade of his promotion to tenure, he will prove to be a very routine teacher indeed. … for the individual faculty member, the balance between teaching and research must be preserved. … It is in post-graduate education that a research-oriented faculty is essential. … Our own system … requires a man to start showing a sizable volume of productive results within at least two years of arrival if he is to be ensured an orderly progress up our promotion ladder.

Are you assuming that research and publication are synonymous?

That is what is meant in the report by "productive results" -- not a mere collection of notes but actual publication. A dancer dances, a painter paints, a composer composes, a builder builds, and a **scholar publishes** [emphasis added]. All the costly gimmicks, the laborious jargon, the world's -fair architecture, the intellectual posturing, the enormous staff, top-heavy administration, and swarming student-body of a big modern university are but window-dressing unless we can show that we are able to produce something.

Is publication necessary to preserve integrity?

There is no better way. As long as a professor can go to bed at night and rise up in the morning in the sublime assurance that he will never be called upon to produce solid support for his exalted station; as long as he can fulfill the measure of his existence by pontificating before a room full

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[5] Writing and Publication in Graduate School. Excerpts from an address to the History Honors Banquet, Wilkenson Center, Brigham Young University, May 12, 1965 by Hugh Nibly.

of adolescents, warming chairs in committee rooms and dozing at meetings without ever having to pass muster before a competent board of editors, a man is bound to abuse his security by the relaxing of scholarly standards. The trouble with not publishing is that it is just too easy -- nothing is easier in fact than not to publish. Anyone can be a teacher, a very bad teacher, if you will, but still anyone can teach. On the other hand, consistent publication requires a high level of excellence -- journals simply cannot afford to publish trash. Publication and not teaching is the one way to keep a scholar on his toes.

Is it not enough to study hard and to be well informed?

No. Scholarship is an open-ended discussion in which things are never settled. The important thing, therefore, is not to be right on a particular point but to be able to enter into the discussion. It is for this purpose that scholarly journals exist. Until one gets onto the playing field, one is not in the game -- he is merely a spectator, who may cheer for this or that player or shout advice from his classroom bleachers, but never knows what it really is like in the arena.

How much time should be spent in courses before trying to publish?

An absolute minimum. The first paper a student writes should be aimed at publication [emphasis added]. The student who has read enough and thought enough and knows enough to have something to say is ready to write; and if he is ready to write, he is ready to publish.

Even if he is very young?

Age has nothing to do with it. There is no point to spending long years learning how to give form and expression to thoughts you are never going to have, or learning how to write up discoveries you will never make. Don't bother to spend time, money, and energy learning how to hunt buffaloes unless you are sure that there will be buffaloes to hunt. You should be sure of that by the time you are ten years old. If you don't find any game in one area, move to another and move quickly; avoid becoming shackled to another man's career. In hundreds of graduate schools, the eager youth are being ostensibly prepared for venturing forth into new and wonderful worlds of intellectual exploration; yet I have known many professors in those schools who would gladly give a thousand dollars to anyone who could suggest to them some really good topic in their field to write about. Don't waste your time in played-out fields -- there are plenty of others. How can the graduate faculty prepare others to hunt the buffaloes they have never seen?

When can a student consider a study worthy of publication? How can he be sure of mature judgement?

He can get all the mature judgement he wants, free of charge, from the editors. When they consider a study acceptable then he can. You see how important it is not to be left to our own opinions regarding our own work. Vanity often tells a man a work of his is a masterpiece, when it may not even be mediocre by general standards.

But doesn't [that] mean that very few people can become scholars?

It means that no one can become a scholar merely by taking courses and serving time. … Countless students have come to grief because they have believed, and even been encouraged to believe, that scholarship is a rank to which one can rise by [the] process of promotion. It is nothing of the sort. Good grades, a neat appearance, and a pleasing personality are good enough in themselves but they have nothing to do with a student's capacity to produce. … One can become a professor, a dean, a department head, a president, or a regent by appointment … but since the beginning of time nobody ever became an artist, a scientist, or a scholar by appointment.

You mean that every graduate student should publish?

What else? What else is he being trained for? Read what it says on an M.A. or Ph.D. diploma. This is what it says on mine: "The regents of the U. of So-and-so have conferred upon So-and-so who has proved his ability by original research in Such-and-such a subject the degree of Such-and-such." The operational words here are "ability and original." There is no mention whatever of administrative experience, hard work, ability to get along with people, teaching skill, dedicated loyalty, a pleasing appearance, etc, by which we place such store in our educational politics. Here they have nothing to do with the case. The degree is awarded entirely as an earnest of things to come, the recognition of promise in terms of "ability" and years of "original research" that lie ahead. What the graduate school is doing, if this all-important certificate means anything at all, is getting the student ready for a lifetime of original research.

Should ten, twenty, or thirty references be required for a term paper?

I have heard that question before … and hardly believed my ears. On the old Library Committee we used to discuss by the hour how many titles would be necessary for the library of a college with five thousand, ten thousand or fifteen thousand students. It makes as much sense to ask how many volumes of an encyclopedia are needed by a small school, a middle-sized school, or a large school, or how many ingredients should go into a one-pound, a two-pound, or a three-pound pudding or cake. The answer is always the same: no matter how MUCH of a thing you want to make, you must always put into it all the ingredients its nature requires. For a given paper one must have all the references necessary for an honest presentation -- whether that means two or two hundred is entirely beside the point.

What is the main weakness of our students?

Undoubtedly the desire for recognition rather than interest in what they are doing. They are decidedly degree-seeking rather than knowledge-seeking. Eager to be successful, they want to rush into production without any foundation. [For many students true scholarship] shows an infinitely exalted but also remotely distant goal for which they have not the diligence to work nor the patience to wait, but whose allure they cannot resist. So they anticipate the goal sometimes in forms and ceremonies (we take our academic ritual in deadly earnest), sometimes cultivating an invincibly cocky self-confidence, and sometimes in mental and emotional crackups. We want to be rewarded and recognized for our study, and that is not a proper motive for learning.

What do you mean, not a proper motive?

… If you conceive that you will attain to power upon such a motive [degree-seeking rather than knowledge-seeking], you are much mistaken. … Our institutions exploit this improper motive to the fullest. The history of universities shows that they have consistently been the enemies of that search for knowledge to which they pay lip service. They give priority to their own image, cultivating the fiction that merely to be connected with an important institution is in itself an achievement. It is nothing of the sort. All productive work is individual work [emphasis added]. A great institution is largely a show; we are much too prone to expend our time and energies cultivating appearances instead of doing an honest job of letting the 'image' take care of itself; … It is easy to hold meetings and ceremonies, form committees, give courses, and talk everlastingly; it is not only easy and pleasant to discourse on the education of the race; it is actually a temptation which few can resist. The urge to improve other people's minds is, as Brigham Young observed, not a rare virtue but the commonest of vices. It should be avoided rather than rewarded. Talking about education is like beer-drinking (and the two often go together); it is pleasantly intoxicating, enormously time-consuming, idiotically exalting, and subtly enervating; while imparting a befuddled sense of power and glory, it effectively paralyzes activity of the mind and body.

Isn't it both exhausting and discouraging to try to buck the fierce competition in the scholarly journals?

There is no competition! The press is large and hungry -- over-expanded, in fact, and the constant complaint of editors is that they almost never get anything that is informed, original, and significant. The editors are pathetically eager to welcome any good material from any source.

How does a student gain access or introduction to the editors of journals?

The only go-between you will ever need is the nearest post-office [or nowadays, email].

Publication Strategy Number 1

Scholars publish.

8 You Must Write to Think

It was Thanksgiving and we were headed for my brother's home in Northern California. My brother, Kieth, is a motion picture director, writer, and producer. He won an academy award for his film The Great American Cowboy and more recently was nominated for a second Oscar for his IMAX documentary Amazon.

Much of his time is spent writing. Once he is into a story he writes until the story is finished. He locks himself in his study and works from early morning until late at night, taking time off only to get a few hours of sleep. He does not like to be interrupted by anyone. His wife slips his food to him, trying very hard not to break his train of thought.

This Thanksgiving week he was writing the script for the movie Take Down, a story of a high school wrestling team. Thanksgiving arrived before he had finished the script and his writing was interrupted by hoards of relatives -- his parents, brother, two sisters and their families -- descending on his home.

We had a wonderful family dinner and in the evening the adults and older children were gathered around the fireplace visiting. "Tell us the story you are writing," someone suggested. And so began a hilarious enactment of a wonderful assortment of high school boys, their reluctant coach, and their adventures as they struggled to put together a winning wrestling team. Tears were running down our faces and our sides hurt from laughter as Kieth leaped around the room relating and acting out the story.

Right at the beginning of a crucial wrestling match he suddenly stopped and announced, "That is as far as I've gotten." He sat down. After the shock of the sudden silence the protests began with ever increasing crescendo.

"What's going to happen?"

"What does Polumbo do next?"

"Do they win the match?"

To every query Kieth answered with a simple, "I don't know."

"What do you mean, you don't know! You are writing the story!"

"Don't keep us in suspense! Tell us what is going to happen!"

"Of course you know, it's your story!"

But no amount of cajoling would cause him to budge. He continued to insist that he could not tell the rest of the story.

As emotions began to rise he finally said, "Wait a minute! Let me tell you how I write a story."

Before I continue with his explanation let me describe his study. He has a large chair with pockets on either side. On one side are a large dictionary and a thesaurus. On the other side are other reference books. On one side of his writing area bookshelves are filled with sources that he has previously collected to provide the necessary background for his story. Above his computer, encircling his writing area, is a board tacked up where he can hang sheets of paper.

His explanation continued, "Before I begin a story I invent my characters. I usually make a sketch to let me know how they look and tack it above my computer. I also write a brief character description for each of them. Often these characters are based on people I know or have met. Then I determine some events. I describe an event and place the appropriate characters in the situation. Once they are placed in the situation the characters tell me what they will say or what they will do. But until they are placed in the situation I don't know. That is the problem today. I have not yet placed Polumbo and the other characters in the wrestling match and they haven't yet told me what they are going say and do. I will have to wait until I continue my writing to find out."

We weren't happy with his explanation but he insisted that we would have to wait for the movie to know the rest of the story. The conversation drifted off into other areas and Take Down was put on hold for another day. I remember thinking that his explanation sounded like something from the Twilight Zone.

A few days later, however, I sat down to continue a technical manuscript that I was writing. I reread what I had written and found that the manuscript was "telling" me what to write next. I had a sudden insight. Even technical writing tends to talk to its author. You haven't completed the thought process until it is on paper and has an opportunity to tell you what's next. I realized an important truth.

You must write to think.

My brother carries with him a notebook, usually one of those books that are bound with blank pages. Everyday he writes and draws. He writes funny or unusual events that he observes. He describes interesting people that he had met. He writes how he feels and how he reacts to people and events. I asked him once what he did with all these notebooks (these days he does much of this writing on his laptop). "This is my idea repository," he replied. "When I write a story I can go to my character sketches to find participants for my story. I go to descriptions to provide settings for my characters. I reread my feelings to capture the necessary emotion."

I bought myself a notebook, one of those lab books filled with blank pages sold by every college bookstore. It goes with me everywhere. I started to write. As a scholar, I'm not a creative writer. My brother's notebooks are much more interesting than mine. But I've learned that you must write to think.

Every day you are exposed to new ideas, you observe activities, and you read. Each of these ideas makes you think, question, and wonder. Remember, thinking is writing. So write! Write down the ideas you hear. Debate with yourself. Write the questions you have concerning these ideas. Then write answers to the questions.

Over the years I've filled many notebooks. Most them I've never read. But writing is thinking. When what is written will be useful for a paper or presentation, then I place a red star in the upper right corner of the page so I can find it again.

Publication Strategy Number 2

Buy a notebook for thinking and always keep it with you.

My brother often takes some time at the end of the day to write. I'm not that disciplined. I never have time to write, however I write when I have time. There is lots of time everyday to write. Write when you're waiting for a meeting to start. Write when you're sitting in a meeting and the conversation does not concern you. Write on the bus, on the train, in airports. Fill the vacant moments that occur every day with thinking-writing.

Three years after completing my Ph.D. I was invited to go to Stanford University as a visiting assistant professor. During the interview for this opportunity I was asked to make a formal presentation of some of my research. My paper was rather technical, involving some complex statistical analysis. One of the faculty members attending my seminar was Lee Cronbach, who had been one of my professors at the University of Illinois. I had great admiration for Dr. Cronbach and was flattered that he was in attendance at my presentation. However, during the entire presentation he was writing on a yellow pad. As far as I could discern he never looked up during my entire presentation. As I concluded my formal presentation and paused for questions, Dr. Cronbach, without looking up, asked, "On slide number 8 you were reporting your statistic analysis (which he then summarized). Did your consider (and he then raised some important concern about my assumptions)?"

I was dumbfounded. It appeared to me that he was not listening at all but then he asked a very detailed technical question about my analysis. Afterward I visited briefly with him and observed that he was writing during my presentation and consequently my surprise at his detailed

technical question. He replied, "I have this very important proposal that has to be out tomorrow. I have to get it written this morning but I didn't want to miss your presentation." I was impressed by his ability to multi-process. I learned to multi-process. Perhaps you can learn to multi-process.

Publication Strategy Number 3

Never go to a class or meeting without something else to think-write about.

Most of us can do some multiprocessing. Often classes, and more often meetings, go off on tangents that are of marginal importance or relevance to you. What a good opportunity to think-write! I'm often accused of being an avid note taker, which I am when it is important or relevant. But often my notes are thinking-writing about something else. I'm sure that this is a very impolite recommendation, but it does keep me from falling asleep.

When there will be periods during the day in which you can think-write, take a few minutes early in the day to select a question, problem, or project for thought. Jot the question down on the top of a page in your notebook. Then, when the lag occurs, open your notebook and start to think-write. Ponder the question. Outline solutions. Argue with yourself. Think. And yes, when the content of the meeting is important shift your attention and take notes on the meeting. You may want to divide the pages of your notebook so that you can take notes on one side and use the other side for thinking.

What have I learned from my brother, from Dr. Cronbach, and from hundreds of graduate students?

You must write to think.

9 Never Write a Paper You Don't Intend to Publish

As a faculty member at several different research universities I have frequently been reminded of the three important roles of a professor: teaching, service and research. While administrators often indicate that these three important activities are weighted evenly, in practice the weighting is more often 5:5:90. "Publish-or-perish" is the tacit understanding of every tenure-track assistant professor. If after a trial period you have not produced a substantial body of published work it is very likely that you will be looking for a new position at another institution.

Graduate students often worry about courses and grades. However while grades may be considered, they are seldom the deciding factor in consideration for an academic position. Given the resumes of several potential faculty members, the candidates with the strongest portfolio of published research almost always appear in the final cut for consideration.

The wise graduate student recognizes that to be competitive for an academic position it is absolutely critical that they have already commenced a life of scholarship. Their success in finding the position of their desire will be directly correlated with their evidence of productivity while a graduate student.

My favorite comedian is Jonathan Winters. My favorite Jonathan Winters' routine involves someone from the audience handing him some object. He would then proceed to use the object in a tremendous variety of ways, most of which were never the intended use of the object in the first place.

While lecturing I often use this Jonathan Winters' routine. When graduate students ask a difficult question it is with real relish that I explore as many different ramifications of the question as possible. Some of these discussions are bizarre and some inspired. Occasionally, after such a discussion, my excitement over the fabulous insight resulting from the discussion approaches euphoria. The best ideas I have ever written occurred to me in such interactions with brilliant graduate students.

After one such discussion, and what I considered an extremely insightful explanation, CR approached me after class.

"Have you written this lecture?" he asked.

While attempting to maintain my credibility as a scholar, I tried to explain that this particular explanation occurred as a result of the interaction in our seminar.

"Well", he continued, "would you be offended if I tried to capture these ideas?"

Always willing to encourage eager young minds I readily agreed that he should proceed. I suspected that after some effort, and because of the press of other courses, that the attempt would be aborted. Much to my surprise a well-crafted manuscript appeared in my box three days latter. The paper had captured the essence of our discussion. However, even more important, there was significant evidence of considerable thought beyond our discussion. The paper raised some provocative issues. I immediately requested an interview with CR. Thus began one of the most fruitful publishing episodes in my career as CR and I collaborated on several papers over the next year or two while he continued as one of my graduate students. Each of these papers often started in the same way.

"Have you published these ideas yet?" And when they had not yet been published he soon began another collaboration that resulted in a joint publication.

CR went on to a brilliant academic career and has continued to be a very productive scholar who is now considered one of the leading people in his field.

Publication strategy Number 4

Publish that lecture.

The lectures of the most inspiring professors often run considerably ahead of their ability to publish. When a lecture or discussion inspires you, it is just possible that the professor has not had time to publish his or her ideas. Ask that all-important question, "Have you published that lecture?" The results may be a fruitful collaboration that will benefit both your career and that of your mentor.

Our assignment for the semester was to design and conduct a research study in experimental psychology. Our reading assignments had introduced us to some of the latest research findings and theory concerning human learning. My study built on one of these current research papers in an attempt to resolve some of the confounding that seemed to be a problem in the interpretation of the findings. Thanks to the experience in the Training Research Laboratory, I had previously participated in several research investigations so the process was not entirely new to me. The study went very well. The apparatus worked without difficulty. The

student subjects showed up as scheduled. The analysis of the data showed significant differences in the direction predicted by our hypothesis.

The professor was very pleased with the study. He gave me an A for which I was very grateful. He wrote a note on my paper that said "You ought to publish this paper." I was impressed but ignored the note and went on to other work in other classes. I never published the paper.

Sometime later, when reading the journals, I came across a study that was almost an exact replica of my own work. This study was conducted several years after I had done the study for my class. Over the next few years this particular study triggered a flurry of research activity regarding the question involved. But by then, I was involved in other things and it was too late for my study.

I often wondered what would have happened to my career if I had taken my professor's advice and published that paper. It is a lesson that has affected my career since. If research is worth doing, it is worth publishing. If a paper is worth writing, it is worth publishing. If a paper is not worth publishing, then perhaps it is not worth doing.

Our graduate program involved courses from a number of other departments. We had recommended that our students take some computer science courses from the CS Department; some statistics courses from the Statistics Department; and some psychology courses from the Psychology Department. As is sometimes the case, professors in one area look down on other academic areas as not as sophisticated, not as rigorous, or not as critical to society as their own.

While we had permission from the department for such interdisciplinary study a particular psychology professor really felt that our students were not as capable as those from his department and consequently that they should not be allowed to enroll in his course. But, he was overruled and BT found himself enrolled in Professor X's Social Psychology course.

The major activity for the course was to conduct a study and write an article reporting the results of the study. BT completed this assignment and completed a study that he and I thought was a significant contribution to the field. Being a very confident individual BT assumed that his paper would be accepted and that his grade would be commensurate with his perceived performance. However, when the grades were issued he found himself with a C, not an acceptable grade for a Ph.D. student.

A conversation with the professor gained no satisfaction. The professor expressed his disdain for our field and suggested that in the

future the student would do well to avoid study in psychology. BT was upset by this turn of events but resolved to remedy the situation in a most creative way.

He revised the paper, had it read by some other colleagues, had the paper edited for format and submitted it to the Journal of Social Psychology[6]. After a revision it was accepted for publication and subsequently appeared. In the mean time BT decided to consult the Citation Index to see how extensively the Social Psychology professor had published. To his astonishment he found that the professor had never published in the Journal of Social Psychology.

BT sent a reprint of his published paper to the professor with a brief note that said simply. "Some of your colleagues do not agree with your evaluation."

Publication strategy Number 5

Never write a paper that you don't intend to publish.

Since only 5% of all Ph.D.s ever publish anything beyond their dissertation you might gain considerable satisfaction by sending your published paper to the professor who gave you the assignment to write it in the first place. If the professor is on your committee, however, you may want to wait until after your defense.

Whenever I give an assignment for a graduate student to write a paper it is accompanied with the direction, "Submit your paper for publication in an appropriate professional journal." If the student feels that their work is not worthy of publication and chooses not to submit it, then their grade reflects this self-evaluation.

For some students this is a threatening requirement, but for others it inspires them into a life of productive scholarship. BT was one of those inspired to a life of publishing. Every paper he wrote in graduate school was submitted for publication. When he graduated he continued to be a very productive scholar. Today he is one of the most widely published scholars in our field.

A few years after he received his Ph.D. he approached me at a national convention with the words, "Gotcha!" I was taken back.

"Excuse me. In what am I got?"

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[6] I was perhaps a bit more persistent than my professor had been in encouraging RT to publish this paper.

"I have more publications in referred journals than you do," he answered.

"I didn't know we were having a contest," I protested, "or you wouldn't have had a chance." Of course this was ego talking. There is no way that I have been as productive as BT. And secretly I was very proud of the very small role that I played in helping inspire his productivity.

"Well, " I explained by way of excuse, "the last several articles I've submitted for publication have been turned down. The approach to research that I have been pursuing does not seem to be in vogue at the moment." This was true. I had received several discouraging rejection letters about my research papers in the recent past.

"I've never been turned down," he protested.

"Don't lie to me." I countered. "Remember, I was your major professor. I've reviewed many of your papers. While you are very productive, I know that you don't write all that well. It is very unlikely that you haven't been rejected on some papers."

"No! I have never been rejected. I have had to resubmit from time to time, but I've never been rejected."

"It just doesn't seem possible," I still argued.

"Well, you have to understand," he explained. "There are only three possible reactions from an editor or the reviewers: accept as is, revise and resubmit, rewrite and resubmit. Since I always revise or rewrite and always resubmit I have never been turned down. Oh, I admit that I have had to change the title on a paper or two, but I always send it back to the same editor. After three submissions I have always been accepted."

As a reader, you should know that the three evaluations are: Accept, revise, or reject. But BT reinterpreted the third category as rewrite and resubmit.

Publication strategy Number 6

Always rewrite and resubmit.

There are really only three responses when you submit a paper for publication in a referred journal: accept (which seldom happens on the first submission), revise, or change the title, rewrite, and resubmit. Remember your grandmother said it, "If at first you don't succeed …."

10 Make Stuff Up

In my final semester of undergraduate work[7], a check with the registrar showed that I was short one hour of credit for my minor in mathematics. Naturally there were no one-hour math classes so it was necessary to enroll in a three-hour class. The University of Illinois had already awarded me a fellowship for my Ph.D. study, hence the completion of the additional math class assumed considerable significance for my future. A class in number theory appeared, on the surface, to be the easiest path to the necessary credit. The year was 1961. New mathematics in the public schools was still in the future. Computers were just coming on the scene. Binary arithmetic, base 8, base 16, and other representations of numbers were not in the repertoire of a small-town undergraduate student scrambling to complete his bachelor's degree.

This particular class in number theory was, for this student, a unique math class: no problems to work; no homework; a very small textbook. At the end of each lecture the professor merely said, "Think about it!" Think about what? How do you think about mathematics? In desperation, and as a substitute for thinking, I read the textbook every week. It wasn't difficult, it had only 97 pages and a bright yellow cover. However, the concepts presented floated over my head like clouds in the sky. I had no idea what the course was about, or what the text was about. Each week a lecture, the injunction to "Think about it!" and another read through the text.

The midterm exam was a disaster. It had no problems to work, only a single question: "Invent a number system." Invent a number system? What in the world does that mean? In true survival mode I wrote for the whole two hours. However, it didn't fool the professor. There were seven students in the class; there were seven F's on the midterms. When we objected, the only explanation from the professor was, "Think about it!"

My anxiety was at an all-time high. My graduate career was about to be terminated before it began by the unnerving command, "Think about it!" I tried every avenue of escape: Another class? Getting the registrar to waive the credit? Home study? There were no other options. My bachelor's degree, and hence my entrance to graduate school, were both riding on a class in which I had received a failing grade on the midterm and, worse, a class that was to me completely incomprehensible.

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[7] The following account appeared as part of the Preface in my book *Instructional Design Theory* published by Educational Technology Publications, 1994.

Somewhere in the thirteenth week the light came on. Number systems are inventions. They are not natural phenomena. Number systems are like any other invention: an assembly line, an organization. A number system is merely a system of logic consisting of premises and conclusions. Base 10 is only one of many possible number systems. Base 10 numbers are useful for many everyday things, but other systems might be equally useful.

The day of the final arrives. My anxiety was still high, but at least I thought I understood. You guessed it, only one question, "Invent a number system." Either I understood or it was too late. My future graduate studies depended on my ability to invent a number system. So I wrote, "Let there be an oar and a rubber boot." I proceeded to define a binary number system with two elements, an oar and a rubber boot. I was in the professor's office the next day to see if I was going to graduate school or not. He handed me my paper with a large red A written across the top. I thanked him, breathed a sigh of relief, and vowed to never take another math class as long as I lived.

My first year of graduate school was very difficult. Not only was there a tremendous amount of work, but there seemed to be too many contradictions. The content of learning psychology challenged many of my fundamental beliefs. There were numerous contending systems, each claiming to explain learning. I struggled for days trying to explain learning of the concept *green* using only *S-R* bonds. I found myself in the basement of the psychology building feeding rats that were on a deprivation schedule. Why was I feeding rats when I wanted to know how to teach children? I was about ready to give up and look for a real job.

About this time B. F. Skinner visited our campus. Like my fellow classmates, I went to hear the great man. I don't remember any details of his lecture, but his response in the question-and-answer period changed my life. A member of the audience said, "Dr. Skinner, in your book (which he named) you said such and such (some detail of Skinner's theory); but tonight you seemed to contradict yourself by saying such and such" -- he quoted a part of Skinner's speech.

"Hell, " said Skinner, "do you think I believe everything I ever wrote?"

This was a great insight for me. Here was a great author saying he changed his mind and now disagrees with his earlier self. However, what he said next changed my life.

"What I've tried to do," continued Skinner, "is to make only a few assumptions and then see how much of human learning we can explain with only these assumptions." He went on to defend his theory and the

point he made in his speech. I stopped listening before he ended his explanation.

"Good grief," I thought, "psychology is just an oar and a rubber boot as well. Psychological systems are not reality either, but merely logical systems that try to explain what we observe in the real world. Behaviorism is merely one logical system that is tested against reality to see how good a match can be found. Just like there can be many different number systems, there can be many different psychological systems. Each is tested against reality to see how close it fits, but none are reality, merely inventions."

I returned to my studies with renewed enthusiasm. I looked upon all theories as artificial systems, and found them fascinating. I stopped trying to make all theories agree and force them to form one great truth. It became a game to see if I could identify the theorist's assumptions and conclusions. It was fascinating to observe that some systems were carefully constructed and logical, while other systems were very loosely constructed and often violated the canons of logic. I realized that theory building is our puny attempt to understand our world by inventing artificial systems and trying them out against the world.

Later in my graduate career I had one additional insight. We were studying learning and some instructional theories. It was apparent that learning theories tended to explain how persons acquire and store knowledge, but they have very little to say about how an instructor should structure and sequence knowledge to promote efficient and effective learning. It occurred to me that one could build a logical system, a theory, about instruction. So, I said, "Let there be an instructional oar and rubber boot." I went on to invent a theoretical system about instruction. I have been fortunate in that others have found this system helpful in their own efforts to build instructional products and systems.

I had just completed what I thought was an exceptionally fine lecture and had paused for questions. A student asked a particularly challenging question extending our discussion. It occurred to me that if I drew a diagram, a flow-chart as I recall, relating several elements of our discussion that it would clarify the point I was trying to make. I proceeded to draw my diagram on the blackboard and to explain the relationship of the ideas involved as I proceeded.

As I concluded my drawing and accompanying explanation a woman sitting around our seminar table to my immediate left ask, “Where did you get that diagram?”

“I’m not sure that I understand the question.”

"What is the reference for the diagram you drew on the board?" she persisted.

"Well," I stammered, caught somewhat off guard by the request, "There is no other reference, I drew this diagram to help us understand the relationship among these three components. There won't be a reference until I submit this diagram for publication in some article." I jested.

"You mean that you just made it up?" she almost screamed with considerable emotion.

Now I was completely bewildered and responded "Yes, I guess I just made it up."

"WELL!" she intoned in disgust, "I've never been so insulted in all my life. To think that you have the nerve to just make stuff up to teach us!" And with this last word still hanging in the tense air she gathered up her books and made a dramatic exit from the class, slamming the door as she exited the room.

The entire class was somewhat stunned and sat in rather embarrassed silence, all eyes trained on a somewhat disconcerted professor.

After a few moments I recovered sufficiently to say, "Well, someone has to make this stuff up, why not me? And why not you?"

I went on to elaborate my feelings to the class.

"Where does she think all this information we study comes from? As far as I know God wrote only a few commandments on the stone tablets. But most of the information we have, most of the knowledge we study, most of the science that makes our life better had to be 'made up' by somebody."

"Now we do have some agreed on ways by which different kinds of information is 'made up'. There are some agreed on conventions for testing our knowledge, for critiquing our scholarship, for evaluating our art. But ultimately every idea, every principle, every theory originated in the mind of some scientist, artist, scholar, or writer. In a sense, I guess, they just made it up."

So, why not you? If you are a graduate student do you have the courage to "make stuff up"? Or are you limiting yourself to read and teach what someone else "made up"? Are you an inventor, discoverer, creator or merely a repeater, or interpreter? Are you willing to expose yourself by "making stuff up" and submitting it for review by fellow students, professors, editors, and most important, by other scientists, artists, writers, and inventors in your field.

If you have read this far I am sure that you are a person who has a desire to contribute to the world of science, art, or scholarship. Otherwise

you would have put this book down long ago. So contribute! Take the risk! Make stuff up! Write it down! Create something! Do the experiment! Engage in whatever form of scholarship is appropriate and share it with others. Nothing will help you grow faster than "just making stuff up" and sharing it with others. There is no shortage of persons who will find the fallacy in your logic, find the errors in your method, and critique your fondest creation. But, how much better off you are. For having "made stuff up" and had this stuff submitted to the rough weather of constructive and not so constructive criticism, you have become more aware, your thought is more precise, your method is more sure, and your creativity is improved. So revise your stuff, resubmit your stuff, make your argument, stand your ground and make up some more stuff. After all that is what scholarship is all about.

The ultimate publication strategy

Make stuff up!

Submit it for review and criticism. Then revise it, modify it, defend it, and submit it again. Then make up some more stuff. With all the information available in the world there is still room for lots more good stuff.

DISSERTATION

11 Write Your Dissertation First

Hugh Nibly is one of the more fascinating classics professors that I've ever met. He speaks many languages and he reads ancient manuscripts. His writing adds significant meaning to so much of our world whose origins have been lost in antiquity.

RA was very interested in reading Dr. Nibly's work. On one occasion he was visiting with Dr. Nibly in his office. The office was unlike any he had ever seen. Every possible wall contained a bookshelf. Every shelf was filled with shoeboxes. Every shoebox was filled with handwritten 5 x 8 index cards. After while RA couldn't resist the temptation, "Dr. Nibly, what is on all of those cards?"

"Only two things," Nibly replied, "those things I agree with and those I don't."

"But that's everything." RA protested.

"Oh no dear boy! Most things aren't worth considering."

I've often had occasion to consider Dr. Nibly's profound statement: "Everything I agree with and everything I don't." What a great guideline for graduate study.

What should I read?

"Those things I agree with, and those I don't."

Isn't that everything.

Not by a long shot. "Most things aren't worth considering."

What classes should I take?

"Those [classes] I agree with, and those I don't."

Isn't that all of the classes?

With due respect to my colleagues, "Most [classes} aren't worth considering."

What professors should I have on my committee?

"Those [professors] I agree with, and those I don't. "

Who does this eliminate?

All those who either don't care what you think, or who are not interested in what you are thinking about. "Many [professors] aren't worth considering."

Who should I have as my academic chairperson.

"[Someone] I agree with." Let the other members of the committee represent those I don't.

"Those things I agree with and those things I don't," leads to the most important graduate student strategy of all:

Write your dissertation first.

Come on! We all know that you can't start your dissertation until you have finished your coursework and passed your comprehensive examination. Look! Here is the regulation in the graduate catalog.

You're right. It is a regulation. Do you think that this regulation is based on sound pedagogy, carefully reasoned curriculum planning, and research based learning theory? IT IS NOT! Almost every university has this regulation so you won't sue them. If the faculty allow you to start on your dissertation before you have demonstrated that you're capable of finishing a degree, then you may feel that the faculty have conveyed a message to you that they have already decided to let you finish. If the faculty let you start your dissertation early you may conclude that they have already decided that you are a good candidate for a Ph.D. or other advanced degree. Universities don't want to provide any ammunition for a good lawyer to be able to imply that the faculty has misled you in any way. Consequently, universities make a rule: "You can't start on your dissertation until you have finished your coursework and passed your comprehensive examination."

So, should I ignore this rule? YES! But remember the faculty did not allow you to do this so don't infer that you have their permission. You will probably be told that you can't start on your dissertation until after you comprehensive exam. Do it anyway!

How can I write my dissertation first? I haven't had the class in how to write a dissertation. Every graduate program has such a class. They masquerade under names such as "Graduate Research."

Write your dissertation before you take this class. This class will confuse you and restrain your creativity. Most such classes make

assumptions about what constitutes appropriate research for a thesis or a dissertation. Most often the model is based on the experimental method and includes such topics as hypotheses, limitations, method, procedure, design, analysis, results, discussion, etc. This set of headings is great if you are pursuing an experimental research study using classic scientific method. BUT, what if you have a different idea about what you want to contribute. Later, after you have written several drafts of your dissertation throughout your graduate study, then you will be able to select from this class on how to write a dissertation "Those things [you] agree with, and those things [you] don't." Then you won't let preconceived notions (those things that are not worth considering) about the form for a dissertation get in the way of creativity.

A dissertation or thesis is first and foremost a contribution to the knowledge of your field. There are many methodologies for contributing to knowledge, some that have not yet been invented. Perhaps you are one who will make a significant contribution not only to the findings of your field but to the methodology used to create new knowledge. We have a tendency to limit graduate students too early and too much. Some even believe that graduate students are incapable of creative, original thought. But in reality you are the scholars and leaders of tomorrow. Some of you will change the world. Why not you?

Why did you come to graduate school? What was your burning question? What do you hope to accomplish? How do you want to change the world? Something motivated you to come. What? This is your dissertation. Your dissertation should be your passion. However, if you haven't written it down it may not be articulated sufficiently to be a guiding force in your life. Perhaps you have a vague question that needs considerable refining before it will guide a program of research or scholarship. Perhaps you haven't articulated your thoughts in a way that you can communicate them to others, so when you explain your passion it is not understood. When you are not understood then your professors, fellow students, and other well-meaning individuals will try to get you to pursue their passion. Maybe your passion is complimentary to theirs and you have found a colleague with whom to cooperate. BUT, how do you know if you have not formulated your question sufficiently to be able to enter into an informed dialogue?

During the first few weeks of graduate school you should take some time to contemplate, introspect, think, ponder, and, most important, write. Write down your ideas. Formulate your question as many ways as you can. Step back from your text and let it talk to you. Have a dialogue with yourself. Do you agree with what you have written? Do you understand what you have written? Is what you have written sufficiently specific that it can be used to guide you to "Those [you] agree with and those [you]

don't." If not, rethink. Ponder some more. Revise, write some more, and more, and more.

You should rewrite your dissertation every few weeks throughout your graduate career. You should return to this manifesto again and again. Every time you register for a class you should read your dissertation and ask, does this class support my thesis? Does this class challenge my thesis? Is this class irrelevant to my thesis? If it falls into the first two categories pursue the knowledge with vigor constantly comparing new ideas both pro and con with your ideas. If it falls into the last category, avoid it or, if required, jump the hoops with the minimum effort required to acquire the necessary credit.

You will be advised to read widely and read everything in your field before you decide on a research question. With due respect to well-meaning professors, this is a ridiculous idea. The library is very large. The literature in every field grows exponentially. You cannot read all the important literature in your field. It is not possible. How do you know what to select? Many students let their professors direct their reading. But then you are reading ideas that agree or disagree with your professor's passion, not your own.

Every time you find a professional item to read, whether by assignment or by inclination, ask yourself, does this book, chapter, or journal article support my thesis? Does it challenge my thesis? Is it irrelevant to my thesis? If you have written your dissertation first, if you have carefully formulated your question, if you have articulated your passion, then most of the literature of the field "… is not worth considering." If you haven't written your dissertation first, how will you know what to read? Reading is extremely important. You need to be informed about the field. However, it is most important that you know those ideas that agree with you and those that don't.

Write your dissertation before you go to the library.

Write your first version of your dissertation before you read extensively, before you go to the library. Write enough that your question is clear. Write enough that you can determine, "Those things I agree with and those I don't." Then, once you have formulated your question the library (or the Internet) shrinks to a manageable size. If you find it still unwieldy, then think some more, write some more, and refine your question some more.

Do you want an enjoyable graduate career? Of course. We all do. If you will formulate your questions early in your career, if you will use this question to guide your study, you will find your enthusiasm increasing and each day too short to do what you would like. If you let someone else

direct your graduate career because your question is vague, unspecified, and unwritten, then you will likely find a graduate education burdensome, unpleasant, and drudgery. In fact you are likely to join the huge army of ABD (all but dissertation) graduates. Or more sadly, you may join the large body (some estimate as many as 95%) of Ph.D.s' who never again do a significant piece of research because their dissertation was so onerous.

What have I learned from the success and failure of hundreds of graduate students?

Dissertation Strategy Number 1

Write your dissertation first.

12 An Empirical Dissertation Can Be Done In A Weekend

I had just collected data for an experimental study. The study included 100 students with 5 data points for each student. Now it was time to determine if the mean differences that seemed to support our hypothesis were really differences or did they occur by chance? Armed with several sheets of paper containing the raw data I sat down at the 100 key Monroe calculator to conduct an analysis of covariance.

You probably haven't seen a hundred-key Monroe calculator. It is a mechanical device that has keys from 1 - 10 organized in each of 10 rows. There were also some additional operation keys, the most important of which was the calculate key. To do an analysis of covariance it was necessary to enter two pieces of data on the keyboard and then press the calculate key. The gears in the machine whirred and clanked as the numbers in the display at the top spun around indicating the results of the calculation. When silence was restored the next pair of numbers were entered. After one phase of the calculation was completed the result was recorded and the next phase of the calculation began in like manner.

There was one serious drawback to this mechanical marvel of a machine. If you made an error in entering the data and accidentally pushed the calculate key before correcting the entry, it was necessary to return to the beginning of this phase of the calculation and begin again. In my case this meant that 200 sets of figures had to be entered without an error during each phase of the calculation.

I'd like to have back the hours I spent with this green monster of a device. Many of the naughty words I learned in my youth were delivered to this frustration-generator. Of course, the machine worked perfectly, it never made a mistake in its whirring. The mistakes were all mine in punching keys on its keyboard. Nevertheless the wrath generated by my own clumsiness was directed at Mr. Monroe's green wonder.

"Would you review the schedule for my dissertation research?" requested one of my doctoral students. Her schedule was something like the following:

Conceptualize the research question: June 1 - June 30

Do a literature review: July 1 - August 30

Develop the experimental treatments: September 1 - October 31

Collect the data: October 31 - December 15

Analyze the data: January 1 - February 28

Write the dissertation report: March 1 - April 30

Defend the dissertation: May

"Wow!" I observed. "This schedule requires a whole year to do your research. Why are you taking so long?"

"Isn't a dissertation supposed to take a year." was the surprised reply. "The university requires that I take 18 hours of dissertation credit, that is equivalent to two semesters of work, so I figured that a dissertation was supposed to take a year." she added in explanation.

"No way!" I exclaimed. "An empirical dissertation can be done in a weekend."

I received an incredulous look from my student. She was almost ready to walk out of my office and seek an advisor that was in the real world.

Observing her demeanor I added the following in explanation:

"Look, you already know what you want to do for your research. We have discussed several research questions. You should be able to write a purpose statement in a few hours, less than a week end."

"I grant you that you need more literature review, this will no doubt require several weeks, as you have indicated. It would have been much easier if you had conceptualized your dissertation earlier in your program.[8]"

"Your experimental treatments will require you to develop some instruction. I grant that this will also require several weeks.[9]"

"But once your treatments are created, you plan to collect the data using a computer. You can collect data on 25 students at a time. You estimate that your treatments will require only 90 minutes per student during the first data collection. You can easily collect all your data in the one day."

"Once the data is collected, it will already be on the computer. The data can easily be sorted and organized using a database. This will take only an hour or two. Once the data is organized it can be analyzed using a commercial statistical analysis program. This will take only a few minutes."

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[8] She had never read Essay 11 and learned to write her dissertation first.

[9] She had never read Essay 8 on carrying a notebook and writing, writing, writing.

"With your analysis in hand you can write the result section of the dissertation in two or three hours. All you need to do is report your statistical analysis."

"So, lets see, the data collection will require one day (Saturday) and the analysis and results will require a second day (Sunday) so you can conduct your empirical study in a weekend."

I don't think that my student was convinced.

Many of my students have been involved in non-empirical dissertations. These often involve inventing and building computer tools. Sometimes they involved exploring innovative technology-based instructional procedures. Inevitably at least one member of the student's committee wants to know where is the data collection. There seems to be a tradition in educational research that we must administer treatments to two or more groups, collect data, and analyze the data. If we don't get involved in this empirical activity there are many in our profession that seem to feel that it is not a legitimate dissertation.

Developing a new computer tool or developing a complex technology based product is a tremendous amount of work. Some of my students may spend several months or even a year in this activity. When a member of their committee suggests they must also conduct an empirical investigation before the dissertation is acceptable, the students are often very discouraged. Why? Because they have this mindset that an empirical dissertation requires another year of effort.

But! If you have already developed a computer tool or if you have already developed some innovative technology based instruction, then you have already completed the hard work. The research or product review has been completed as part of your development activity. Potential experimental treatments already exist as part of your development efforts. It is usually possible in a few days to modify the tool or product to provide experimental treatments. In many cases the length of the experimental treatment need not be lengthy, or if it is, it can often be administered using the computer or the Internet with little involvement of the experimenter.

Once the data is collected the analysis is a matter of a few hours. Adding a result section to the report of the development is a matter of a few more hours.

So, I tell my development-oriented students, don't sweat it! The empirical part of this dissertation can be done in a weekend (or two).

The hardest part of any dissertation is asking the right question. Don't wait until you start your dissertation to determine this question. Write your dissertation first, or at least write the purpose of your graduate study and the question(s) that are your passion early in your graduate career.[10] Then the first phase of your dissertation research will be done before you start your formal dissertation research.

If you write your dissertation first, every class, every article you read, every book you read, and every convention address you hear is part of your literature or product review.[11] If you buy a notebook[12] and are constantly writing your ideas, jotting down references, arguing with the authors you read, and thinking your own thoughts by writing them, then not only have you thoroughly examined your research question, but you have analyzed in detail the literature, research, or products that relate to your question. By the time you start your dissertation your literature review merely needs to be consolidated, the hard work has been done over the entire period of your graduate career.

If you become actively involved in real-world development,[13] if you submit yourself for exploitation by working with professors who are doing interesting things[14] then you will have already developed numerous potential experimental treatments. By the time you start your dissertation you merely need to select the appropriate treatments for your study, make some necessary modifications to facilitate data collection and you are ready to collect the data.

So, what's left? Arrange for some student subjects, schedule the data collection, collect the data, analyze the data, and write the result section. The other sections of your dissertation have already been written because you wrote your dissertation first, you were engaged in real-world development and research, and you submitted yourself for exploitation by working with a productive faculty mentor. You can do the rest in a weekend (or two).

[10] See Essay 11 Write Your Dissertation First.

[11] See Essay 11 Write Your Dissertation First.

[12] See Essay 8 You Must Write to Think.

[13] See Essay 4 Don't Let Coursework Limit Your Education.

[14] See Essay 5 Submit Yourself for Creative Exploitation.

Dissertation Strategy Number 2

An Empirical Dissertation can be done in a weekend, assuming that you have followed some of the other strategies recommended by this series of essays.

13 Don't Let Format Cripple Your Creativity

I had just accepted an appointment at a new university. During the interview I had been asked, "Have you chaired many doctoral committees?"

I answered that I had been the chairperson for several students who had completed their degree. I didn't think much more about this question until I started my job and met with my department chairperson for the first time. "I would like you to take over the advising of the following Ph.D. students," she requested, handing me 15 folders each with a different name written on the tab.

Fifteen Ph.D. students were double the number I had previously worked with in my entire career to that point. I was overwhelmed. Diligently I began to call each of these students to find out their status. To my relief, I found that about half of these students had dropped out of the program without completing their degree and had no intent of finishing their degree. I was still left with eight students to advise.

One of these students was a middle-aged woman who was working in the public schools. She had started her degree several years earlier and the record showed that her coursework had been completed for more than three years. Apparently she had been working on her Ph.D. for all this time. I called her and we sat up an interview.

"Tell me about you." I asked. "What do you do with the public schools?"

She related to me how for the past five years she had developed a discipline program that involved counseling, parent visits, and a very informative reporting system. Since I had six children in the public schools I had a serious curiosity about her ideas and so continued to quiz her about this program. It was a very well thought-out program, very well developed, very innovative, and based on her report very successful in several schools in her district. I was very impressed by how well she articulated the program, the creativity involved in its development, and the tenacity with which she had pursued its implementation.

After about an hour I finally asked, "So what is the status of your dissertation?"

Her countenance fell, the animation with which she related her work on the discipline system evaporated and a solemn gloom overshadowed her face. "I'm very discouraged!" she said. "I've written five proposals, I've had three advisors (you are my fourth) and I've been unable to get a

proposal approved. I'm about ready to quit but I really want this degree after all the work I did in my courses."

"Do you have a copy of your last proposal with you?" I inquired.

She produced a manuscript from her briefcase. I took the time to read it. It was awful. She was proposing to send a questionnaire to a number of schools in an attempt to determine what kind of discipline programs they had in place, if any. It was evident that she did not know how to write a questionnaire. It was apparent that she did not understand sampling. Her procedure was weak and would be unlikely to yield satisfactory results. Most important, her writing as well as her demeanor indicated that she had little or no interest in collecting this data.

"Why are you doing a questionnaire study?" I asked.

"Because I was told that a dissertation required data collection and this is the only thing I could think of that was of interest." But it was clear that she had very little interest in this data.

"Have you written about your discipline system?"

"Oh yes!" She replied, her eyes again showing some of the spark that she exhibited during her previous description of her program. She reached in her bag and handed me a large manuscript. It was a manual for implementing the discipline program. It contained a description of the program, forms and procedures for implementing the program, and training for administrators who would administer the program. I took some time to read some of this document. It was very well written. Clear, concise, full of energy. I wanted to read it all.

"Good grief!" I almost shouted. "This document is better than most of the dissertations I've seen. Why don't you submit this for your dissertation?" I went on to inquire as to authorship, she was the sole author. When was it written? During her work as a Ph.D. student. It certainly qualified as original scholarly work.

"I didn't think that you could submit a manual as a dissertation." She rationalized. "I thought a dissertation had to be a questionnaire or some other type of data collection.

"This work is far more important than some table summarizing whether or not a bunch of schools are using some form of discipline system. Let's use this for your dissertation."

Her enthusiasm brightened the room. Her eyes danced with delight. She began to immediately explain nuances of her work and areas where she wanted to improve. She began to tell me about successes and some areas where problems had emerged and then been solved.

Over the next few weeks we met several times as she revised her manual and added sections reporting qualitative data about the success of the program. We submitted the results of her efforts to the other members of the committee. All were very impressed. Not one asked why she didn't send out a questionnaire instead. Her work was recognized for the tremendous effort and creativity involved.

The only difficulty encountered in completing her degree was the editor in the graduate school office that checks the format of dissertations. This person was concerned that the manual and accompanying documentation submitted by my student didn't follow the usual format of dissertations from our college. It took a letter from me and a couple of meetings with the editor including a review of the Chicago Manual of Style to convince him that this was an acceptable format for a dissertation.

For three years this woman had encountered a format stonewall. Her preconceived notion of what was an acceptable dissertation had prevented her from pursuing the important work in which she was engaged as an example of scholarly activity. She was letting format get in the way of her dissertation.

After completing her degree, she continued to improve her program. It was accepted as the operating procedure for a very large school district. She was in demand to present lectures and seminars on her program throughout the country.

IM was an unconventional student. His ideas almost always came out of left field. For me he was a delight to work with because he kept me constantly on guard. Furthermore, discussions with him were never dull.

It was time for his dissertation proposal. He, at my recommendation, had recently read a book on artificial intelligence by Marvin Minsky.[15] This is a very unusual book. It consists of 270 very short essays about how the mind works. No essay is more than a page long. Each essay can be read independently of every other essay, that is, they each stand alone. The basic premise of this book is that the mind is like an anthill. There is no mastermind ant directing the work of the colony. Each ant is programmed to do its thing. Different ants are wired to do different jobs. When all of the ants are working together it appears to be very organized. In a like manner Minsky hypothesizes that the mind is composed of many individual agents. Each agent knows how to do its thing. When all these little agents work together it gives the appearance of intelligence. But

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[15] Marvin Minsky. (1986). *The Society of Mind*. Simon & Schuster.

there is no mastermind controlling the rest of the mind. There is no executive function. Minsky's book was written after this same idea. Each essay stands alone and conveys some information about the mind and how it works. No one essay by itself is complete. But taken all together the entire set of essays provides a fairly comprehensive theory of mind.

IM was taken with the Minsky book. "I intend to write a dissertation in the model of The Society of Mind." he announced in one of our meetings. He went on to explain that he intended to write a series of very short essays about instructional design. Each essay would stand-alone. Each would describe some aspect of the total problem. Only when taken all together would a comprehensive picture of the instructional design process emerge.

I was intrigued, but skeptical. A theory dissertation is hard to sell to a committee in the first place, even when written in a conventional manner. But a theory dissertation, using a most controversial format would be almost impossible to get approved. I expressed my reservations and concern. But IM was not to be deterred. He took a copy of Minsky's book to every member of the committee. He carefully outlined his procedure and how his dissertation would emulate this approach in the area of instructional design. He met with each member of the committee several times patiently explaining again and again why this approach would be appropriate and how he would proceed. Finally, probably to avoid future meetings with the candidate the members of the committee hesitatingly approved his proposal.

In the mean time, IM had been vigorously working on his manuscript. He had been writing essay after essay. Each essay was very carefully edited. He submitted each essay to various colleagues for review and comment. Most of these reviewers had no idea of how all these individual pieces would be assembled into a whole. They merely reviewed them as individual ideas worthy of comment.

After many months, the project was finally complete and submitted to the committee in preparation for the final defense. The defense meeting was most interesting. Three members of the committee were very impressed with the document. It was unusual but made for very interesting reading. However, all three realized that it was not a dissertation you could skim. It had none of the usual markers that allow you to check for this or that element of a study. It required one to read each of the essays (in any order). Then as more and more of the essays were assimilated a picture of the whole process of instructional design advocated by this theory began to emerge. It was a very interesting experience, one I found very exciting. I believe that two of my colleagues also enjoyed the experience. It was surely different.

The other members of the committee began the questioning. "I found this paper very difficult to understand." was the opening salvo. "I was unable to find the purpose statement, or the method section of this dissertation." Obviously this committee member had a fixed idea of what was an acceptable dissertation and was skimming the paper for the expected sections (probably an hour before the examination).

IM patiently read the preface of the volume which explained the approach that he had taken and referenced the Minsky book as a model.[16]

The faculty member made several additional comments that seemed to indicate that he had not read the manuscript. Finally, IM politely asked, "Did you read every essay?"

"No, I just skimmed the document." the examiner reluctantly admitted.

"Did you read Minsky's book?" the candidate continued.

"I had no interest in artificial intelligence." came the terse reply.

The other members of the committee, who had carefully read the manuscript then jumped in to express their delight. They began to point out ideas that they especially liked and how reading another of the short essays enhanced these ideas. IM didn't have much else to do during the defense.[17] The discussion moved to dissertation format and whether such an unusual format was acceptable. The three who had read the book finally convinced the two who had not that they were not in a position to judge the work. The candidate passed.

The graduate school editor was another question. In passing we merely observe that IM helped expand his concept of what was an acceptable format for a dissertation. A more timid student would have probably given up the battle, but IM was determined and persevered.

There are many ways to do scholarly activity. A given academic college or department often has a rather narrow conceptualization of what constitutes a proper format for a dissertation. When one tries to force fit a theoretical dissertation into an empirical dissertation format the result is a misshapen monstrosity that pleases no one. When one attempts to describe the development of a product or tool in terms of hypotheses, methods, and data analysis the result is unreadable gobbledygook.

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[16] See Essay 15 Don't Answer a Question that Wasn't Asked.

[17] See Essay 15 Don't Answer a Question that Wasn't Asked.

I have seen many students try to force their creative ideas into some limited format consisting of a set of predefined chapters. A common format in our profession is Chapter 1, the Problem; Chapter 2, Literature Review; Chapter 3 Method and Procedure; Chapter 4 Results; Chapter 5 Conclusion. This works well for an experimental study. But what about a developmental project? What about a theoretical thesis?

Select the format that is appropriate for your project. Don't just accept some predefined format and then try to force-fit your ideas into this format. You may have to do some persuading, remember No, is not the right answer.[18]

You may have to define a new methodology. You may need to find a model that someone else has used. You may not want to be as far out as IM was with his Minsky look-alike, but too often creativity is limited because we view a dissertation as some unique document that is never replicated in real-life.

The best format for a dissertation is the format that will be accepted if this project were done in the real-world where you will be employed following your degree. If you are an academic, then your dissertation better use the accepted format for referred journals in your field. If you plan to be a professional then your dissertation should follow the accepted format for products and product reports in your chosen profession.

Dissertation Strategy Number 3

Don't Let Format Cripple Your Creativity!

[18] See Essay 3 *No* is Not the Right Answer.

14 This Work Is Too Important For A Dissertation

CR came to the university with a goal in mind and carefully selected his advisor after interviewing several of the faculty members.[19] He had assisted in writing a proposal that was funded which allowed us to work together in developing a theory[20] and procedure for sequencing instructional events. It was very exciting work and we had received very positive feedback from our presentations at some national meetings.

Naturally I assumed that CR would pursue this line of research for his dissertation project. As the time approached for a formal proposal I assumed that CR would modify our contract proposal and propose to do the next phase of our research on instructional sequencing for his dissertation. One morning CR placed his dissertation proposal on my desk with the request, "Look this over and let me know what you think."

You cannot imagine my surprise when I picked up the document. The proposal had nothing to do with our work. Rather it proposed a rather straight forward experimental study investigating some instructional design prescriptions that I had been working on with other students. The proposal was excellent, the methodology proposed was very complete, and the study was likely top yield some positive results. However, it was certainly not what I expected, nor was it directly related to the extensive work CR and I had done together.

"What is this?" I questioned in an accusatory tone when we met the next day to discuss his proposal.

"I thought that you would propose to extend our research on Elaboration Theory (the name of the theory we were investigating together).

"Oh!" he explained with deep sincerity, "our work on Elaboration Theory is far too important for a dissertation."

He went on to justify his decision.

"My committee has five members. Dr. X and Dr. Y both think that the work we are doing is not likely to be successful because it is contrary to their apriori philosophical position. They will mount an offensive to prove that they are right and that we will fail in our attempt to develop this

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[19] See Essay 2 Don't Do Someone Else's Dissertation.

[20] See Essay 4 Don't Let Coursework Limit your Education and Essay 5 Submit Yourself for Creative Exploitation

theory. This would be great if their input was in the form of constructive criticism, but it won't be. It will merely be pontificating from a philosophical point of view and will be of very little benefit to our work. I don't want to be distracted by having to defend our work to critics who want it to fail and who are not interested in helping us succeed."

He went on, "Furthermore they are of the opinion that the only good dissertation must be an empirical dissertation. They don't believe that graduate students are capable of developing theory. They don't believe that there is anyway to verify a theory except by experimental studies and we are not ready to conduct an experimental study with regard to our theory efforts. On the other hand, they will not argue with a well designed empirical research investigation. So I figured that I could do the experimental study very quickly[21] and not be seriously distracted from our more important work on instructional sequencing."

What could I say? CR completed his dissertation in a few weeks but continued to spend the majority of his time on our instructional sequencing research. The dissertation was well accepted (with the usual challenges in the defense.[22]) It was a good empirical study that added a valuable piece of information to our work on instructional strategies. CR went on to further develop Elaboration Theory. It became a major position in the field and is widely used and applied today.

Dissertation Strategy Number 4

Perhaps your passion is too important for a dissertation.

CR was successful in pursuing an alternative course of action for his dissertation because he was actively involved in a number of real-world problems,[23] he carefully selected his advisor[24], he submitted himself for exploitation[25], he engaged in an active program of publication[26], and he

[21] See Essay 12 An Empirical Dissertation Can Be Done in a Weekend.

[22] See Essay 15 Don't Answer a Question that Wasn't Asked.

[23] See Essay 4 Don't Let Coursework Limit your Education.

[24] See Essay 2 Don't Do Someone Else's Dissertation.

[25] See Essay 5 Submit Yourself for Creative Exploitation.

had a clear vision of what he wanted to accomplish[27]. Consequently when it came time for a dissertation he had multiple options from which to choose for a study. Because he felt that getting approval from some members of his committee would be difficult or impossible if he pursued his first priority question, he reverted to a second priority question to avoid getting NO as an answer[28]. But most importantly, he did not desert his original goal but pursued both goals simultaneously. Today he is recognized as one of the most productive scholars in the field.

[26] See Essay 7 Scholars Publish and Essay 9 Never Write a Paper You Don't Intend to Publish.

[27] See Essay 11 Write Your Dissertation First.

[28] See Essay 3 *No* is Not the Right Answer.

15 Don't Answer a Question that Wasn't Asked

One of the significant rites of passage for every Ph.D. candidate is the dissertation defense. A dissertation is a difficult exercise at best since the candidate must satisfy at least five individuals who likely cannot agree on anything among themselves, but who each feel it their moral duty to make sure the dissertation meets their own idiosyncratic model for acceptable research. The candidate is frequently blown this way and that by the various winds of doctrine that flow from the various members of this august body of respected scholars.

While some members of the committee are likely to be very helpful to the candidate during the writing of the document, there are always others who, even though given the document to review, fail to provide input prior to the dissertation defense.

It is an unusual Ph.D. candidate that does not spend a sleepless night prior to the dissertation defense. Sleep is disrupted by nightmares of the question that is sure to be asked that will find his or her Achilles' Heel and punch a deflating hole in the carefully executed methodology and laboriously prepared document.

In this brief essay I share some strategies that have proved useful to students in the past and which may help future graduate students more gracefully survive this dreaded event.

After a year of research review, materials preparation, data gathering and analysis, and careful crafting of a final report in the form of a dissertation I was finally ready to defend the efforts of the past year of my life. My chair had been most helpful in providing guidance throughout the project, but other members of my committee had provided only minimal input.

Just prior to the examination, the statistician on my committee called to point out a possible problem in my analysis and suggested that he may ask me to address this issue in the exam. I was most grateful since his advance warning allowed me to make the necessary preparations to justify my procedure.

Like many committees mine was comprised of individuals from widely differing theoretical orientations. The defense started in the usual way by having me make a short presentation of my research. This completed, my chairperson asked me the first question. Since this question addressed the interest of another member of my committee I formulated

my answer in terms that he might have used. My chairperson immediately disagreed with my conclusion but addressed his disagreement to the other member of my committee. A very lively discussion (argument really) ensued that lasted for 45 minutes. The emotions ran high and the comments overlapped as they bounced back and forth between these two scholars. I felt that I was watching some sort of sporting event.

Finally, as the discussion started to die down a little, my chairperson said, "Perhaps we should return to questioning the candidate." He asked for other questions (I had only started to answer one so far). The statistician on the committee asked the promised clarification. I gave my prepared answer.

With that the examination was over. I was excused from the room to return a few minutes later to congratulations on attaining the Ph.D. degree. All my sleepless anxiety was for not. But I learned an important lesson that I have seen used by other students throughout my career.

Dissertation Strategy Number 5

Always choose two faculty members who represent opposite theoretical positions. Then in your defense, when one asks a question, ask the other for clarification. The resulting debate between them will divert attention from you and likely occupy most of the examination period.

RA's doctoral committee had gathered for his dissertation defense. One member of this committee, Dr. H, had a significant prejudice against experimental studies that did not extend over a full semester or a full year. He felt that you could not learn anything important from a study whose treatments were only a few hours long. RA had completed an experimental study on instructional methods comparing several different treatments and a control group. The total treatment time consisted of two class periods of one hour each. RA anticipated that this member of the committee was likely to comment on the length of his treatment.

Sure enough, when it was Dr. H's time for questions, he commenced an emotional harangue about short studies. "I can't believe that a bright student like you would believe that anything significant could be learned from a trivial study that ran for only an hour. Instructional effects usually don't show up until after …." He continued this lecture on the evils of short treatments for about ten minutes. After ten minutes he stopped and waited for a response from RA.

RA, who seldom blinked anyway, was starring directly into the eyes of Dr. H. But, he said nothing. He just starred. As the chair of RA's

committee, the sound of silence was pounding in my ears. Dr. H's gaze dropped to the table to avoid the piercing look from the candidate. Still there was no sound from the defendant. After what seemed like an excruciatingly long pause (probably only a minute even though it seemed like ten), the chairman of the committee said. "Well I suppose we should continue with the questioning." And he turned the floor over to another member of the examining committee.

In spite of the nonresponse, RA passed the defense and received his Ph.D. After the meeting I asked RA, why didn't you respond to Dr. H.

"He didn't ask me a question." was his simple reply.

Dissertation Strategy Number 6

Never answer a question that wasn't asked.

CR is a very careful methodical scholar. His study was very complete. His dissertation was very carefully prepared. He followed the graduate school guidelines to the letter. It seemed very unlikely that any member of the committee would be able to find fault with his study.

Dr. V had a reputation for always asking questions during the defense that required the student to more carefully define the technical terms involved in the study. CR's defense was no exception. When it was Dr. V's turn for questioning he asked. "You have used the term XXX. This is a very esoteric term. I don't know what it means. Can you define this term for me in terms that I can understand?"

CR sat thoughtful for a moment, then he deliberately and slowly turned the pages of his manuscript laying on the table in front of him. His finger scanned a few pages as if searching for something. Then it stopped and CR began to read. "An XXX is …" He read a couple of paragraphs that very clearly defined the term, identified who had used it previously, and explained why the term was appropriate to the current study.

"Is this unclear?" he asked Dr. V very innocently.

Dr. V grunted in acknowledgement and asked his second question. This question was the same format asking for a definition of yet a second term.

CR repeated his previous performance, very deliberately paging through his manuscript until he found the definition and again patiently reading the answer from the dissertation itself. Again he asked if the definition given in the manuscript itself was unclear.

"I have no more questions." Dr. V wisely yielded the floor.

Dissertation Strategy Number 7

Read the answer to the examination questions.

It is a statistical fact that only 2.7 members of your committee will have read your dissertation. Therefore, whenever possible merely read the answer to the examination question from your manuscript.

Epilogue

It was difficult to contain my excitement as I entered my office on the campus of a small university where I had accepted my first appointment as an assistant professor. The campus has been around for a long time. The building was old but well kept. My office was on the second floor in the corner of the building. I had a wonderful view of the quad of the campus, a large green space surrounded by classic buildings. Squirrels chattered noisily in the large maple tree just outside my window.

How fortunate to obtain a faculty appointment that would allow me ample time to pursue research as well as teach. On the very first day I outlined a research study that extended the work done for my dissertation. The first draft of a research proposal lay on my desk at the end of the first day. I was very grateful for the "Creative Exploitation" I had received in the Training Research Laboratory. Launching a research career was merely a continuation of my graduate education.

My department head was a very productive scholar who had obtained thousands of dollars in government research contracts. During the first few weeks of my employment he was always in his office hard at work whenever I arrived and was still hard at work when I left to go home for the day. He often responded to comments about his work habits with the statement, "Well, I was raised on a farm." He would merely nod when someone suggested that he must arrive with the birds. We all assumed that he must come to work at 4:30 or 5:00 A.M.

After a few weeks I decided that it was time to launch a major academic activity and write a book. I had already learned that "scholars publish." By missed opportunity it was also evident that I had learned that you should "never write a paper that you don't intend to publish." The manuscript was proceeding nicely. In those days we didn't have personal computers, and while I often composed my work on a typewriter I was not the most proficient typist in the world. After a chapter or two had been written it was submitted to our department secretary for her to type a draft that I could use to submit to the publisher.

"Could I speak with you a few minutes?" my department head requested a day or two later. "Writing books is private enterprise. It is not an appropriate activity for our department secretary to type a manuscript for you."

I was shocked. After all "scholars publish." I thought books were part of the package. I expressed my surprise, but he was unyielding and suggested that I hire my own typist. Then, to make a touchy situation worse he said, "Writing a book should be done on your own time. I note that you aren't coming to work very early or staying late." Since my day

was usually at least eight hours long it had not occurred to me that I was not working hard enough[29].

Anxious to make a good impression, I decided to come to work before my department head and stay until after he went home, even if I had to spend 20 hours at the office. The next morning I arrived at 5:00 A.M. The building was dark. I had to find a custodian to let me in the front door. No one was around. I went to work on my manuscript hoping that the hours from 5:00 to 8:00 A.M. would be perceived as my own time and that he would not feel I was shortchanging the university if I wrote my book during these hours.

At 7:45 A.M. he arrived at the office. He mumbled something about lots of stuff he had to do at home this morning making his arrival somewhat later than usual.

When 5:00 P.M came I continued to work. I was prepared to stay until after dark if necessary determined not to leave until after my department head left. At 5:15 P.M. he locked his door and left. I continued to work until about 6:00 P.M. in case he was merely running an errand and would return. He did not.

The next day I arrived before dawn as the day before. Again my department head arrived 15 minutes before 8:00 A.M. Again he left at 5:15 P.M. I continued my early schedule for several more days until it was very clear that he never came before 7:45 A.M. and he always left between 5:15 and 5:30 P.M. So I adjusted my schedule to arrive at 7:30 A.M. and leave at 6:00 P.M. During the remainder of my employment at this institution my department head never came to work before I arrived and never left after I had departed. My department head commented on my diligence. I merely suggested that I was trying to follow his example. I never revealed my actual arrival or departure time.

I learned another valuable strategy. Fifteen minutes can make a very big difference. Most of my associates throughout my career have commented on my diligence and hard work. Amazing what 15 extra minutes can do.

It was my good fortune to learn some of the lessons outlined in these essays as part of my own graduate career. Some were learned later. The

[29] I've long since learned that an 8 hour day does not apply to academics. For years I've worked at home as well as at school. It would be a vacation to return to the 8 hour day. But for the events related here I had not yet learned this reality.

strategies for a successful graduate career are also strategies for a successful professional career.

Students sometimes ask, "How did you get a reputation as a productive scholar?" They want to know the secret of success, sometimes assuming that it must have to do with whom you know or being in the right place at the right time. However, if there is any secret it is the adaptation of the strategies suggested in this volume applied to a career.

Don't do someone else's dissertation or don't do someone else's research. Early in my career I determined my research question or wrote my dissertation first. Simply stated it is

> "Seek to understand the role of instruction in human learning. Seek an answer to the following questions: How to organize learning materials so that a learner acquired knowledge and skill as efficiently, effectively, and appealingly as possible?"

Decisions about what to read? what to study? what to investigate? were reduced to "those things I agree with and those things I don't."

Graduate students have proved to be my most valuable colleagues. At every opportunity I engage in the "creative exploitation of graduate students." Most of my publications include graduate students as an author. I'm grateful for the many brilliant students with whom it has been my opportunity to work.

We've written many "comprehensive exams" as we have evaluated our research and development activities. We continue to ask ourselves: Are our research findings related to theory? Did our research or development activities use effective procedures? How does our research and development compare with other efforts? What new information does our research or development efforts provide?

My students and I have filled many notebooks with our thinking. We've made up lots of stuff. I still carry a notebook with me wherever I go and constantly write-think. We have revised and resubmitted many manuscripts many times. We have always tried to remember scholars publish, publication is our product, and if it is worth writing it is worth publishing.

My students and myself have explored many different avenues of expression for creative work. Some have worked, some have not. And above all we have always tried to remember that "NO is not the right answer."

Hopefully these short essays will enhance your own graduate education and perhaps your academic career.