Portfolio

for Stanford Todd Stubbs

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Part A—Instructional Design

Item A–1: Storyboard—Physics Virtual Lecture

A storyboard for a simple, page-turning presentation with *Flash* animations based on the author/instructor's PowerPoint lecture slides use in his live courses.

Item A–2: Personas/Scenarios—Faculty-Course Profiler

An initial concept design for a syllabus wizard (called a "faculty-course profiler") which includes three personas/scenario. User flow diagrams and other materials are included.

Item A–3: Storyboard—Physics Lab Introduction Video

A storyboard for a short digital movie to prepare students for a computer simulation of the difficult-to-visualize "Coulomb tension balance."

Cover Page

for Item A–1: Storyboard—Physics Virtual Lecture

Description

A "virtual lecture" was created by using the professor's original *PowerPoint* slides as a source, then altering the content to allow the resulting Adobe *Flash* "slide show" to stand alone. To do this, the slides' content was parsed differently, text was edited to make it clearer, the visual design was improved, user controls were added, and animations were inserted where they helped clarify content.

Demonstration—Water & Charge

Water molecules are "polar," that is, one end is positive, and the other end is negative.

In the presence of a charged item, the molecules "orient" themselves

When the molecules are aligned, the *sides* of the stream of water are now "polar" as well.

Because the side of the stream now has a charge, it is attracted to the charged item, and moves toward it.

My Role

Using Microsoft *PowerPoint's* "Notes" view as a storyboarding tool, I adapted the professor's original lecture slides and concepts by improving the visual design, modifying the sequencing and timing, adding user controls, and then wrote directions to programmers about how the animations should flow. This storyboard was then be used by artists and programmers as a production guide.

What Is Included

This portfolio sample contains 8 randomly selected pages of the original 47 pages as they appeared in PowerPoint. (If you would like a complete copy of this storyboard document, please contact me.)
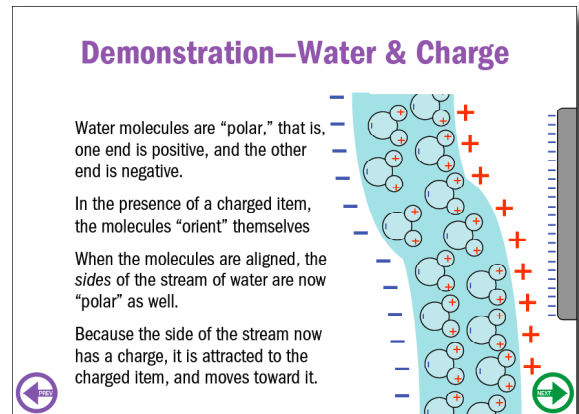
Basic Rules of Electrostatics

Positive charge is produced on a glass rod by rubbing it with silk or plastic.

Negative charge is produced on a rubber rod by rubbing it with fur.

Screen set up: heading and the background numeral "2" alone.

Sequence:

1. Pause 1 Second
2. First block of text appears ("Positive charge...plastic.").
3. Beat, then glass rod appears.
4. Beat, then silk cloth appears and rubs the glass rod 2 or 3 times; as it rubs, positive charges (red plus signs) appear, increasing with each rub.
5. Silk cloth stops
6. Pause 1 second
7. Second block of text appears,
8. Beat, then rubber rod appears:
9. Beat, Fur pelt appears and rubs the rubber rod 2 or 3 times; as it rubs, negative charges (blue minus signs) appear, increasing with each rub.
10. Fur pelt stops
11. Pause 1 second
12. Screen controls appear at the bottom of the screen.

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Demonstration—Water & Charge

Water molecules are "polar," that is, one end is positive, and the other end is negative.

In the presence of a charged item, the molecules "orient" themselves

When the molecules are aligned, the sides of the stream of water are now "polar" as well.
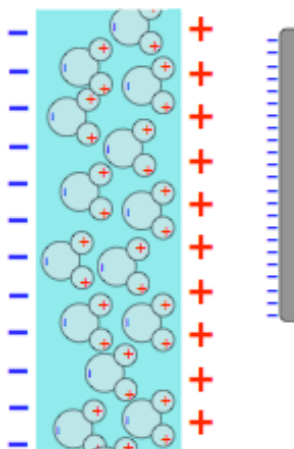
Screen Set up: This is a continuation of the previous screen

Sequence continued:

8. Pause 1 second
9. The third block of text ("When the…as well.") appears.
10. The view of the molecules at the right "zooms out" (the molecules get smaller) and they appear to be in a stream of water (they should be moving *slowly* downward, off screen, with new molecules appearing at the top. All molecules should be properly oriented toward the charged object on the right.
11. Then, the charge symbols appear on either side of the stream of water

(note: no screen controls! Go directly on…)

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PHSCS 220 Virtual Lecture Lesson 1   Thursday, July 17, 2008

Demonstration—Water & Charge

Water molecules are "polar," that is, one end is positive, and the other end is negative.

In the presence of a charged item, the molecules "orient" themselves

When the molecules are aligned, the *sides* of the stream of water are now "polar" as well.

Because the side of the stream now has a charge, it is attracted to the charged item, and moves toward it.

Screen Set up: This is a continuation of the previous screen

Sequence continued:

12.   Fourth block of text ("Because the side...towards it.") appears.
13.   The stream bends toward the charged item (without touching it).
14.   Pause 1 second.
15.   Screen controls appear at the bottom of the screen

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PHSCS 220 Virtual Lecture Lesson 1   Thursday, July 17, 2008

Calculating the Force

$$\vec{F} = \frac{e}{\varepsilon_0} q_f \vec{\ell} v$$

$$\vec{F} = \frac{e}{\varepsilon_0} q_f \vec{\ell} v$$

$$\vec{F} = \frac{e}{\varepsilon_0} q_f \vec{\ell}_0 v = \frac{e}{\varepsilon_0} q_f \vec{\ell}_0 \frac{q_s}{e} \frac{N_e}{4\pi r_0^2 c} \quad \text{with} \quad \vec{\ell}_0 = \ell_0 \vec{r}_0$$

$$\vec{F} = \frac{eq_f}{4\pi\varepsilon_0} \frac{1}{r_0^2} \frac{q_s}{e} \frac{N_e \ell_0}{c} \hat{r}_0 = \frac{1}{4\pi\varepsilon_0} \frac{q_s q_f}{r_0^2} \hat{r}_0$$

Screen Set up: Continued from previous screen. Everything but the equation disappears

Sequence: NOT SHOWN ABOVE, SEE TRANFORMATION STEPS BELOW

1.   Using the technique described below, the equation steps to its new form (shown after the equal sign) at the bottom of the screen through 3 or 4 steps with beats (not user controlled).
2.   Pause 1 second.
3.   Then screen controls appear at the bottom.

All equations will be modified using the following method.

1.   The equation is shown as is near the top of the screen, leaving room below for steps in the transformation
2.   Beat. Then the parts of the equation that are about to change change color or are highlighted in some other way.
3.   Beat. Then the next step of the transformation appears, with the parts that have just transformed highlighted in the same way as the previous step.
4.   Pause or user controlled pause. Then, the highlighting fades to black (normal).
5.   Beat. Then repeat steps 2 – 4 for each step in the transformation.

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Cover Page

for Item A–2: **Personas/Scenarios—Faculty-Course Profiler**

Description

In addition to informing students about class content and conduct, a syllabus might also be used to connect course objectives with program, department, college, and university objectives. A software program to support this approach was conceived, and three personas/scenarios were written to understand how such a tool might be made attractive for general faculty use, and useful for those larger purposes. The working title was "faculty-course profiler," though what was intended was more of a "syllabus wizard."
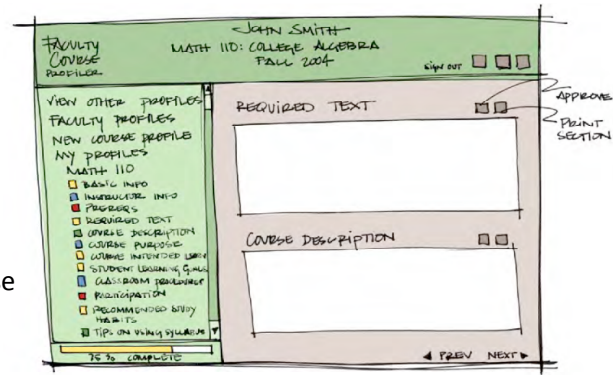
My Role

Except for student-artist-drawn thumbnails (like the one above), I produced the entire design document, including the scenarios and other design elements as part of design documentation.

What Is Included

This portfolio version contains 5 selected pages out of the original 12. The original was produced in Microsoft Word. (If you would like a complete copy of this concept document, please contact me.)

Faculty-Course Profiler

General Need

The Faculty-Course Profiler is the heart of a proposed system which includes a Course Content Management System (probably the Blackboard Content System). As the name "Faculty-Course Profile" acknowledges, each Profile would be distinct by both the faculty member as well as by course (or, for that matter, section). Profiles, with their related learning materials, become a repository that will hopefully provide us with the means to begin to make sense of the data generated by taught courses.

Several members of the Educational Resources Group will either contribute to or draw upon this repository: CID and Independent Study are natural points at which to begin capturing, organizing, and archiving this information; the library is a natural location for storage of the long-term artifacts; the Faculty Center can use it's contents to assist in development of improved teaching, and so forth. The Faculty-Course Profile will form a foundation for future initiatives, which can take advantage of the institutional memory that captures the "thinking" of courses being taught on campus.

Because this is a new system, the opportunities to engineer it from scratch are great. Unfortunately, so are the opportunities for failure. For this reason we recommend the following strategy.

- Start small
- Build from understood functional needs
- Don't pre-design the entire system; figure it out as we go.
- Prototype early and often
- Be willing to abandon early attempts if they don't meet needs

Description

A Faculty-Course Profile will probably contain the following **types of data** (listed in priority order):

1. Descriptive information about the course and the faculty: course name, course description, faculty details, etc. (faculty/course metadata)
2. Information about methods, media and materials used to teach the course, including assignments, exams/assessment items, lessons/methods, handouts, readings, demonstrations & case studies, multimedia assets, and learning activities, as well as links to these stored resources.
3. Teaching & learning alignment strategy information, that is course goals and how course activities, resources, and assessments are associated with those goals.
4. A general schedule (e.g., dates or days of coursework)
5. A way to connect the stored methods, media, learning activities, and materials to objectives

To make this information useful, it would be stored in a common format for various kinds of output (probably XML). For example, once the information is gathered, it could be used to generate a syllabus for use in the class. Because detailed objectives in the profile would be directly linked to materials and content in a Course Content Management System, when used together, they would also provide a fairly complete picture of a course.

The proposed format is intended for flexibility of automated systems, and not for human readability, so the tool, the Profiler, must be constructed to assist faculty and others in creating Profiles, as well as making the resulting

User Persona & Scenarios

What follows are three personas used to clarify the everyday usage and value of the Profiler.

The following are fictional persona's based on real individuals. Because they have been significantly fictionalized, no attempt should be made to identify them with real individuals, though they and the situations which they are in are based on real people and events.

Persona 1, Rob Nelson: A new instructor

Rob is developing a course that was taught before he joined the university using the Profiler.

Biographical Details

Rob Nelson, is in his late 20s/early 30s and lives in Orem.

A recent graduate of a PhD program, Rob began teaching at BYU before he had even finished his dissertation. He is quite young, and it was expected that he would take over some classes from some of his older, distinguished colleagues to give them more time for administrative duties and other studies.

His learning experiences have primarily been at another university where the culture and atmosphere are quite different than BYU, though he is eminently willing to learn.

Motivations:

The obvious motivation is the need to gain tenure at the university. Less obvious, but more pressing is the need to "prove" himself to his colleagues at BYU and show that he can be a legitimate contributor.

Needs:

Initially Rob needs time—time to finish his dissertation and time to gain his reputation. He also needs to be successful in teaching, as well as scholarship, in order to earn respect as well as that coveted "tenure" (continuing status).

Preferred Computer Platform Mac OS X

User Scenario:

Rob has been given some limited training during his orientation to the university about the Faculty-Course Profiler. He opens the tool by logging in, and queries the system to discover whether the large-section Humanities class he is being asked to take over from a respected colleague, has an entry in the Profiler. He is delighted to discover that it has two: one from a faculty member of whom he has never heard, and other from the colleague from whom he is inheriting the class.

The former profile, he quickly discovers, is skeletal. It has just a few gems he can use. He prints it out for later reference. He then opens the latter profile and sees that it is quite complete. He decides to save it as his own so he can borrow ideas from it. He is immediately asked if he would like to edit a copy of this profile as his own, and he

says "yes." Dutifully, a copy is opened, with the other instructor's personal information replaced by his own (highlighted so he knows it has been tentatively changed from the original). He then proceeds to read it through.

The profile is essentially a syllabus of the course, but includes descriptions of teaching activities, links to on-line resources, and test items. It is too long for him to peruse in one sitting, and make all the needed changes, so he clicks a button which allows him to print a "paper working copy" so he can take it home, make notes, changes and comments on the paper, and enter them into the Profiler later. He then saves the file, and marks it as "In Progress" to indicate that it is unfinished.

From this paper document, Rob has access to everything one would want to know about how the course was conducted (as well as blanks if there was information not yet gathered). He makes changes, circling some resources he wants to check out, crossing out some items he wants to change and writing in notes to himself about changes he plans to make. One of these changes is in the fundamental objectives of the course. He rewords it to reflect a new understanding of the subject that his older colleague has not included.

When he returns to work the next day, he logs into the Profiler and begins to make edits to his new course profile based on his paper notes. When he makes the change to the objective, a warning dialog comes up explaining that a change to an objective can cause a dislocation of teaching activities, linked resources, and test items associated with the profile and asks if he wants to proceed. He responds affirmatively, and all items which have a connection to that objective are highlighted to warn the professor that they need to be reviewed for needed changes to fit the new objective. (This highlight is different from the one identifying tentative changes. Once he reviews an item and approves it, the highlight is removed.)

He continues editing and changing the things he made notes of on his paper the evening before, as well as things that occur to him as he works. At the end of this work session, he once again saves his work as "In Progress" and makes another print out to take home with him. (If he has access to a color printer, highlights of tentative changes and the highlights related to objective changes are also evident.)

At this point, the changes become more detailed and refined, as opposed to the large sweeping changes he made earlier. He is "tweeking" this profile and making those refinements which he feels with give the course more impact and substance, as well as refining the schedule to incorporate holidays and times he will miss class.

Within a couple of days, with several iterations of the profile, he is finished. After changing the status from "In Progress" to "Active," he saves the profile in the Profiler. Using options provided, he produces two outputs: first is a PDF of a syllabus produced from information in the profile. This syllabus conforms to a standard proposed by the Faculty Center including a lot of information about the course for students. This print syllabus does not contain reference to resources, teaching activities (except as they relate to schedule), or test items, though those may be associated with the profile (in other word, there is more information in the profile that is printed in the syllabus— the syllabus is not a complete version of the profile).

The second product is a Blackboard course. Based on the style he selects, a Blackboard course is produced using all the resources he specified in profile that are found in the Course Content Manager, as well as all his test items, etc. Of course, the Blackboard course is not yet ready for use, and will need some additional, further "tweeking" (things that the Profiler cannot do, things that didn't work out quite as expected, resources that will need to be created, etc.) but his Blackboard course "presence" is essentially started.

This entire process has taken Rob a total of about 14 hours, not counting the effort he will now need to clean up the Blackboard course. By his estimation, it was a good use of his time; it took him a little longer than it might

Faculty Course Profiler Concept—Draft Monday, May 17, 2004   *page4*

have done, but the result covered the entire semester (rather than the first week or two, which is what he would have otherwise done) and has probably saved him significant time over the long run. Conducting the class will now be merely a matter of following the plan, for the most part—and not trying to figure out, week-by-week, what to do next. In addition, it gives him a tool to revise the course for next year when he will be teaching the course again. In fact, he can begin to work on that as the course is being taught.

Persona 2, Mark Taylor: CID Instructional Architect

Mark creates an IS course as informed by the tool (a mostly manual process, at this time) scope & sequence tied to objectives.

Biographical Details

Mark Taylor is in his early 50s, and lives in Provo.

Mark Taylor joined the Center for Instructional Design as an Instructional Technologist after receiving his Ph.D. in Instructional Psychology & Technology. Mark also has an MBA and an MS in Systems Management. Previously, Mark worked in information technology and as a project manager in the electronics industry. Most recently, Mark was a Senior Instructional Designer.

He is technically savvy, but new to CID, so his knowledge of Independent Study courses is fresh. He is not afraid to try new things, but is pragmatic enough to want them to be worthwhile. Mark would try something once, but then would work to see it changed if the result was not favorable.

Motivations:

Mark is productivity oriented. He likes to get things done. He does not like "busy work" or processes for which he sees little purpose or advantage, but he is obedient, so he would perform anyway, while working to improve things.

Needs:

Mark likes to perform and see productive change. He is a natural leader and likes his work to have a broader impact than just his personal projects.

Preferred Computer Platform: PC—Windows XP

User Scenario:

Mark has been asked to convert a course from a live course with a Blackboard presence, to an independent study course. The course instructor, (Susan Jannes, a French instructor) has included several items on the Blackboard course, but has never filled out a Faculty Course Profile before. In this case, Mark is going to provide the initial data entry for the course, and then Mark will work closely with Susan to fill in the details later.

The first step Mark takes is a little like detective work. Using paper copies of the syllabus, textbooks, handouts, the Blackboard course, and other materials Susan has provided, Mark (and his assistants) begin to fill in the Profile.

New Profile

Pattern Maker


Faculty Course Profiler Concept—Draft Monday, May 17, 2004   *page11*
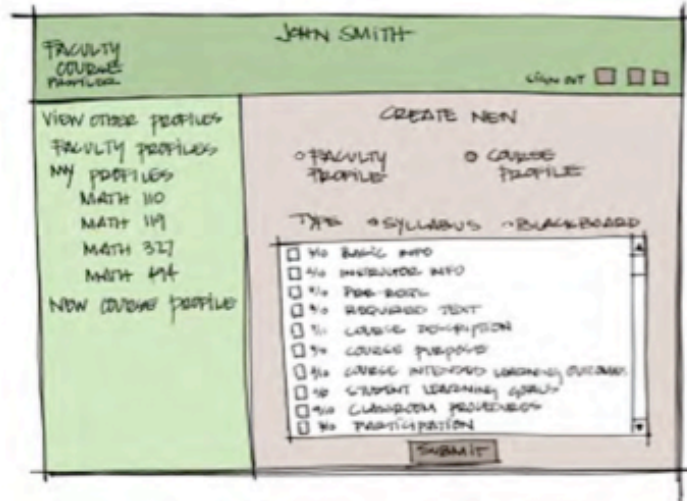
Cover Page

for Item A–3: **Storyboard—Physics Lab Introduction**

Description

A simulation of a "Coulomb Torsion Balance" is used in a lab for a course on electro-magnetism, but the device is very hard to imagine without seeing one. So, for distance education students who will not likely have access to the real device, a simple animated video (3 to 5 minutes) was planned to describe and explain the Coulomb Balance and its operation before students use an interactive *Flash* version of the device to experiment with for the first time.
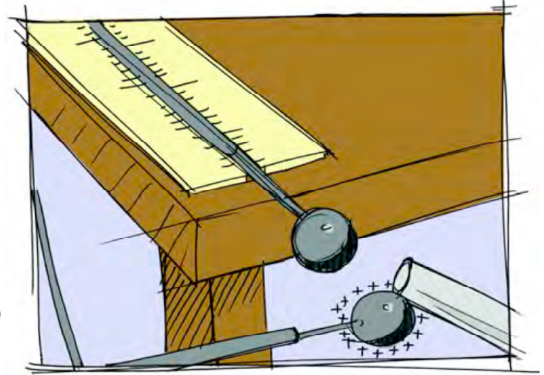
My Role

In addition to determining the instructional need the solution, I wrote the script, and directed a student artist to draw storyboard pictures for it. 3D artists then used this storyboard to animate and produce the movie. (I even got to narrate!)

What Is Included

This portfolio version contains 3 selected pages out of the original 6. If you are viewing this portfolio interactively (e.g., on a computer screen), there is also a short clip from the movie. (If you would like a complete copy of this storyboard document or movie, please contact me.)

Coulomb's Torsion Balance, Introductory Narration
BYU Physics 220

Narration by Todd Stubbs with Lawrence Rees. Storyboard images by Meghan Saunders.

Charles de Coulomb was a French Physicist of the 1700s who is best known for his experiments in static electricity.

Picture of Charles de Couloumb; dissolve to…

In the mid-1780s he invented a way to measure the force between charged objects using the torsion or twisting of a wire like a spring. The device he invented works something like this:
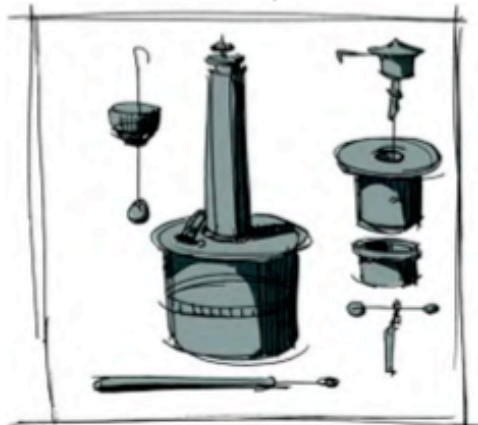
Engraving of diagram for Torsion Balance. Cut to…

First, you start with a wire strung between two anchors. The wire must be attached in such a way that it cannot slip in the anchor.
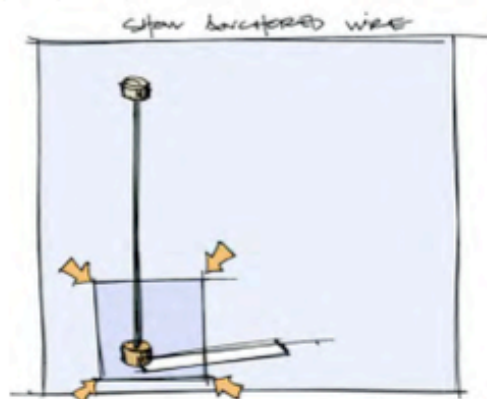
Show wire anchored at top and bottom. Zoom into anchor at bottom.

Coulomb's Torsion Balance, Introductory Narration; Draft printed: 17 July 2008   Page 1 of 1

Now a charge can be put on both pith balls, so that the electrostatic force between them causes a torque on the wire.

Show object touching one of the balls, balls are now surrounded with plusses or minuses.

For example, if we put a charge on one of the balls…

…and then touch the two balls together, the charge will divide itself equally over both balls.
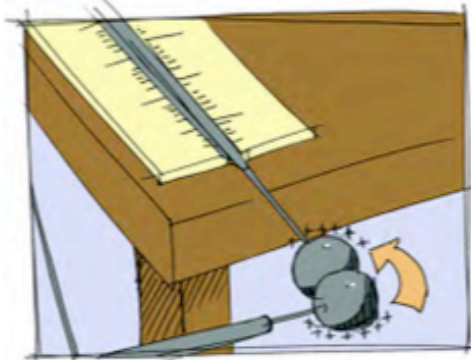
The two balls are moved together to touch, and the plus-sign are equal on the two. After both are charged, the ball on the wire rotates away from the other.

After balls are apart, move slowly to vertical perspective.

Now that the balls have the same charge, they will repel each other. But how can we measure the force between the balls?
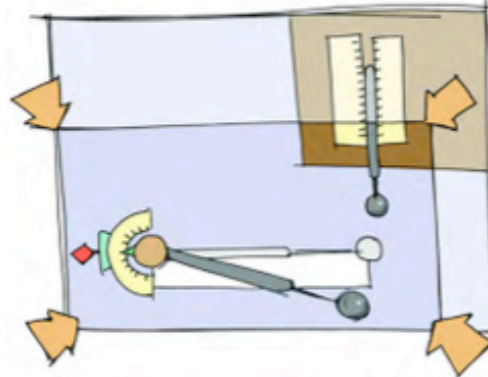
Balls are apart. Zoom to dial.

If we now turn the dial just far enough to twist the wire to bring the arm back to its equilibrium position – the position it would have if the pith balls had no charge – we know that the torque caused by the electrostatic repulsion must equal the torque caused by the dial.

The number on the dial tells us the how much the wire is twisted. By comparing this to the amount "known" that torques twist the wire, we can determine the torque caused by the force between the pith balls. We can then use this torque to measure the electrostatic force.
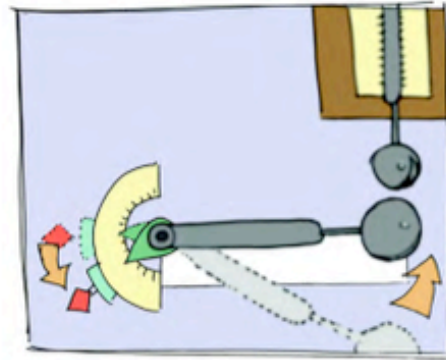
Focus shift shows that rods & balls are in foreground. Hand turns the dial rod to re-align the two balls

Highlight the number on the dial.

Now it's your turn. Pick up the glass rod, the rubber rod, or the grounding wire with your mouse to apply or remove a charge to one or both of the balls and watch and measure how they react.
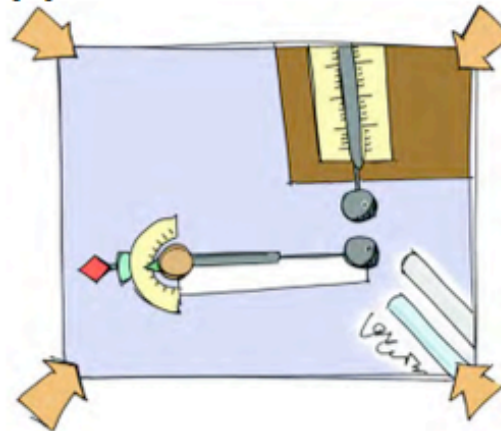
Shift in size (zoom back out) and show halo on each tool as discussed.

Play with it using various combinations of charges to see how it reacts so you will be able to conduct experiments with it later on.
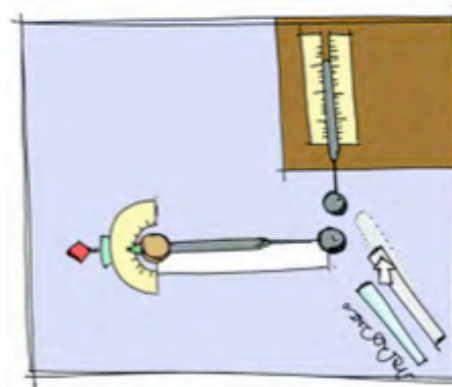
Show interactivity by the appearance of the cursor over tools.

Coulomb's Torsion Balance, Introductory Narration; Draft printed: 17 July 2008   Page 5 of 5

Sample Quicktime Movie:

Part B—Instructional Materials

Item B–1: Handbook—Student-Employee Training

A walk-in faculty support center which produced media for classroom use as well as provided campus-wide support for Blackboard was staffed entirely by students. To encourage these "Instructional Media Consultants" to continual improvement and growth, I created a training and advancement program. This handbook was an important part of that training and advancement program.

Item B–2: Slides & Handout—ICED Conference

This presentation was given recently at the annual conference of the International Consortium for Educational Development (ICED) held in Salt Lake City in 2008. The topic of the address was about ways to help and support faculty building distance-learning courses.

Item B–3: Guidebook—Blackboard Course Transition

When BYU was upgrading from Blackboard 5.x to 6.0, it was thought that the best way to transition courses to the new system would be to have each faculty transition their own courses. This guide was written to simplify the process and help faculty with that transition. (Fortunately, they found an easier way!)

Item B–4: XML Encoded Course—Old Testament

BYU Independent Study course production at the Center for Teaching and Learning was accomplished by encoding the course content into XML using a proprietary schema. From there, either a paper course (Adobe Acrobat or ".pdf"), or a Web course (using static ".html"), could be generated. This example shows some screens from a Old Testament course as well as some sample XML code used to create the course.

Cover Page

Item B–1: **Handbook—Student-Employee Training**

Description

Student employees at technology support walk-in center (who were called "Instructional Media Consultants") assisted faculty with media production chores and with Blackboard use. The body of knowledge needed to be successful was significant: in addition to being familiar with most basic multimedia production tools, they had to be able to do basic Blackboard support, and to be friendly, courteous, and helpful. A training and advancement program was devised to encourage them to improve and grow in these areas. This handbook was a guide to the program, as well as a way to help them keep track of their progress.
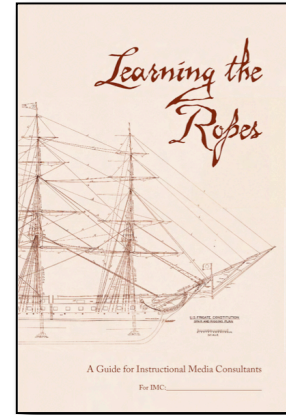
My Role

I researched and created the advancement program, wrote the text, designed it, laid it out (using Adobe *Photoshop* for many of the graphic elements and Adobe *InDesign* for the layout), and published it as this handbook, "Learning the Ropes."

What Is Included

The original booklet had a total of 20 pages including the cover. The samples in this portfolio show the front cover, and 3 of the inside page spreads. (If you would like a complete copy of this training handbook, please contact me.)

Learning the Ropes

A Guide for Instructional Media Consultants

For IMC:_____
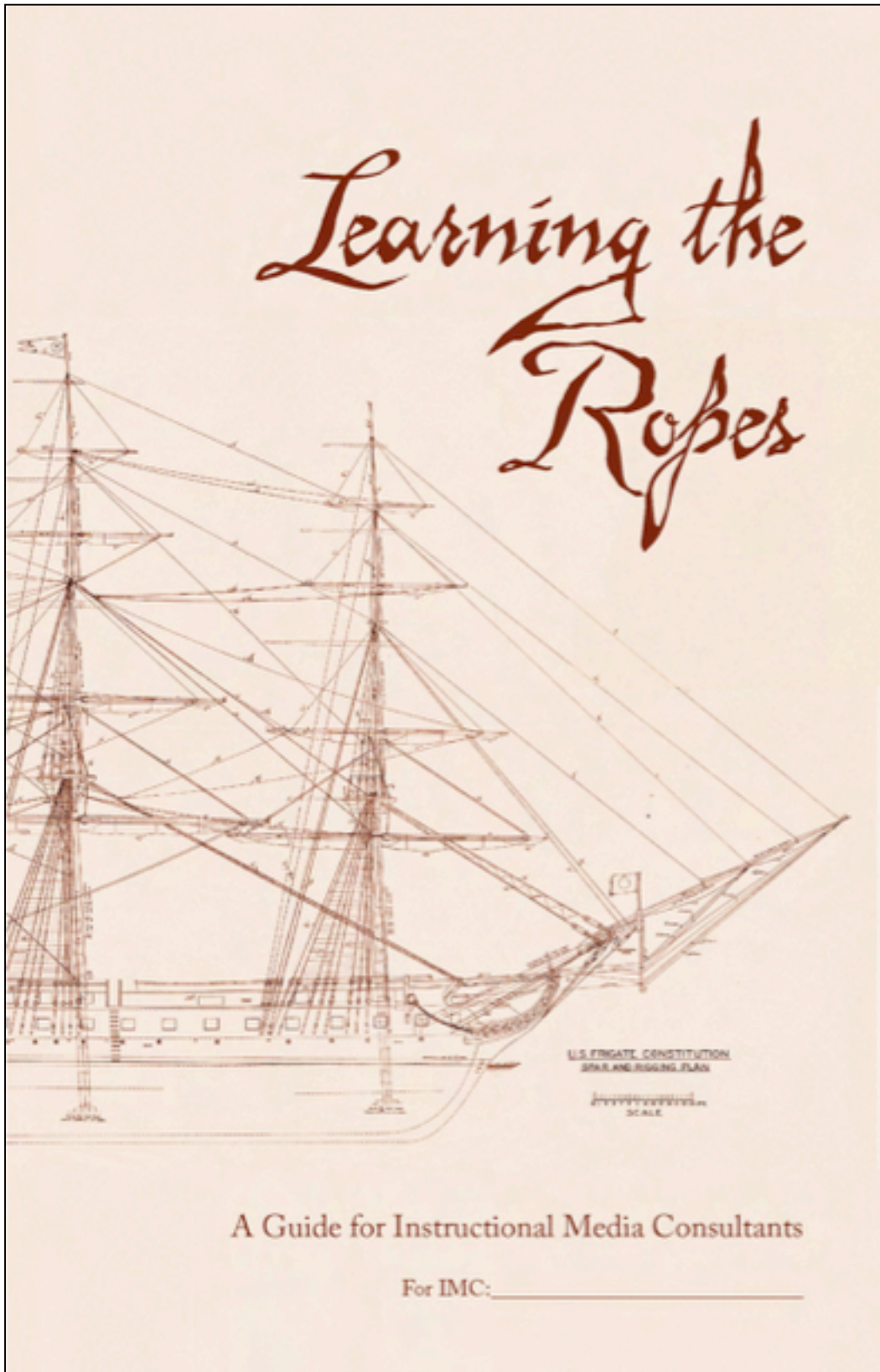
Table of Contents

by S. Todd Stubbs

Introduction

What You Need to Learn...

As an Instructional Media Consultant (IMC) what do you need to do to "prove" yourself? Rest assured that you would not have been hired if there weren't a lot of confidence in your ability to perform already. That doesn't mean to don't have a lot to learn. You do. One of the first things you need to learn is—what to learn! That is the purpose of this little booklet.

IMCs help faculty improve learning their courses by helping them create and use media in their teaching. That's our mission. Of course it's much more than that, but helping others is the core of what is expected of you. Everything you do is to assist in helping others.

Learning the Ropes

A wind-driven sailing ship has literally miles of ropes. The technology we call "rope" is what made sailing possible. "Standing ropes" were double-wrapped and painted with tar to make them stand up to the weather, to help hold things up—like the ship's masts. "Running ropes," were pulled and tied to change the positions of sails, masts, booms, rudder, anchors, etc. in order to operate the ship.

Running a tall sailing ship with three masts requires many people, each of whom needs to know hundreds of distinct ropes, each with its own name and purpose, as well as how to tie those ropes into dozens of useful knots and hitches. A seaman who "doesn't know the ropes" is pretty useless, except as a manual laborer. On the other hand, a sailor who "knows the ropes" is one who can be called on to perform any of the hundreds of tasks needed to run the ship. He is a trusted, valuable crewmember.

In the 18th and 19th centuries, seamen were divided into four groups

USS Constellation, Baltimore Harbor

– 1 –

based on their knowledge and skills. A beginning or novice sailor was called a "Landsman" (a kind of insult, referred to someone who knew nothing at all of the sea or sailing). An apprentice sailor, the second level, was called an "Ordinary Seaman" (or sometimes just an "Ordinary"). It meant someone who was "learning the ropes" (in the modern navy these are called "Apprentice Seamen"). At the third level, an experienced, capable, and trusted journeyman sailor became an "Able Bodied Seaman" (later shortened to just "Able Seaman"). This title was reserved for sailors that could be trusted to do any of the hundreds of duties on a sailing ship. One of the hallmarks of these people was that they knew all the ropes—the name of each and every one of them and what they did, and how to tie them. Beyond this third level, some able seamen learned to command and help others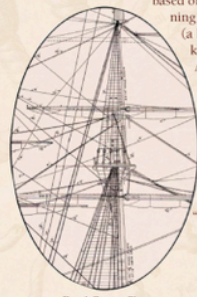 in the general workings of the ship. Known as petty officers, they ran the day-to-day operations of the ship under the direction of the captain and other commissioned officers.

The work at just about any endeavor requiring a team falls into these four groups—including the work of helping faculty use technology. We have chosen different terms (we don't think any of you are "ordinary"!) but we have a similar structure with four levels.

Detail: Rigging Plan
USS Constitution

Four Levels

IMCs can advance through four ranks or levels. They are novice, apprentice, journeyman, and mentor (or

> "On a boat, ropes are known by many names: *halyards* raise sails, *lines* secure the boat and its gear, *sheets* control the sails, *guys* keep a spinnaker anchored to the boat, and *twings* adjust sheets and guys--just to name a few."
>
> ~Rai Peterson, Ball State University

– 2 –

levels 0, I, II, and III). If you are reading this for the first time you are probably a novice. Your ultimate goal should be to aim for journeyman (level II) status. Journeyman implies a level a skill that, no matter the problem of a faculty member who walks in the door or calls on the phone, you'll be able to answer it immediately, or figure it out in short order. It is the equivalent of the "Able Seaman" mentioned above. In other words, you'll know the ropes.

The IMC Skills Inventory

The IMC Skills Inventory (included at the end of this booklet) will help you understand what you need to master to perform at journeyman (level II). The list is neither complete nor comprehensive. Think of this list as a kind of a map. Like a map, it doesn't include every detail, just enough so that you know where you are and were you should be going.

Journeyman also implies a certain level of trust that the faculty will have in you. There is a lot more to this than just "skills." You need to know how to be upbeat even when faculty are negative or complaining. You need to know how to gain their confidence. They need to feel that you can really help them. You need to "sparkle" and inspire. This is hard to do, and even harder to measure. That's why we have the other IMCs help decide if you've reached that level or not.

Detail, USS Constellation, Baltimore Harbor

What About Level III (Mentor)?

There is no requirement for you to move to the level of mentor (level III). This level is reserved for IMCs who show leadership in the ability to help others, and a higher level of expertise in one or more of the areas we support. Mentor is somewhat like the petty officers who directed the detail work on the ship. Mentor is discussed in more detail below.

– 3 –

Animation Programming (Flash)

0 1 2 3 4 Import objects into the library

0 1 2 3 4 Add an object to a cell

0 1 2 3 4 Create a new cell

0 1 2 3 4 Create a new key frame

0 1 2 3 4 Create a motion tween

0 1 2 3 4 Create a shape tween

0 1 2 3 4 Show difference between event sound & streaming sound

0 1 2 3 4 Export a Flash file to .swf format

0 1 2 3 4 **My overall skills in creating Flash objects are at what level?**

Average of above ratings: _____

Answer to last question: _____

Clients Helped with Flash Problems: _____

CLIENT (OR "CHALLENGE") & DESCRIPTION   DATE

_____ _____

_____ _____

_____ _____

Other

0 1 2 3 4 **My overall skills in** _____

0 1 2 3 4 **My overall skills in** _____

0 1 2 3 4 **My overall skills in** _____

Clients Helped with Other Problems: _____

CLIENT (OR "CHALLENGE") & DESCRIPTION   DATE

_____ _____

_____ _____

_____ _____

- 16 -

Use this chart to record your progress

	Average Score	General Level	Number of Clients Helped	Projects or "Challenges"
University Environment				
Learning Management				
Document Portability				
Scanning				
Web Authoring				
Presentation Software				
Word Processing, etc.				
Image Software				
Audio Production & Editing				
Video Production & Editing				
CD/DVD Production				
Animation Programming				
Other				

Cover Page

for Item B–2: **Slides & Handout—ICED Conference**

Description

This presentation was given 2008 annual conference of the
International Consortium for Educational Development
(ICED). The talk addressed ways to help faculty build distance-
learning courses. It is based on a couple years' experience
helping BYU Independent Study instructors/authors prepare
their manuscripts.

**Helping Faculty
Develop Online Courses**

My Role

I wrote and submitted the original proposal (not included here), created the slides in Microsoft *PowerPoint*
(including graphic elements produced with Adobe *Photoshop*), and the accompanying handout (in Microsoft
Word) to support my presentation.

What Is Included

This sample shows 8 of the original 13 slides. The two-page handout is complete (though slightly adapted),
though the other handouts used at the presentation are not included. (If you would like a complete copy of
this PowerPoint document or Microsoft Word document, please contact me.)

Slide 1

Slide   2

Slide 3

Slide 8

Slide 9

Give Regular, Scheduled Attention to their Course

▶ Don't tell them everything and then send them into the wilderness—stay with them

▶ Set up a regular schedule

▶ Be engaged in their production progress

▶ Be their "idea" person, not their nag

▶ Make constructive suggestions

ICED Conference 2008—BYU Center for Teaching & Learning

Slide 11

Handouts:

▶ CTL Course Process diagram

▶ CTL Course Timeline diagram

▶ CTL Course Production Contract

▶ Table of Contents of the
   CTL Course Production Guide
   (http://ctl.byu.edu/files/courseguide/courseguide.pdf)

▶ Presentation Outline

ICED Conference 2008—BYU Center for Teaching & Learning

Helping Faculty Develop Online Courses

I. Overview

    A. Help [instructors] understand online teaching as a medium of instruction (II)

    B. Help [instructors] "see" the students (III)

    C. Have a specific process [instructors] can navigate (IV)

    D. Have a contract, with milestones & deadlines (V)

    E. Give regular, scheduled attention to [the instructor's] course (VI)

II. Help [Instructors] Understand Online Teaching as a Medium of Instruction

    A. Synchronous vs. Asynchronous

        — What is lost when you lose synchronicity?

    B. Wide pipe vs. narrow pipe

        — In what specific ways is a narrow pipe more challenging than a wide pipe when it comes to teaching?

    C. Replace interaction with what?

        — When you reduce interactivity (through increased audience numbers, "asynchronousness," or a narrowed pipe) what you mostly lose is interactivity.

        — How do you compensate for lost interactivity?

    D. Different teacher role

        — What part of the teacher's role in a live classroom, is lost in an online situation?

            a) Teacher guidance

            b) Clarification of expectations

            c) Face-to-face motivation

            d) Others?

        — How can you compensate for these?

    E. One idea for compensating:

        (From Swan, R.H. (2008). *Deriving operational principles for the design of engaging learning experiences*. Dissertation Draft, Brigham Young University.)

        1. Use self-consistent setting/thematic signaling to immerse students in the learning environment

        2. Provide meaningful, growing challenge—start easy, help them grow in competence

        3. Know the core performance expectation and build everything toward the student's ability to attain it

        4. Make risk tolerable with recoverability and embedded helps

III. Help [Instructors] "See" the Students

    A. Beware of an "out of sight, out of mind" mentality

    B. If there is a local online student, introduce him or her to the teacher

    C. Are their students who could provide feedback to the teacher's writing? (user testing)

IV. Have a Specific Process that [Instructors] Can Navigate

    A. Can you show it to them? Is it printed?

    B. Will [instructors] be able to tell where they currently are on the chart?

    C. Have you allowed for institutionally important tasks like Quality Assurance and other things?

"Helping Faculty Develop Online Courses"   *2008 ICED Conference, Salt Lake City, Utah USA*   *page 1 of 1*

V.   Have a Contract, with Milestones & Deadlines

    A.   Build flexibility into the contract

    B.   Make it workable—allow for their input

    C.   Make *them* be realistic—it's a contract!

    D.   Spread reimbursements out so you have some control until the very end

    E.   Make contentious issues clear up front

VI.   Give Regular, Scheduled Attention to [the Instructor's] Course

    A.   Don't tell [the instructor] everything, and then send them into the wilderness—stay with them

    B.   Set up a regular schedule

    C.   Be engaged in their production progress

    D.   Be their "idea" person, not their nag

    E.   Make constructive suggestions

VII.   If [Instructors] Go off Track…

    A.   **Don't** decide to become a nag

        It doesn't work!

    B.   **Do** *stick* to contracts (or, mutually agree to alter them)

        With a contract, you don't need to threaten or become an enforcer, just follow the contract

    C.   If you're meeting regularly, you'll know there's a problem long before it becomes a contract issue…

VIII. Handouts:

    A.   Presentation Outline (this document)

    B.   CTL Course Process diagram

    C.   CTL Course Timeline diagram

    D.   CTL Course Production Contract

    E.   Table of Contents of the
        CTL Course Production Guide (http://ctl.byu.edu/files/courseguide/courseguide.pdf)

    (note: this order varies from the way it is listed in the presentation)

Contact Information

    BYU Independent Study

        206 Harman Continuing Education Bldg
        Provo UT 84602-1514
        http://ce.byu.edu/is/site/

    Dr. S. Todd Stubbs

        BYU Center for Teaching & Learning
        3800 HBLL
        Provo UT 84602
        stubbs@byu.edu

Cover Page

for Item B–3: **Booklet—Blackboard Transition Manual**

Description

A few years ago, BYU was anticipating a transition from one version of the Blackboard Learning Management System to another, which would require faculty make the transition themselves. It was decided that a printed guide-booklet would help faculty navigate the somewhat complex process. the guide-booklet needed to have a friendly appeal and an easy feel to reduce stress, and to be as clear and simple as possible.
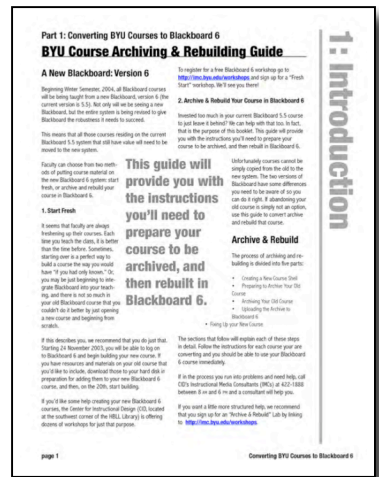
(Gratefully, an automated solution to the transition was found before it actually took place, so this booklet was not needed.)

My Role

I researched, wrote, designed, illustrated, and laid out, the prototypes of the booklet in Adobe *InDesign*.

What Is Included

This sample contains 5 selected pages of the original 12.

Part 1: Converting BYU Courses to Blackboard 6

BYU Course Archiving & Rebuilding Guide

1: Introduction

A New Blackboard: Version 6

Beginning Winter Semester, 2004, all Blackboard courses will be being taught from a new Blackboard, version 6 (the current version is 5.5). Not only will we be seeing a new Blackboard, but the entire system is being revised to give Blackboard the robustness it needs to succeed.

This means that all those courses residing on the current Blackboard 5.5 system that still have value will need to be moved to the new system.

Faculty can choose from two methods of putting course material on the new Blackboard 6 system: start fresh, or archive and rebuild your course in Blackboard 6.

1. Start Fresh

It seems that faculty are always freshening up their courses. Each time you teach the class, it is better than the time before. Sometimes, starting over is a perfect way to build a course the way you would have "if you had only known." Or, you may be just beginning to integrate Blackboard into your teaching, and there is not so much in your old Blackboard course that you couldn't do it better by just opening a new course and beginning from scratch.

If this describes you, we recommend that you do just that. Starting 24 November 2003, you will be able to log on to Blackboard 6 and begin building your new course. If you have resources and materials on your old course that you'd like to include, download those to your hard disk in preparation for adding them to your new Blackboard 6 course, and then, on the 20th, start building.

If you'd like some help creating your new Blackboard 6 courses, the Center for Instructional Design (CID, located at the southwest corner of the HBLL Library) is offering dozens of workshops for just that purpose.

To register for a free Blackboard 6 workshop go to http://imc.byu.edu/workshops and sign up for a "Fresh Start" workshop. We'll see you there!

2. Archive & Rebuild Your Course in Blackboard 6

Invested too much in your current Blackboard 5.5 course to just leave it behind? We can help with that too. In fact, that is the purpose of this booklet. This guide will provide you with the instructions you'll need to prepare your course to be archived, and then rebuilt in Blackboard 6.

This guide will provide you with the instructions you'll need to prepare your course to be archived, and then rebuilt in Blackboard 6.

Unfortunately courses cannot be simply copied from the old to the new system. The two versions of Blackboard have some differences you need to be aware of so you can do it right. If abandoning your old course is simply not an option, use this guide to convert archive and rebuild that course.

Archive & Rebuild

The process of archiving and rebuilding is divided into five parts:

- Creating a New Course Shell
- Preparing to Archive Your Old Course
- Archiving Your Old Course
- Uploading the Archive to Blackboard 6
- Fixing Up your New Course

The sections that follow will explain each of these steps in detail. Follow the instructions for each course your are converting and you should be able to use your Blackboard 6 course immediately.

If in the process you run into problems and need help, call CID's Instructional Media Consultants (IMCs) at 422-1888 between 8 AM and 6 PM and a consultant will help you.

If you want a little more structured help, we recommend that you sign up for an "Archive & Rebuild" Lab by linking to http://imc.byu.edu/workshops.

page 1

Converting BYU Courses to Blackboard 6

2: Creating A Course Shell

Part 2: A Course New Shell

Creating a Blackboard 6 Course Shell

If you're reading this section, you've decided that your courses need to be converted to the new format. The first step is to create the new course shell into which your content will be added. We do this first because it will take until the next morning for the course to be available in Blackboard 6. Because of this, do this step first, then read the section on getting your old course ready for conversion to the new course.

1 Click on the **Blackboard Course Management** icon under the work category of your Route Y interchange page.

Work
- University Electronic Handbook
- Human Resources/Payroll
- AIM
- Blackboard Course Management
- Financial Rep
- Advanced Help Desk (AHD) v6.0
- Extensity (Alpha Testing)
- Enterprise Software
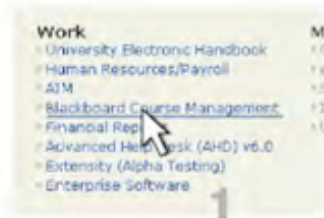
2 A message will appear notifying you which Semester and year you are currently working on. Make sure that it is for the year and semester you intend (Winter 2004.)

Microsoft Internet Explorer

⚠ You are currently editing courses for Fall 2003. To switch to a different Year Term, please click the Year Term link in the upper right hand corner of this page.

[OK]
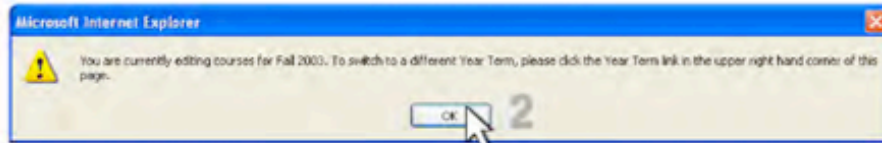
(To change the year and semester, click on the Year-Term link in the upper right corner and select the correct year and semester from the popup menu.)

3 Click on the **Create New Course** button.

Existing Blackboard Courses for Winter 2004
You do not have any black board courses for this year term.

[Create New Course]

Changes to this page are immediately saved and active within one business day.

4 First enter the name of the course that you want to create. Identify your course by catalog name, section, and semester, like this: "**Psych 240 Section 6, Winter 2004**" (you will link it to the official course name in the next step).
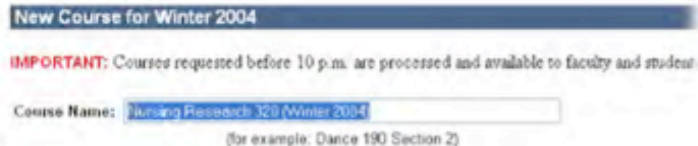
If a list of classes appears that you can copy from— don't! Leave it on the default setting to create the course as an empty shell. (If you choose to copy from a Blackboard 5.5 course, nothing will happen.)

New Course for Winter 2004

IMPORTANT: Courses requested before 10 p.m. are processed and available to faculty and student

Course Name: Nursing Research 320 (Winter 2004)
(for example: Dance 190 Section 2)

Converting BYU Courses to Blackboard 6

page 2

2: Creating A Course Shell

5 Click on **Create Course**.

Create Course | Cancel

5

6 Click on the **Add a Section** button. This is where you associate the Blackboard 6 course with the official BYU class schedule. If you do not associate the course, then your students will not have access to your course.

Course   Nursing Research 320 (Winter 200

Currently Associated BYU Sections   Ins
No sections currently associated...   How

Add a Section   Add

Allow others to copy: ☐   **6**
Last Updated By: **Howell, Daniel B**
Last Updated Date   **11 Nov 2003**   Te
No

7 A new window will pop up on your screen and list all the sections that you are assigned to teach this semester. Check the boxes next to the correlating sections and click **Add** at the bottom (If you do not see the right courses or sections listed or if there are no courses listed in the box, it probably means you are not listed as the instructor of that course. Contact your department course scheduler to have them make changes).

Route Y Blackboard C...

Fall 2003
Teaching Area	Cat	Sec
☑ Nursing	655	400

Add

7

🔒 Internet

8 This step is optional. Enter the names or netIDs of the other Instructors or TAs that you want to have in your class. If the computer does not recognize the names or netIDs and you cannot find them in the directory, contact the IMCs at 422-1888 for assistance.

2004) (KSG8-20041-1) Edit Title

Instructors:
Gale, Kristina Starr

Add Instructor: [   ] Add
(NetID or last name, first name)

Teaching Assistants:
No TA's have been assigned to this course.

Add TA: [   ] Add
(NetID or last name, first name)

e within one business day.

8

9 **Important!** Courses are not created immediately. It usually takes until the next morning before your courses will appear in Blackboard 6. If you have more than one course to archive and rebuild, do all of them now by starting over with step 1 on page 2.

page 3

Converting BYU Courses to Blackboard 6

2: Creating A Course Shell

5 Click on **Create Course**.

6 Click on the **Add a Section** button. This is where you associate the Blackboard 6 course with the official BYU class schedule. If you do not associate the course, then your students will not have access to your course.

Course — Nursing Research 320 (Winter 200

Currently Associated BYU Sections
No sections currently associated...

Add a Section

Allow others to copy: ☐
Last Updated By: **Howell, Daniel B**
Last Updated Date: **11 Nov 2003**

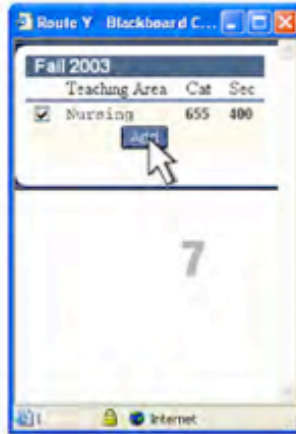**7** A new window will pop up on your screen and list all the sections that you are assigned to teach this semester. Check the boxes next to the correlating sections and click **Add** at the bottom (If you do not see the right courses or sections listed or if there are no courses listed in the box, it probably means you are not listed as the instructor of that course. Contact your department course scheduler to have them make changes).

Route Y Blackboard C...

Fall 2003

Teaching Area	Cat	Sec
☑ Nursing	655	400

Add

🔒 Internet

8 This step is optional. Enter the names or netIDs of the other Instructors or TAs that you want to have in your class. If the computer does not recognize the names or netIDs and you cannot find them in the directory, contact the IMCs at 422-1888 for assistance.

2004) (KSG8-20041-1) Edit Title

Instructors:
Gale, Kristina Starr

Add Instructor: [_____] Add
(NetID or last name, first name)

Teaching Assistants:
No TA's have been assigned to this course.

Add TA: [_____] Add
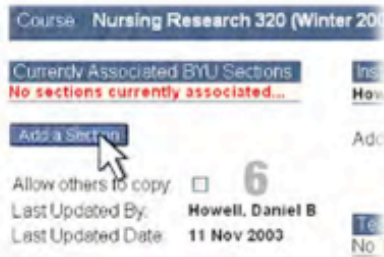(NetID or last name, first name)

within one business day.

9 **Important!** Courses are not created immediately. It usually takes until the next morning before your courses will appear in Blackboard 6. If you have more than one course to archive and rebuild, do all of them now by starting over with step 1 on page 2.
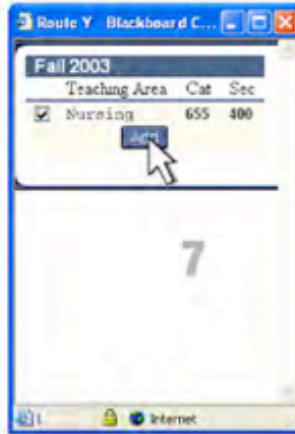
page 3

Converting BYU Courses to Blackboard 6

Part 7: Finishing Up

Finishing Up

Backing Up Your Course

Just like you would never think to leave an important Word file or spreadsheet un-backed-up, we recommend that you regularly save your course to your hard drive or other local media. This is very similar to the "Archive" you just went through, but with a new twist: in Blackboard 6 you can save everything. That way, if Blackboard goes down, you'll have an up-to-date copy of your course.

To backup your Blackboard 6 course, log on to Blackboard 6 and go to the course which you want to back up. Then go to the **Control Panel** for this course. Click on the **Archive Course** control panel located at the lower left side.

This will display information about the course and ask you to confirm archiving by clicking the **Submit** button. (Note: After clicking the submit button, Blackboard may take a several minutes to archive your course.)

In a while, Blackboard will display a "receipt" which will include this statement: **Click here to download the exported course site** as well as several warnings.
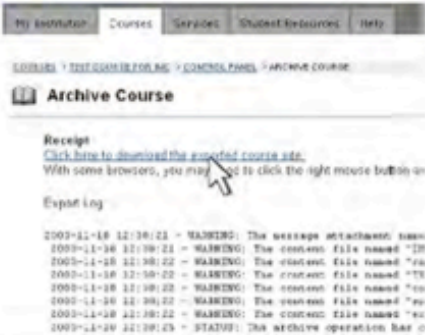
(Usually the warnings that appear have to do with the users with whom files in Blackboard are associated. When you archive your course, you are creating a file which is separate from the Blackboard system so connections between users and your file are broken. If you have concerns about any of these warnings, call the IMCs, 422-1888)

After clicking on the statement an option to **Open** or **Save** the archive will appear. Click **Save** and another dialog box will open which will allow you to navigate to where you want to store the file, and save it. Place the file somewhere on your hard disk or in another safe place. You now have
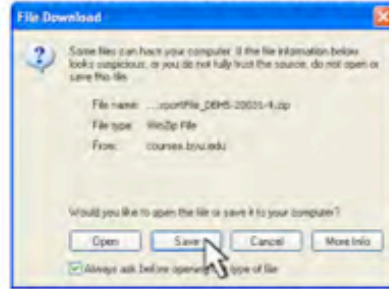
a backup of your course. This backup is in the form of a single zipped file.

To restore a course from a backup, use the **Import Package** option in control panels to upload the zipped course file. Be aware that any changes or additions made since your last backup (by your or by students!) will be lost when you import your course package.

For Multiple Courses

If you followed the advice in part 2 and created course shells for each of your courses that need to be converted, go back to Part 3 to convert the next course.

If you did not create course shells at that time, you will need to create them as shown in Part 2 and then wait until the next morning to begin working on the new course.

Repeat the steps as needed. When you have archived all your courses, you will no longer need this guide — it may be recycled.

You're Done!

Congratulations! You have completed converting your course to Blackboard 6. You should now have a fully functioning Blackboard 6 course.

If you have had any problems with any step in this guide, or if we have not covered a problem specific to your needs, please contact the IMCs at 422-1888 for help.

Converting BYU Courses to Blackboard 6   page 12

Cover Page

for Item B–4: **Online Course—XML-Encoded Old Testament Course**

Description

Until a few years ago, BYU Independent Study courses were composed in page layout software for the printed version, and then the text was transferred manually to static HTML pages for the online Web version. Since about 2004, BYU's Center for Instructional Design (now Center for Teaching and Learning) has been developing a program called *SingleSource* which simplifies that process significantly.

The production process under *SingleSource* involves editing the manuscript in Microsoft *Word*, then using a conversion program uses to generate a first XML markup attempt. This preliminary XML marked-up version then had to be carefully corrected and tested before release. Once polished, the XML document could then be used to produce all versions of the course.
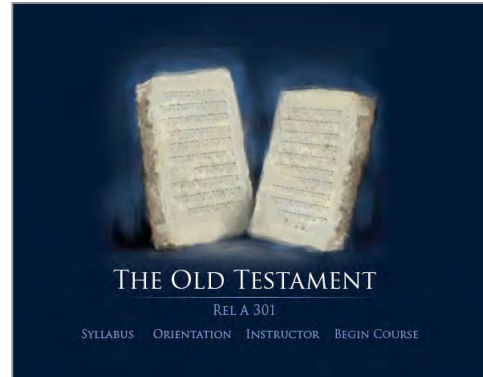
My Role

For this course, I did the conversion, and hand-entered corrections and many other features, such as pictures to complement the text. While the XML code is not written from scratch, the automated process produces problematic code, so significant interaction was required to insure accuracy and high production quality.

What Is Included

In addition to a couple of screen shots, this sample includes 4 selected pages of approximately 15 pages of printed text (which is only a representative sample of a complete course). (Note that long lines run off the right edge of the page, so you're intentionally only seeing the beginning of the lines.)

(If you would like a complete copy of this XML document, please contact BYU Independent Study for permission, then I will be able to supply one. All test items and a number of lessons have been removed from this version to ease distribution.)

REL A 301

HOME
SYLLABUS
LESSON 1
    PAGE 1
    PAGE 2
    PAGE 3
    PAGE 4
    PAGE 5
    PAGE 6
    PAGE 7
    PAGE 8
LESSON 2
LESSON 3
LESSON 4
LESSON 5
LESSON 6
LESSON 7
LESSON 8
LESSON 9
LESSON 10
FINAL EXAM
PREPARATION
FINAL EXAM REQUEST
COURSE EVALUATION

GRADECHECK
REPORT PROBLEMS
REPORT BAD LINK

Tools

[Search]
Font: (Default)
Size: ▲ ▼
Scrollable Menu ☐
Print Version
Mobile Version

INTRODUCTION, THE CREATION, AND THE FALL
GENESIS 1-3

Introduction

The word testament can be defined as a witnes[s]
that chronicles some of Gods dealings with this
inhabitants, beginning from the creation of the
450 years before Jesus Christs birth. Humankin[d]
this witness, for it provides answers to some o[f]
fundamental questions, such as: "Why was this
is God?" "What is my relationship to Him?" "Do
God expect of me?" and "What can I expect of
and prayerfully reads and studies the Old Test[ament]
these ancient people, we can find answers to th[e]
that are just as important today as they where

Learning Outcomes

By the end of this lesson you should be able to[:]

1. Explain what the Old Testament is and h
2. Give a general overview of the content th
3. Identify the purpose of the creation acco[unt]
   principles taught therein.
4. Summarize the account of the Fall, and e
   consequences of the Fall.

Reading Assignments and Activities

Begin by doing the following:

1. From the Bible Dictionary of the LDS Edition of the King James Version, read these entries:
   • Bible (read from the beginning of the entry through to end of the heading titled Preservation of the text of the OT);
   • Canon
   • Masoretic Text
   • Septuagint

Religious Education – Ancient Scripture 301: Syllabus

Close Window

Syllabus

- Contents
- Course Introduction
- Course Objectives
- Required Materials
- Lessons and Grading

Contents:

Lesson 1: Genesis 1-3—Introduction, the Creation, and the Fall
Lesson 2: Genesis 4-23—The Patriarchs
Lesson 3: Genesis 24-50—From Isaac to Joseph: The Beginning of Israel
Lesson 4: Exodus 1-20—The Exodus
Lesson 5: Exodus 21-40 and Leviticus—The Mosaic Law
Lesson 6: Numbers—From the Wilderness to the Promised Land
Lesson 7: Deuteronomy—The Second Law
Lesson 8: Joshua, Judges, Ruth—The Conquest and Judges
Lesson 9: 1 Samuel: Israel Wants a King
Lesson 10: 2 Samuel: King David
Preparing for Final Exam
Request Exam

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Course Introduction

The Old Testament is a collection of 39 books, written by prophets, poets, and

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REL A 301

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INTRODUCTION, THE CREATION, AND THE FALL
GENESIS 1-3
LESSON 1

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Discussion Material

What Is the Old Testament?

Some individuals mistakenly believe that the Old Testament is a record that was written and handed down as a whole from one prophet to another until it included the 39 books that constitute todays text. In reality, as the reading assignments from the Bible Dictionary explain, the Old Testament is actually a collection of sacred and prophetic writings gathered and put together long after the authors had passed away. While many of the authors were indeed great prophets who declared Gods word (e.g., Isaiah, Jeremiah, Ezekiel, etc.), others laid no personal claim to prophecy, and were writing to preserve history or inspiring literature (e.g., 1 Samuel, Ezra, The Song of Solomon, etc.). Thus there are different genres or types of texts in the Old Testament corpus. Christians typically group them as follows:

The Five Books of Moses, The Pentateuch, or The Torah (Law)	5 books	Genesis, Exodus, Leviticus, Numbers, Deuteronomy
Historical Books	12 books	Joshua, Judges, Ruth, 1 Samuel, 2 Samuel, 1 Kings, 2 Kings, 1 Chronicles, 2 Chronicles, Ezra, Nehemiah, Esther.
The Wisdom Literature or Poetic books	5 books	Job, Psalms, Proverbs, Ecclesiastes, Song of Solomon
Prophetic books	17 books	Major Prophets—Isaiah, Jeremiah, Lamentations, Ezekiel, Daniel; Minor Prophets—Hosea, Joel, Amos, Obadiah, Jonah, Micah, Nahum, Habakkuk, Zephaniah, Haggai, Zechariah, Malachi

It is my belief that those who collected and selected the 39 books that constitute the Old Testament canon did a marvelous job, and were inspired in the process. We owe them a debt of gratitude for preserving these sacred texts and making them available to us.

Overview of the Course Content

In this course you will study the **Pentateuch** and the historical books Joshua, Judges, Ruth, 1 Samuel, and 2 Samuel.

The Pentateuch is also called the **Five Books of Moses** because the initial texts and teachings are attributed to him. It contains an account of the creation of the world, the Fall of Adam and Eve, the Flood, the founding of the House of Israel, the Egyptian captivity, the Exodus, and wilderness wanderings. The narrative focuses primarily on those descendants of Adam and Eve who were the progenitors and the spiritual leaders of the House of Israel. Among those progenitors and leaders are individuals such as Adam, Eve, Enoch, Noah, Abraham, Sarah, Isaac, Rebecca, Jacob, Judah, Joseph, Moses, and Joshua. As the

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7a_RELA301_course.xml                                                    Page 1 of 15
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```

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  Text by Dr. Terry B. Ball
  XML Encoding by S. Todd Stubbs
  "SingleSource" schema & software by BYU Center for Teaching & Learning

  To reduce the size and length of this portfolio copy, only representative lessons have been included.
  (please note the page numbers). If you would like to obtain a complete copy of this file, please
  contact BYU Independent Study at http://elearning.byu.edu.
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    <instructor>
      <name>
        <firstname>Terry</firstname>
        <middlename>B.</middlename>
        <lastname>Ball</lastname>
        <degree>Ph.D.</degree>
      </name>
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        <para>Professor Terry B. Ball is a Professor of Ancient Scripture at Brigham Young University. Prior to teaching at BYU he spent
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        <title>Course Introduction</title>
        <para>The Old Testament is a collection of 39 books, written by prophets, poets, and historians, that chronicles a covenant peop
      </block>
      <block class="objectives">
        <title>Course Objectives</title>
        <para>At the end of this course students will be able to:</para>
        <orderedlist>
          <listitem>Recall and discuss the history, doctrine, and prophecies in Genesis through 2 Samuel.</listitem>
          <listitem>Read and interpret Genesis through 2 Samuel with confidence.</listitem>
          <listitem>Identify major and common themes in Genesis through 2 Samuel.</listitem>
          <listitem>Identify and discuss ancient and modern fulfillment, interpretations, and applications of prophecies and teachings i
          <listitem>Apply the doctrines, principles and truths taught in Genesis through 2 Samuel to their own life.</listitem>
          <listitem>Bear testimony of the value of Genesis through 2 Samuel.</listitem>
        </orderedlist>
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      <block class="materials">
        <title>Required Materials</title>
        <para>1. The LDS edition of the King James Version of the Bible.</para>
      </block>
      <block class="grading">
        <title>Lessons and Grading</title>
        <para>There are ten lessons in this course. The first lesson includes is an essay assignment that you will complete and submit t
        <para>After you have completed all of the lessons and Speedback assignments, you will take a comprehensive final essay exam. Ple
        <para>Your final grade will be calculated this way:</para>
        <unorderedlist>
          <listitem>70% for lesson assignments (1 instructor-graded and 9 computer-graded Speedback assignments; worth 7% each)</listite
          <listitem>30% for the final exam</listitem>
        </unorderedlist>
        <para>You should carefully follow the course of study in this course manual, reading and studying all of the material for each l
        You will complete and submit all ten Speedback assignments before you take the final exam.</para>
        <para>Grade Scale:</para>
        <para>93-100%: A</para>
        <para>90-92%: A-</para>
        <para>87-89%: B+</para>
        <para>83-86%: B</para>
        <para>80-82%: B-</para>
        <para>77-79%: C+</para>
        <para>73-76%: C</para>
        <para>70-72%: C-</para>
        <para>67-69%: D+</para>
        <para>63-66%: D</para>
        <para>60-62%: D-</para>
        <para>0-59%: E</para>
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   <para>The word testament can be defined as a witness. The Old Testament is a witness that chronicles some of Gods dealings wit
  </block>
  <title>Learning Outcomes</title>
  <block>
   <para>By the end of this lesson you should be able to do the following:</para>
   <orderedlist>
     <listitem>Explain what the Old Testament is and how it came to be.</listitem>
     <listitem>Give a general overview of the content this course covers.</listitem>
     <listitem>Identify the purpose of the creation accounts, and the important truths and principles taught therein.</listitem>
     <listitem>Summarize the account of the Fall, and explain the need for and the consequences of the Fall.</listitem>
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  <title>Reading Assignments and Activities</title>
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   <para>Begin by doing the following:</para>
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     <listitem>From the Bible Dictionary of the LDS Edition of the King James Version, read these entries:
       <unorderedlist>
         <listitem>Bible (read from the beginning of the entry through to end of the heading titled Preservation of the text of t
         <listitem>Canon</listitem>
         <listitem>Masoretic Text</listitem>
         <listitem>Septuagint</listitem>
       </unorderedlist>
     </listitem>
     <listitem>From the <emphasis>Old Testament</emphasis>, read Genesis chapters 1-3.</listitem>
     <listitem>From the Pearl of Great Price, read Moses 1-4 and Abraham 4-5.</listitem>
     <listitem>Read the Discussion Material and Selected Commentary in this manual.</listitem>
   </orderedlist>
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 </contentblock>
 <contentblock>
  <title>Discussion Material</title>
  <para> </para>
  <title>What Is the Old Testament?</title>
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   <para>Some individuals mistakenly believe that the Old Testament is a record that was written and handed down as a whole from
    <table>
      <tr>
        <td><strong><emphasis>The Five Books of Moses, The Pentateuch, or The Torah (Law)</emphasis></strong>
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        <td>5 books</td>
        <td>Genesis, Exodus, Leviticus, Numbers, Deuteronomy</td>
      </tr>
      <tr>
        <td><strong><emphasis>Historical Books</emphasis></strong>
        </td>
        <td>12 books</td>
        <td>Joshua, Judges, Ruth, 1 Samuel, 2 Samuel, 1 Kings, 2 Kings, 1 Chronicles, 2 Chronicles, Ezra, Nehemiah, Esther.</td>
      </tr>
      <tr>
        <td><strong><emphasis>The Wisdom Literature or Poetic books</emphasis></strong>
        </td>
        <td>5 books</td>
        <td>Job, Psalms, Proverbs, Ecclesiastes, Song of Solomon</td>
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      <tr>
        <td><strong><emphasis>Prophetic books</emphasis></strong>
        </td>
        <td>17 books</td>
        <td>Major Prophets—Isaiah, Jeremiah, Lamentations, Ezekiel, Daniel; Minor Prophets—Hosea, Joel, Amos, Obadiah, Jonah, Mica
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   <para>It is my belief that those who collected and selected the 39 books that constitute the Old Testament canon did a marvelo
  </block>
  <title>Overview of the Course Content</title>
  <block>
   <para>In this course you will study the <strong>Pentateuch</strong> and the historical books Joshua, Judges, Ruth, 1 Samuel, a
   <para>The Pentateuch is also called the <strong>Five Books of Moses</strong> because the initial texts and teachings are attri
   <para>The historical books we study in this course, Joshua through 2 Samuel, tell of the House of Israels return to and establ
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    <title>The Creation</title>
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    <title>An Approach to Understanding the Purpose of the Creation Account</title>
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      <para><emphasis>Jeopardy</emphasis> is a popular and long-running TV game show in the United States. It is somewhat unusual in
      <para>Often, we can beneficially apply the <emphasis>Jeopardy</emphasis> approach to scripture study as well. For example, we
    </block>
    <title>Moses' Questions</title>
    <block>
      <para>Latter-day Saints are fortunate to have a record of a conversation between God and Moses that helps us identify the ques
      <blockquote>beheld the earth, yea, even all of it; and there was not a particle of it which he did not behold . . . And he beh
      <para>Following this remarkable vision of many lands or earths, Moses called upon God and asked two important questions of Him
      <para>This conversation between God and Moses suggests that of the interrogatives we typically consider (who, what, where, whe
      <blockquote>What is a day? . . . There is no revealed recitation specifying that each of the six days involved in the Creation
      <para>The question of <strong>how</strong>the earth was created also seems to be addressed but only in broad, sweeping terms w
      <para>Latter-day Saints can find insight to the issue of whether or not there are two conflicting accounts of the creation in
      <para>And now, behold, I say unto you, that these are the generations of the heaven and of the earth, when they were created,
      <para>This passage indicates that rather than containing two conflicting accounts, the narrative is simply describing or empha
      <para>The Book of Abraham account handles the creation with what may be a slightly different paradigm. In the 4<superscript>th
      <para>While the Mosaic and Abrahamic accounts of the creation may provide some insights into what may appear to be inconsisten
      <blockquote>Our analysis properly begins with the frank recital that our knowledge about the Creation is limited. We do not kn
    </block>
  </contentblock>
  <contentblock>
    <title>Who Created the Earth?</title>
    <block>
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        </instance>
      </media>
      <para>The Creator is identified in the opening line of the text, In the beginning God (<emphasis>Elohim</emphasis>) created th
      <para>The Abrahamic account of the creation makes it clear, however, that more than one deity was indeed involved in the creat
      <para>Genesis 1:26 seems to support the notion that more than one deity took part in the creation: And God said, Let us make m
      <para>While use of the plural verb in Genesis 1:26 indicates God is counseling with others in the creation process, the next v
      <para>A primary purpose, then, of the creation narratives is to provide an answer and witness to the question of <strong>who</
    </block>
    <title>Why Was the Earth Created?</title>
    <block>
      <para>The prelude to the Abrahamic creation account provides a clear answer to the question of why the earth was formed. There
      <blockquote>We will go down, for there is space there, and we will take of these materials, and we will make an earth whereon
      <para>The declaration makes it apparent that the earth was created as a place for pre-mortal individuals to grow, learn, and b
      <para>In the proclamation that God created man in his own image (Gen. 1: 27), Latter-day Saints find additional insight into w
      <para>Further insight into the purpose of the creation appears in the account of the creation of woman found in Genesis 2, Moses 3
      <para>After announcing that God plans to make an <emphasis>ezer kenegdo</emphasis> for Adam, one would think that the next pas
      <para>Through this process, it appears that God is teaching Adam that just as he had a special creation and is far different t
      <para>While the creation narratives make it clear that the earth and all that is in it was made for man, they also make it cle
      <para>In a revelation given to the Prophet Joseph Smith, we learn that unrighteous dominion is a great evil in the eyes of God
    </block>
    <title>Conclusion</title>
    <block>
      <para>The creation narratives give wonderful insights into the questions of who created the earth and why. They confirm that t
    </block>
  </contentblock>
  <contentblock>
    <title>The Fall</title>
    <block>
      <title>The Need for and Consequences of the Fall of Adam and Eve</title>
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        <caption>1-4. Adam and Eve after the Fall.</caption>
        <description>A painting of a wooded scene, with Adam and Eve, at a distance, dressed in skins, walking through the trees.</d
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7a_RELA301_course.xml                                                          Page 10 of 15
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            <listitem>Review and make sure you are able to meet each of the lesson learning outcomes, which are to be able to do the fol
              <unorderedlist>
                <listitem>Discuss the history and teachings recorded in the book of Joshua, including:
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                    <listitem>The overall structure of the book.</listitem>
                    <listitem>The Lords commission of Joshua (Joshua 1).</listitem>
                    <listitem>The Rahab account (Joshua 2, 6).</listitem>
                    <listitem>The miracle of the crossing of the Jordan River (Joshua 3, 4).</listitem>
                    <listitem>The fall of Jericho (Joshua 5).</listitem>
                    <listitem>The battle for Ai (Joshua 7, 8).</listitem>
                    <listitem>The treaty with Gibeon (Joshua 9).</listitem>
                    <listitem>The battle at Ajalon (Joshua 10).</listitem>
                    <listitem>Dividing the land (Joshua 14-21).</listitem>
                    <listitem>Joshuas final exhortation (Joshua 23-24).</listitem>
                  </orderedlist>
                </listitem>
                <listitem>Discuss the history and teachings of the book of Judges, including:
                  <orderedlist numeration="A">
                    <listitem>The overall structure of the book.</listitem>
                    <listitem>The cycle of apostasy (Judges 1-2).</listitem>
                    <listitem>The accounts of Deborah, Gideon, Jephthah, and Samson (Judges 3-16).</listitem>
                    <listitem>The anarchy accounts and Israels desire for a king (Judges 17-21).</listitem>
                  </orderedlist>
                </listitem>
                <listitem>Discuss the history and teachings of the book of Ruth.</listitem>
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            <distracter>Counsel with the elders in your decisions.</distracter>
            <distracter>Love even your enemies.</distracter>
            <distracter>Do not save any of the Canaanites alive.</distracter>
            <correctanswer>Meditate day and night in the book of the law.</correctanswer>
            <feedback>See Joshua 1:6-9 and Discussion Material under The Lord Commissions Joshua.</feedback>
          </multiplechoice>
          <multiplechoice>
            <stem>Which of the following is true in regards to Israels crossing of the Jordan River as recorded in Joshua 3, 4?</stem>
            <correctanswer>Parting of the Jordan was a sign to Israel that God was with them and Joshua.</correctanswer>
            <distracter>Joshua smote the river to part it in the eyes of all Israel.</distracter>
            <distracter>Those carrying the Ark of the Covenant were the first to reach dry ground on the other side of the river.</distr
            <distracter>The priests carrying the Ark had little faith until after the river was parted.</distracter>
            <feedback>See Joshua 3:10 and Discussion Material under Crossing the Jordan River.</feedback>
          </multiplechoice>
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        </questionset>
      </speedback>
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      <title>Lesson 10: 2 Samuel: King David</title>
      <contentblock>
        <title>Introduction</title>
        <block>
          <para>King David is an enigma. Jews typically view him as among their greatest kings and a forefather of their people. Others :
        </block>
        <title>Learning Outcomes</title>
        <block>
          <para>By the end of this lesson you should be able to do the following:</para>
          <orderedlist>
            <listitem>Discuss the history and teachings recorded in the book of 2 Samuel including those associated with:
              <orderedlist numeration="A">
                <listitem>David's response to the death of Saul (2 Samuel 1).</listitem>
                <listitem>David's reign over Judah and struggles to unite Israel under one king (2 Samuel 2-3).</listitem>
                <listitem>David's response to the death of Ishbosheth (2 Samuel 4).</listitem>
                <listitem>David's rise to power and reign over united Israel (2 Samuel 5-10).</listitem>
                <listitem>The Uzzah incident (2 Samuel 6).</listitem>
```

Part C—Design & Writing Samples

Item C–1: Design Proposal—Testing Center Signs

The BYU Testing Center has occupied the historic Heber J. Grant Library building for many years. As a result there was an accumulation of signs from previous policies and needs. The presence of these signs resulted in confusion and distraction from the center's purpose, and they impeded a smooth flow through the building and the testing process. This item is some of the selected pages from the proposal to change or remove those signs.

Item C–2: Process Flowchart & Timeline—IS Course Production

BYU Independent Study course production process has changed over the years, occasionally resulting in redundant steps and confusion in the process. I designed this diagram to help *me* understand it, and in the process, it helped make the process clearer to others.

Item C–3: Instructional Writing—Book on Web Design

With friend and colleague, Karl Barksdale, I wrote a textbook on the subject of Web design (*Web Design Basics*, 2003) for high school or junior college use, published by Thomson Course Technology. Included here as a sample are the first few pages of chapter three on the subject of information design.

Item C–4: Scholarly Writing—Published Article

This is an article that I originally wrote as part of my dissertation. It is now a chapter in a handbook co-edited by me and Luca Botturi, a friend from Switzerland.

Cover Page

for Item C–1: **Proposal—Testing Center Signs**

Description

BYU's testing center is the largest in the nation—over 700,000 tests administered per year. Important signage directing the flow of traffic, explaining rules, and requesting particular behaviors at were routinely ignored by patrons. A surfeit of signs, which had gathered over the 20+ years of operation, were sometimes contradictory, often confusing, and occasionally hostile, so patrons did not pay attention to most of them.

A detailed survey of existing signs was made to support recommendations to remove or change nearly all the signs found throughout the BYU Testing Center building. Approximately 80% of the changes have been made. There has been a noticeable improvement in communication and flow with the new signs and other changes. Among the changes is a large (50") plasma screen with appropriate software to reinforce messages for a number of removed signs and provide current information to patrons.

My Role

I conducted the research, wrote the proposal that proposed action on signs in over 30 areas of the testing center, and designed new signs for all areas. I also directed the work of a student designer/programmer in the software for the plasma screen in the lobby.

What Is Included

This sample contains 5 of the original 32 pages in the recommendation. (If you would like a complete copy of this booklet, please contact me.)

General Principles & Guidelines for Signs in the Testing Center

We propose the removal or adaptation of a large number of Testing Center signs, both formal and informal, to beautify the Heber J. Grant Building and restore the meaning to the signs that remain.

The Heber J. Grant Building, originally built as the new campus library, is one of BYU's legacy buildings. As much as possible, its look and décor should reflect that status. The current signage, as well as some of the other things put in place to support the processes and work of the Testing Center, sometimes get in the way of this heritage. Also, over the years, signs have multiplied until they so clutter the environment, they are not only unattractive, they are typically ignored. The signage in the building is due for a change.

Here are some general rules to consider in changing signs:

1. Avoid using a sign when some other behavioral affordance would work better.

A rope, a guide, the way a particular door opens, a barrier, etc. is a better way to communicate your intent than a sign. For example a velvet rope at the bottom of the staircases in the queue area (with a small "Employees Only" sign) would prevent more people from using the stairs as a seat on which to study than the current warning signs, and would look classier, more in line with the look of the building.

2. Signs should be appropriate to the space in which they appear.

Be sensitive to the mental and physical state of patrons in the placement of signs. For example, signs in high traffic areas should consist of only a word or two for instant recognition (like highway signs). Signs which must be read to be understood (e.g., notices, warnings) should be in places where traffic allows for reading (such as the queue area).

3. Use humor and a light touch when possible.

Current signage is demanding and often commanding. The result is a semi-hostile feel, which has the ironic effect of making signs more likely to be ignored. One trick often used is to place the word "Please" in cursive that sets it off from the rest of the sign. Unfortunately, that inclines the reader to see the word as not being part of the message (because it is in a different style) or to read it sarcastically. Signage that uses good style, and wording that is polite and encouraging will be much more likely to be read and heeded. Appropriate humor can also make a message much more appealing.

4. Use a consistent look and feel.

A consistent style among all signs will help patrons know which signs belong to the testing center, and which do not; this aids them in recognizing and heeding the signs that are important, and ignoring the ones that aren't. We will need to create a style guide for signage and stick to it. The style guide will help us make decisions when making signs so that all signs look like they belong to the same family of signs. A good style guide should include font selection, when and where to use centering, spacing, font size, background, color, use of logos, etc. It can also discuss wording and usage.

Page 3

1stW   "Do not leave your belongings..." Signs

Detailed Sign(s):

Please do not leave your
personal belongings on the first
floor while you take tests.

Free bags are available for storing
your belongings upstairs.

Setting:

Map of Location:

Location Description:	In several places on the first floor and on the landing of the grand staircase (132 HGB on the map). See HGB plan above. These have various forms of lettering, etc.
Nominal Purpose:	At one time lockers were provided for testing center patrons to put belongings into while they took tests. Because many did not lock the lockers, things were stolen from them which became a security problem. At the recommendation of BYU security, the lockers were removed, and patrons were asked to put all their belongings in their backpack, or the provided blue bag, and place these under their desks in the testing hall as they took their tests. These signs warned patrons not to leave things lying around after the lockers were removed.
Problems:	—Someone not familiar with their history (most people) are probably be puzzled by these signs. —These signs do not explicitly state a new rule, which would be more helpful —These signs can be found throughout the first floor; since they are no longer meaningful, they provide a lot of "background noise" from which patrons learn to ignore *all* signs. —The nature of these signs makes the testing center seem foolishly doctrinaire.
Recommended Solution:	**Remove all these signs**. Rules regarding putting belongings in bags will be on the plasma display.
Proposed Replacement:	None.

Page 5

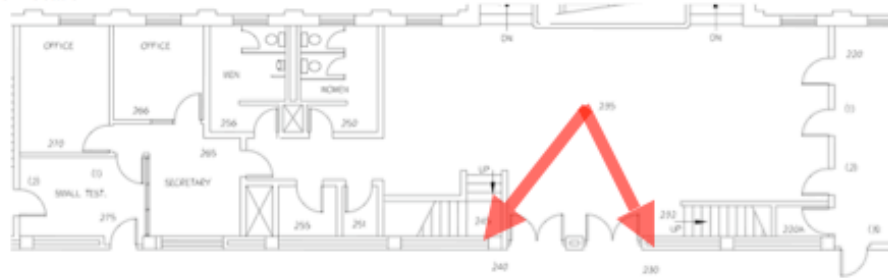## 245W   "Do NOT Study on this Floor" Sign in Queue Area

Detailed Sign(s):

Setting:

Map of Location:

Location Description:	At the first landing of the west staircase going up to door 310 HGB. This sign is laminated paper, and is posted on a corkboard facing the bottom of the stairs. (The map calls this location 245 HGB). Another sign is located to the left of the double doors from the testing room, 295/270 HGB.
Nominal Purpose:	To warn patrons not to study on the second floor. The first sign's position is probably related to the fact that stairs are a favorite seat for patrons wishing to quickly review material before taking a test.
Problems:	—In spite of the happy face, the signs are a demand or command (as evidenced by the red NOT and the tone of the sign) and adds a hostile note to the room, as well as a little clutter. —This sign is regularly ignored, and may be superfluous if another way to accomplish the same result can be found. An affordance would be a better solution for this location. —The corkboard may be useful for other purposes, but in its present location, it would be prone to make the queue area more cluttered.
Recommended Solution:	**Remove the signs and the corkboards. Place a velvet rope across the bottom of the staircases with a suspended sign saying "Employees Only."** Such a sign would make the use of the stairs awkward as a seat, unless patrons ignored the sign and detached the rope, or by-passed the rope and went up the stairs to sit—both of which are unlikely. This will also partially eliminate the need for the unsightly "Warning: This door alarmed" sign at the top of the east & west staircases.
Proposed Replacement:	

Page 12

220D-ent-b Test Distribution Overhead Signs

Detailed Sign(s):   Setting:

Map of Location:

Location Description:	Above the doors leading into the test distribution area.
Nominal Purpose:	The speaker needs to be somewhere! The three lines and door numbers are used to specify one door in particular for a particular test. The scrolling electronic sign is for occasional announcements.
Problems:	—The scrolling sign is a gimmick and not given serious consideration. Also, it clashes with the age of the building and room somewhat. —Use of numbered doors for specific test might be better handled with a queue solution. —Move speakers when new Plasma display is installed.
Recommended Solution:	**Eliminate door signs** and replace that function with a variable queue. **Eliminate the scrolling sign**, etc., and replace it with a plasma display. **Replace speaker** with speakers more appropriate to the plasma display when installed. Move clock to other side of the room, and replace with a more classic styled clock (old schoolhouse) (Identity sign will be added later.)
Proposed Replacement:	

Page 15

Section 2—Style Guide for Replacement Signs

All testing center signs (not architectural signs belonging to the building) will adhere to the following guidelines. Exceptions will be explicitly noted.
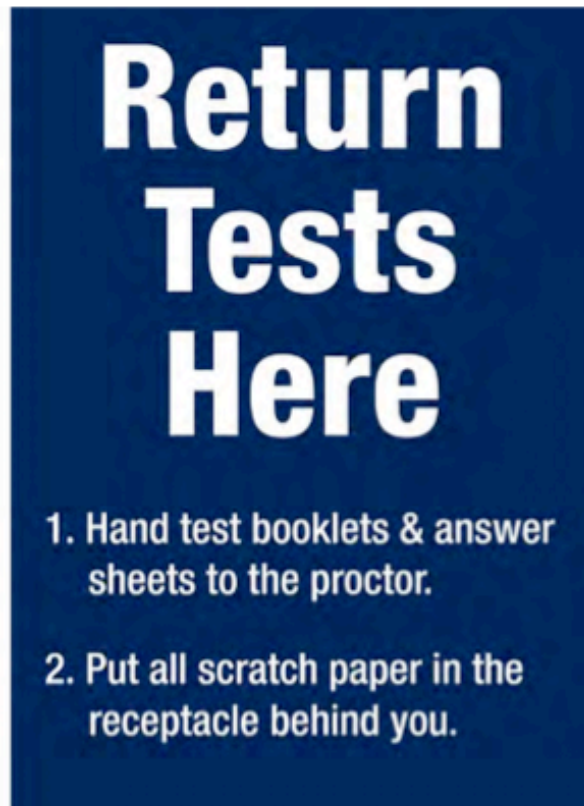
Colors: Colors will be BYU Navy Blue or Dark Bronze with white lettering.

Font: A san-serif condensed font such as *Zurich* or *Helvetica Neue*. Use Heavy or Black for headlines and banners, and medium condensed or normal condensed for body text.

Justification: Headlines may be centered; body text will be left-justified. When using numbers or bullets, use a hanging indent to make the bullets or number stand out. Summary statement (sub-heads) will be used whenever possible on signs with lengthy text on them.

Case: Word in all uppercase—even in headlines—will be strenuously avoided.

Example:

Color is **white text** on **Navy or Bronze background**

Headline is in **Helvetica Neue Heavy**

Centered

Body text is **Helvetica Neue Medium**

Left Justified

with a **Hanging Indent**

Return Tests Here

1. Hand test booklets & answer sheets to the proctor.

2. Put all scratch paper in the receptacle behind you.

Page 31

Cover Page

for Item C-2: **Process Flowchart & Timeline—IS Course Production**
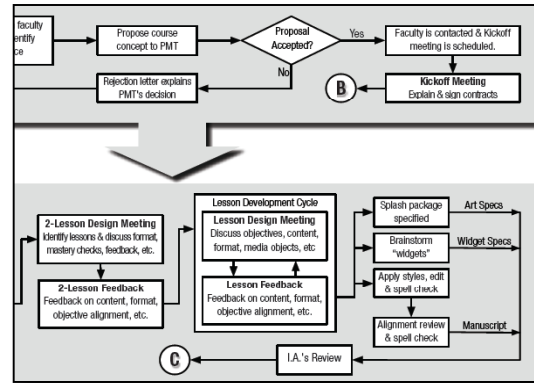
Description

A complex Independent Study course production process was inadequately documented. I documented it to help with my own understanding, and serendipitously, it added clarity to the process for others as well. This diagram precipitated a change to the process by making clear some redundancies and inefficiencies in the process.
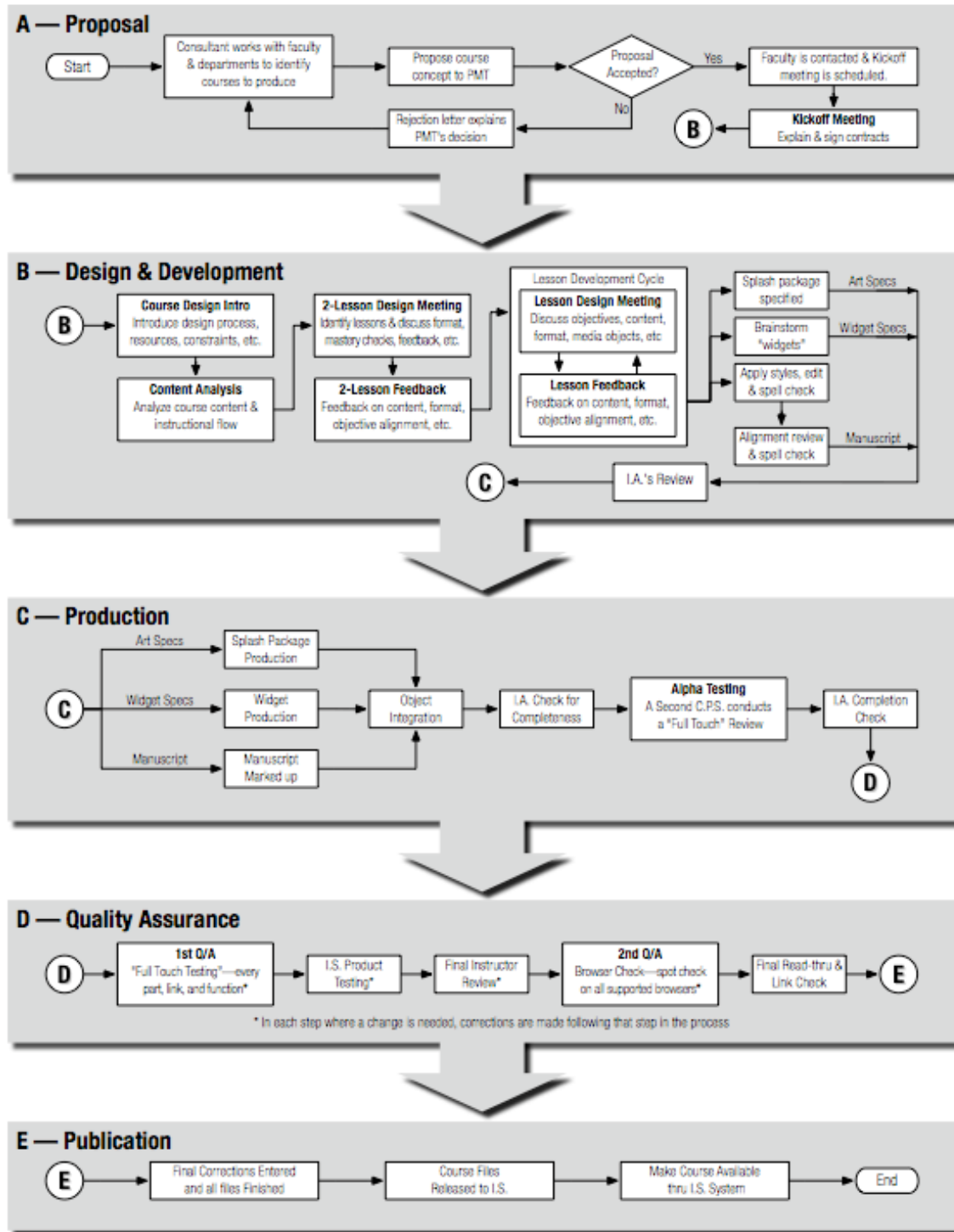

My Role

I created the flow diagram and timeline in *OmniGraffle Pro* from the OmniGroup. Several others had input as I was building to insure accuracy.
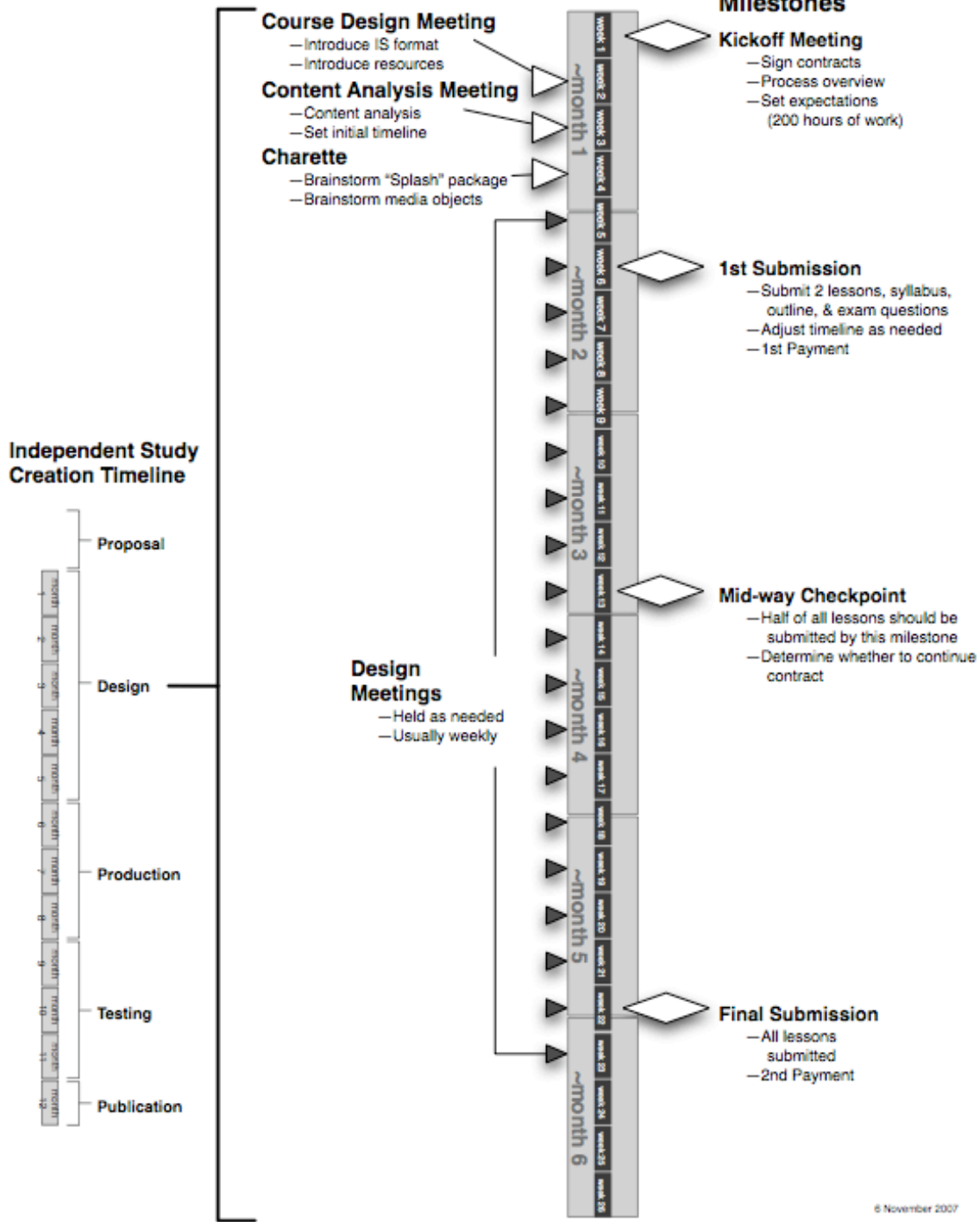
What Is Included

The complete one-page flow diagram, along with an illustration of part of the production timeline is provided.

University Independent Study Course Production Process

A — Proposal

```
Start → Consultant works with faculty & departments to identify courses to produce → Propose course concept to PMT → Proposal Accepted? 
   Yes → Faculty is contacted & Kickoff meeting is scheduled. → Kickoff Meeting: Explain & sign contracts → B
   No → Rejection letter explains PMT's decision → (back to Consultant works with faculty)
```

B — Design & Development

```
B → Course Design Intro (Introduce design process, resources, constraints, etc.) → Content Analysis (Analyze course content & instructional flow) → 2-Lesson Design Meeting (Identify lessons & discuss format, mastery checks, feedback, etc.) → 2-Lesson Feedback (Feedback on content, format, objective alignment, etc.)

Lesson Development Cycle:
Lesson Design Meeting (Discuss objectives, content, format, media objects, etc) → Lesson Feedback (Feedback on content, format, objective alignment, etc.)

→ Splash package specified → Art Specs
→ Brainstorm "widgets" → Widget Specs
→ Apply styles, edit & spell check
→ Alignment review & spell check → Manuscript

→ I.A.'s Review → C
```

C — Production

```
C → Art Specs → Splash Package Production
  → Widget Specs → Widget Production
  → Manuscript → Manuscript Marked up

→ Object Integration → I.A. Check for Completeness → Alpha Testing (A Second C.P.S. conducts a "Full Touch" Review) → I.A. Completion Check → D
```

D — Quality Assurance

```
D → 1st Q/A ("Full Touch Testing"—every part, link, and function*) → I.S. Product Testing* → Final Instructor Review* → 2nd Q/A (Browser Check—spot check on all supported browsers*) → Final Read-thru & Link Check → E
```

* In each step where a change is needed, corrections are made following that step in the process

E — Publication

```
E → Final Corrections Entered and all files Finished → Course Files Released to I.S. → Make Course Available thru I.S. System → End
```

Revised: 2 March 2007

Independent Study Design Phase Timeline

Milestones

Course Design Meeting
— Introduce IS format
— Introduce resources

Content Analysis Meeting
— Content analysis
— Set initial timeline

Charette
— Brainstorm "Splash" package
— Brainstorm media objects

Kickoff Meeting
— Sign contracts
— Process overview
— Set expectations
   (200 hours of work)

1st Submission
— Submit 2 lessons, syllabus,
   outline, & exam questions
— Adjust timeline as needed
— 1st Payment

**Independent Study
Creation Timeline**

- Proposal

- Design

- Production

- Testing

- Publication

**Design
Meetings**
— Held as needed
— Usually weekly

Mid-way Checkpoint
— Half of all lessons should be
   submitted by this milestone
— Determine whether to continue
   contract

Final Submission
— All lessons
   submitted
— 2nd Payment

~month 1 / week 1 / week 2 / week 3 / week 4
~month 2 / week 5 / week 6 / week 7 / week 8
~month 3 / week 9 / week 10 / week 11 / week 12
~month 4 / week 13 / week 14 / week 15 / week 16 / week 17
~month 5 / week 18 / week 19 / week 20 / week 21
~month 6 / week 22 / week 23 / week 24 / week 25 / week 26

6 November 2007

Cover Page

Description

This is the beginning of a chapter from a book on *Web Design Basics* (ISBN-10: 0619059648 and ISBN-13: 978-0619059644) including an instructional activity. This book is written for high school and junior college level; the writing level is about 9th grade.

My Role

I am the principal author of this book. (My co-author, Karl Barksdale, is author of several textbooks, was a consultant, especially on activities for the book.) The layout and graphics were done by the publisher.
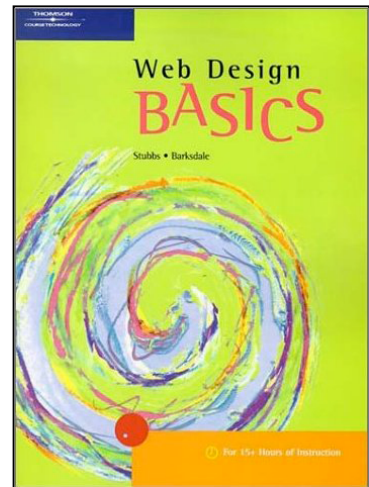
What Is Included

Attached are the first four pages of Unit 2, Lesson 3 (chapter 3) of the book.

LESSON 3

INFORMATION DESIGN

What Is a Design Document?

Great Web sites are not usually built by individuals; they are built by teams with members who have three essential skills:

- Writing
- Computer programming
- Artistic skills

It is nearly impossible to find a single person who can write well, is a great artist, and can program a computer. Instead, companies that make great Web sites will hire several people with different skills and abilities and have them work together as a team to build the Web site.

A *design document* keeps all of these talented people working together effectively. A design document is to a Web site what the blueprint in Lesson 2 is to the building of the house, or what a script is to producing a movie—it guides what happens. A design document outlines the goals of the site and describes or illustrates all its parts. Good design documents contain at least three kinds of information:

- Information design
- Interaction design
- Presentation design

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Remember the questions we said you needed answers to in Lesson 2? Well all those questions fall under three types of design.

Information Design

Information design includes these questions:

- Who is this Web site's audience? Who is it for?
- What is its message? What is it about?
- What is its purpose? What is it for?

Interaction Design

Interaction design includes these questions:

- How will the information be organized?
- How will the Web site work? What will people do to get around in it?
- How can I make it easy to use?

Presentation Design

Presentation design includes questions like these:

- What will it look like?
- How can I make its look and its message work together?

The first kind of design, information design, often requires a team member who can write well. The second, interaction design, usually needs someone who can program a computer. The third, presentation design, most often needs an artist. Blending writing, programming, and art using information, interaction, and presentation design are the keys to a successful Web site. And, that is exactly the job of the design document.

A design document keeps the writers, programmers, and artists working together well. In this unit we will briefly explore information, interaction, and presentation design. In the process, we will show you how to put them all together into a design document to keep the Web site's development moving forward. In this lesson we will focus on the specifics of information design. Lesson 4 will discuss interaction design. And finally, Lesson 5 will demonstrate how to integrate presentation design into your Web projects.

Information Design

The auditorium is filled with thousands of people, all there to hear you give a speech. Suddenly, you are being introduced! In about three seconds, you will step up to the microphone and begin your speech. Then it hits you: You don't remember what you're there to talk about! You don't remember who these people are, or why they should care what you have to say. Why are you giving this speech anyway?

Sound far-fetched? Sound like a nightmare? Well, it happens every day on the Web. Thousands of people visit Web sites looking for something interesting or important to them. Instead, they find aimless, meaningless, disorganized, and sometimes downright confusing information.

What is wrong with these Web sites?

There might be any number of reasons why a Web site doesn't work. However, it is our experience that the designers of most poor Web sites neglected to answer three important questions before they started to build the site:

- What is this Web site about? (What is the *message* of this site?)
- Who is this Web site for? (Who is the *audience* for this site?)
- What is this Web site for? (What is the *purpose* of this site?)

The answers to these three questions make up the Web site's **information design** (see Figure 3-1). An information design helps your Web site avoid mediocrity. When you figure out the answers to these questions, you will want to write them down so you can refer to them later. These written answers are the first part of your design document.

FIGURE 3-1
Information design is made of message, audience, and purpose
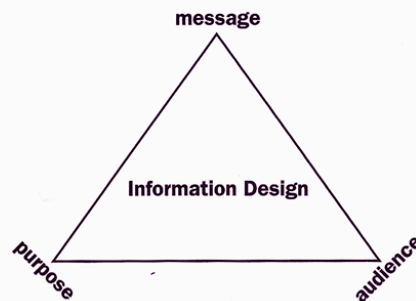
Among these three parts of information design, which one comes first—the audience, the message, or the purpose? Actually, sometimes it is one and sometimes it is another. The following examples will help. They show how other Web site developers faced these three design issues.

- The purpose of a bookseller's Web site is to make money selling books; therefore, making money (the purpose) is the seller's first thought, followed closely by the books he is selling (the message), and finally the people who buy books (the audience).

- A student shared her university's sports history (the message) online. Those interested in the site included sports fans and alumni of the university (the audience). The site was used to help promote interest in the university's sports program (the purpose).

- Another Web site supports the families of people who suffer from cancer. The audience (the families of cancer sufferers) was thought of first, with the purpose in mind (to comfort families) using the message (in-depth information about cancer research).

As you can see, it is very hard to separate these three design questions—they're all connected. If the bookseller's Web site focused so much on making money (its purpose) that it didn't show off the books very well (the message), or didn't show respect for its customers (the audience), it wouldn't sell many books. The bookseller would lose customers, and the Web site's original purpose—to make money—would be ruined. Good design requires you to think carefully about all three questions.

Discovering a Message for Your Web Site

As a Web page designer, your first task is often to figure out what your message is and research it. What? You say you don't know what to create a Web site about? Well, this next activity will help you figure that out. First, you'll brainstorm a list of topics you're interested in, then refine that list to one or two good ideas.

STEP-BY-STEP 3.1

1. Brainstorm with classmates and write down ten topics in which you are interested. These can include hobbies, interests, pets, favorite school subjects, your family, work, or just about anything. If you are developing your site as a partnership or team, develop ten topics with your partner or team.

2. Copy the items in your list in the order in which they most interest you (or your team), with the most interesting topic first. (If you get stuck trying to decide which item should be first, compare them two at a time, putting a mark next to the one that wins each pairing. The one with the most marks is first, the one with the second highest number of marks is second, and so forth.)

3. Look at the first topic in your list and ask yourself, "Can I create a great Web site based on this idea or topic?" If you don't feel you can build a Web site about your first topic, continue down the list until you have at least one topic that can make a great Web site. You should choose something that (1) you either know or are willing to learn about, (2) you are interested in, and (3) is not too narrow and not too broad. If necessary, have your instructor help you decide which topic would be most suitable for a Web site.

4. Your chosen topic or subject will become the message of your Web site. Talk with your instructor or team members about this message. Discuss whether it would be a good topic before you finally decide to develop your Web site around it. Make sure it is a topic you will enjoy spending many hours working on.

5. After you have discussed your message with your instructor, open your word processor and key the heading **Message**. Under this heading, write a description of your message statement beginning with the words **This Web site will _____**. This will be the beginning of your design document.

6. Spend some time (three to ten hours outside of class) researching your message. Take your time and learn as much as you can. Naturally, the Web is one great resource to draw from. You may also want to spend some time in the library or talking to others who know about your subject. Write down what you learn and where you learned it.

Cover Page

Description

The following article was originally written as part of the literature review of my dissertation and adapted as a chapter for the handbook, *A Handbook of Visual Languages for Instructional Design: Theories and Practices*, edited by Botturi and Stubbs (ISBN-10: 1599047292, ISBN-13: 978-1599047294, Hershey NY: Information Science Reference, 2008.)

My Role

Dr. Gibbons, my co-author, was chair of my doctoral committee, so he helped me substantially during this text's original creation. Also, he is responsible for some important paragraphs near the beginning and end to make it fit the book better. However, most of the writing is mine.
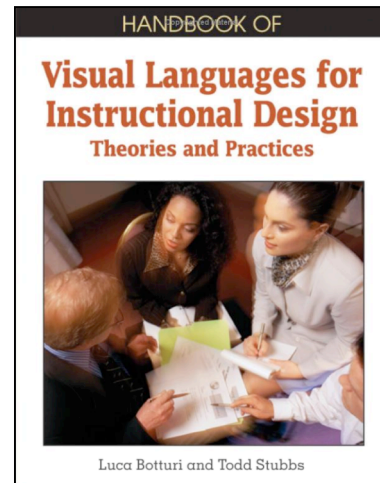
What Is Included

The entire chapter is included, including references.

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Chapter III
The Power of Design Drawing in Other Design Fields[1]

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Andrew S. Gibbons
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ABSTRACT

This chapter is a survey of the literature of design studies, where the various characteristics of a phenomenon called design drawing, are considered. Included in this review is an exploration of the roles and attributes design drawing plays in those design fields outside ID, as an important design language. Its importance to those design fields suggests that design drawing might have much to teach us about visual instructional design languages (VIDLs).

In reviewing these attributes of design drawing and how they are implemented in those other fields of design, we hope to inspire a dialogue on how these important characteristics will aid in creating or nurturing VIDLs.

INTRODUCTION

In this chapter, we will explore the roles and attributes of design drawing, which serves as an important design language in design fields outside of ID. Its importance to those design fields suggests that design drawing might have much to teach us about VIDLs, if we knew more about it.

We will show that, due to the similarities between ID and other fields of design, we might expect that tools, skills, and methods important in those fields—such as design drawing—might also be valuable to ID. The basis of design drawing's importance in those fields lies in the common characteristic of all design fields' need for models and representations, which design drawing per-

forms capably. In fact, we will show that there are a number of characteristics of design drawing which make it attractive to designers in those fields: its close association with design thinking, its language-like characteristics, the fact that it can adroitly represent all stages of design with a number of expressive forms. Design drawing can also be as concrete or vague as it needs to be to support the design at hand—there being a real advantage to a definable level of vagueness. This characteristic also makes it ideal for working with ill-defined problems, which design is usually characterized to be. Design drawing plays a crucial role in a dialectic (called "the dialectic of sketching"), which some authors (Arnheim, 1995) suggest is essential to design. Drawing, which is often accompanied by some kind of narrative, forms the basis of a shared vision of the design: a catalyst for the social agreement necessary for design to move forward.

In reviewing these attributes and their application in those other fields of design, we hope to expose to ID practitioners to the characteristics of this important design language. This might, in turn, begin an important dialogue on some important characteristics to consider when creating or nurturing a VIDL.

IS ID DESIGN?

Murphy (1992) asks, "Is instructional design truly a design activity?" After comparing ID to the general practice of design (as found in architecture, industrial design, engineering, etc.), he concludes, "…it can be argued strongly that instructional designers are truly involved in design activities" (p. 281). And, further, "…instructional designers need to recognize their links with the wider world of design" (p. 282). Rowland (1993) conducted a similar analysis and similarly concluded, "Designing instances of instruction, or more generally, planning and preparing to instruct, can be considered a subset of designing, and the

defining characteristics…for all types of design appear to hold true for ID" (p. 87). Speaking of the literature on ID, Rowland adds that the results of his study, "…match studies of design processes in other fields, but contradict views in the literature on ID, especially those representing a purely rational perspective" (p. 90). Murphy is emphatic: "Thus far, it appears that not much has been done on the design skills of instructional designers," and warns, "All you instructional designers out there, look and learn from the design world. You ignore it at your peril" (p. 282).

In that larger design world, as in ID, design takes place in the gap between the mind of the designer and how the problem and solution are represented—design is the bridge between the conceptual world within and the physical world without. Simon (1996) puts it this way: because the gap is, "…centered precisely on this interface between the inner and outer environments; [design] is concerned with attaining goals by adapting the former to the latter" (p. 113). Bridging this gap requires a process of externalizing the designer's conceptual world. This externalization may be expressed verbally, visually, or physically—with words, drawings, or models.

For many fields of design, the fundamental bridge is drawing. Archer observes, "It has sometimes been said that drawing is the language of design. There has certainly been an intimate relationship between drawing and design from time immemorial… All the design professions today rely heavily upon drawings of various types for both the development of ideas and the communication of findings." Arnheim reports, "The function and nature of [drawing] is inseparable from that of the design it serves. The creative process of designing, being an activity of the mind, cannot be directly observed. The [drawings], done for the eyes and being directed by them, make some of the design plans visible," which makes drawing the perfect bridge across "Simon's gap" (See also Goldschmidt, 1991).

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The Power of Drawing in Other Design Fields

Robbins (1994) has pointed out, "Because drawing is used to communicate ideas and to instruct others about a design, it is often seen as a language. Architects, when speaking about drawing, assume…that drawing may be construed to be a language or quasi-linguistic order of communication" (p. 27–28). Design drawing can be considered a language of design.

In ID, visual representations serve two very different purposes. First, visual representations, including drawing, are used during design as part of the design process to represent some aspect of instruction before it has been produced or presented. This may be in the form of storyboards, flowcharts, etc. Because the product of ID is instruction, visual representations may also serve as part of the content being produced. These may take the form of illustrations of the content or diagrams of concepts, etc. (A more complete taxonomy is presented in Chapter XVII).

The latter—visual representation of content—has been studied extensively to determine how it contributes to learning. Unfortunately, the former—visual representations that are used to further the design itself—have not. Schatz (2003) did a small review of the literature of ID where he noted that it is difficult to find literature on design thinking or design methods in ID, much less a specific method like design drawing. It is a paradox that a field that relies so heavily on visualization for the outcome of its designs has not studied its use in its process. In spite of the apparent similarities between ID and other design fields, and the importance of drawing to design in those fields, design drawing as a tool or skill of ID has not been adequately addressed in the ID literature.

DESIGN DRAWING AS AN ESSENTIAL PART OF DESIGN

A large share of the research in design drawing comes from a field of inquiry called *design studies*.

The last decades of the 20th century saw a great deal of research in the study of design methodology as a general field, where the various creative design activities of architecture, engineering, industrial design, graphic design, software engineering, and others were discussed, compared, and analyzed, in an effort to improve methods and process models. This new field of inquiry was called variously design methodology, design theory, design science, and design studies. The importance of this field is evident by the number of research-based journals in design theory and methodology, such as *Design Issues, Design Journal*, and *Design Studies*, among others. (Kays, 2003). This literature (in which ID is not generally included) contains a wealth of information on design drawing and its relation to the design process.

In this literature of *design studies*, it has been observed that drawing and design have a long history together. Baynes (1992) identified the development of design drawing in the late 18th century as the principle catalyst to the development of design as a separate discipline, which, in turn, helped to fuel the industrial revolution. However, the use of some kind of drawing to pre-plan work predates the industrial revolution by millennia. Shards of pottery and stone with coarse building directions on them have been found from ancient Egypt (Baynes, 1992).

Press and Cooper (2003) pointed out that "…everyone can draw; however, designers are trained to develop this as an advanced form of communication." Lockard (1977) has observed that, "In…the design process, drawing is still the most flexible and efficient means of representation." This is in part because the speed and ease of production of free-hand sketches support design in important ways. According to Kivett (1998) free-hand sketches allow communication to be almost instantaneous, and drawing facilitates making of changes "on the spot." Referring to sketching, Gedenryd (1998) asserts that,

Sketching is made up of very small and simple incremental steps, which yield to local control and

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high sensitivity to feedback. This, in turn, makes sketching into a highly fluid and efficient process, which supports the open-ended and conceptual nature of the design work which sketching is typically used for.

Goldschmidt and many of others assert that drawing is a vital part of design (Archer, 1992; Goldschmidt, 1991; Henderson, 1998; Moore, 2000; Ullman, Wood, & Craig, 1990). For example, Ullman, Wood, and Craig say that,

The evidence both from research in cognitive psychology and from the protocol studies of designers points to the importance of drawing in the design process beyond the documentation of final designs. Not only are drawings the preferred form of data representation, for the designer, but they are a necessary part of the design process. Sketching as a form of drawing has been shown to have properties that make its use important in design.

Many have speculated on the reasons for the close association between design process and design drawings. Some have investigated the relationship of design drawing to specific design activities of which drawing seems to be a part; others have looked at specific processes and properties of design drawings that support design. Still others have studied the close association between design thinking and drawing. What follows are summaries of these ideas.

THE IMPORTANCE OF REPRESENTATIONS & MODELS TO DESIGN

Designers rely heavily on representations and models to accomplish their work. According to Goel (1995):

Design, at some very abstract level, is the process of transforming one set of representations (the design brief) into another set of representations (the contract documents). However, not only are the inputs and outputs of the of the design process representations, all intervening transformations are also typically done on representations.

Saddler (2001) observed, "We use sketches, diagrams, specifications, even verbal descriptions throughout the design process to make the concepts in our heads tangible and communicable." These representations are sometime referred to as models. Representations and models are referents (symbols or metaphors) for some other (real-world) thing. Baynes (1992) says,

The term 'model' is used by scientists, mathematicians, technologists, and designers to mean something that stands for something else. In general, models are powerful because they isolate an aspect of reality and allow us to represent, interpret, manipulate, or control it. Models have predictive power because…they can be 'run' to simulate what will happen if proposed changes are carried out. They are indispensable for design activity because they allow designers to develop their designs and understand their likely effects before they are put into practice.

Goel (1995) adds:

This [practice of using models in design] is not an accident…Recall that design typically occurs in situations where it is not possible or desirable to tamper with the world until the full extent and ramifications of the intervention are known in advance. After all, we only get one 'run' on the world. Every action is irrevocable and may have substantive costs associated with it. Thus, it is not surprising to find that designers produce and manipulate representations of the artifact rather than the artifact itself. All the reasoning and decision making (including performance prediction) is done through the construction and manipulation of models of various sorts, including drawings, mock-ups, mathematical modeling, computer simulations, and so on (p. 128).

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The Power of Drawing in Other Design Fields

Henderson (1998) observes, "design cultures are intrinsically tied to the way in which their representations are constructed because such representations—sketches, drawings, proto-types—are the heart of design work."

CHARACTERISTICS OF DESIGN DRAWING

Design Drawing and Thinking

Much of the literature about design drawing proclaims the close tie between it and thinking. So much so, that the rest of the topics about drawing that follow in this chapter could be considered, more or less, to be subsidiary to this idea. As Robbins (1994) puts it, "Unless you draw something, you do not understand it" (p. 127).

Design drawing aids the designer by reducing cognitive load during the design process. Because design sketches are an external representation, they augment memory and support information processing (Tversky, 2002).

It is probably this support of memory that gives design drawings, "…the capacity to transform our understanding of an issue, and, to some extent, free us from the narrowness of words, labels, and classification systems." (Hansen, 1999, p. 203). Laseau (1989), a theorist in design drawing, calls this close affiliation between drawing and thinking *graphic thinking*: "The term *graphic thinking* distinguishes the use of graphics in support of thought from graphics used in presentations. Graphics should play a significant role in design and problem solving, provoking thought and acting as catalysts for ideas rather than limited representations of products or decisions" (p. 9, italics in original).

Another view of drawing is similar to Vygotsky's description of the relationship of language to thought. Substituting drawings for words, Vygotsky says: "Thought is not merely expressed in [drawings], it comes into existence through them." This seems to be Goel's view, that in his research, design sketching, "played an important role in certain types of open-ended, explorative cognitive processes," different from mere problem-solving. It is also consistent with McKim's (1980) understanding of the role of drawing in design, that "…drawing and thinking are frequently so simultaneous that the graphic image appears almost an organic extension of mental processes" (p. 11).

All this is dependent on the designer's ability to express (or illustrate) an idea in a variety of ways. "In both the exploratory and developmental mode, graphic ideators [e.g., designers] use many graphic idioms. When you are sketching from life or communicating a visual idea to others, you can be content with one graphic idiom. But when you are exploring ideas, you must use graphic language more flexibly…"(McKim, 1980, pp. 134–135) Verstijnen et al. (1998) observed the differences between skilled sketchers and unskilled sketchers, and concluded that the skilled sketchers benefited most from the visual representation in a sketch. When Lockard (1977) compared drawing to a language, he noted that, if the designer has a limited "vocabulary" of drawing skills, he will be plagued by "curious speech stoppages and deadly dull sentence structures…" He goes on to declare, "This vocabulary [of design drawing] needs to be expanded as does the vocabulary of any language that stays alive" (p. 111).

We live in a world, especially in academia, overshadowed by words. Lockard (1977) observed that, "Our cultural heritage is dominated by a linear, verbal, and 'rational' tradition which can inhibit the use of drawing in design." The implication of this tradition is a belief that decisions are made "rationally" (meaning in the mind verbally), and drawing is merely an act of the hand "printing" the decisions out. Instead, he argues for allowing the unconscious mind to contribute to the design process: "We are much older, and

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perhaps much wiser than our mathematical, verbal, 'rational' left frontal lobes, and drawing is one of the most natural and direct outlets for this rich and mysterious resource."

Design Drawing as Design Language

One reason that design thinking and design drawing seem to be so similar is that drawing is very much like another closely related thinking activity: language. In fact, for most fields of design, we might agree with Archer (1992) who says that drawing is the language of design. Robbins (1994) also noted the similarity between drawing and language: "Because drawing is used to communicate ideas and to instruct others about a design, it is often seen as a language. Architects, when speaking about drawing, assume more often than not…that drawing may be construed to be a language or a quasi-linguistic order of communication" (pp. 27–28). Lockard (1977) says:

It is time we looked at drawing again, or perhaps for the first time, as a conscious activity, and a communicative language having, like any language, a syntactical structure. It is time we realized that the drawings we use, the order in which we choose to draw them, and our free, creative, confident use of, and continual, deliberate expansion of this language of drawing lie at the very base of any design method (p. 106).

Tversky (2002) has identified several attributes of drawings that are language-like. "[Design drawings] are segmented into elements. They consist of language-like strings of stylized figures, lines, curves, and blobs. These elements can be combined in different ways to create different meanings, again, like language."

Languages facilitate communication. Vygotsky (Vygotski & Kozulin, 1986) proposed that languages also facilitate thought. Simon (1996) identified some of the value of a design language to thought when he noted "By erecting such a hierarchy of concepts for himself, the designer is, after all, able to face the problem all at once. He achieves a powerful economy of thought, and can by this means thread his way through far more difficult problems than he could cope with otherwise." Languages in general provide advantages, particularly useful to design: (1) they allow thought to be communicated so that good ideas do not get lost; (2) they provide a focus of attention which permits higher-power processing and anchoring of thought; and, (3) they provide the ability to question and judge the value of a thought—to construct thoughts about thought (Jackendoff, 1996). Schatz (2003) has suggested that for the field of ID to grow, it needs a design language to communicate what works and what does not, as is the case in engineering. Gibbons and Rogers (2006) have argued for the need for more than one design language in order to express a design: "…many design languages already exist, and new design languages can be created that provide terms appropriate to the solution of sub-problems…"

Stages in Design and Design Drawing

Design takes place in stages, and changes in design drawing shadow these stages. The stages can be traced by observing to whom the drawing is intended to communicate, which is closely paralleled by the purposes for which they were drawn.

Designers in many fields often start their work with rough sketches to "try out" ideas before they commit them to more formal representations. "Engineers are notorious for not being able to think without making 'back-of-the-envelope' sketches of rough ideas. Sometimes these informal sketches serve to communicate a concept to a colleague, but more often, they just help the idea take shape on paper" (Ullman, Wood, & Craig, 1990).

As the design progresses to the latter purposes, the drawings become more formal, more governed

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by rules and conventions. Bucciarelli (1994) differentiated between the "hastily rendered sketch made to assist in the story telling of the moment" characteristic of early design, and the more formal "graphics, mechanical assembly drawings, circuit topographies, block diagrams, and charts" that exemplify the formal representations used for later purposes of design.

The more formal the drawing, the more commitment on the part of the designer is implied. For obvious reasons, it is better to catch a flaw or make a change at the sketching or drafting stage, or even after a formal design model has been made, than after the product has been produced.

Lockard (1977) organizes the stages of design by identifying the person for whom the communication at each stage is intended, in this manner:

1. Self-communication
2. Inter-professional communication
3. Client communication
4. Builder communication
5. Public communication.

Because he is primarily writing for architects, Lockard uses the term "builder communication," but any communication to any production person would fit the described stage. Forms of communication, often design drawings, move through these stages as well.

The creative work of the designer starts with what Lockard (1977) calls "self-communication." McKim (1980) ties self-communication directly to sketching and calls it "graphic ideation": "Graphic ideation is visually talking to oneself; graphic communication is visually talking to others" (p. 135, italics in original). He divides the first, graphic ideation, into two kinds of activity:

Graphic ideation has two basic modes: exploratory and developmental…

In the exploratory mode of graphic ideation, thinking and sketching are adventurous…Each sketch captures general features only, not details; it is a kind of rough map that allows you to return

later to the concept, if you choose to develop it further.In the developmental mode of graphic ideation, you…develop a more thorough understanding of a promising concept.

This division meshes with Lockard's (1977) original idea of self-communication, where the first, exploratory drawings are analytical in nature to help the designer see broad patterns. Later, developmental drawings are held up for comparison to design determinants to become tentative detailed solutions to the problem (p. 107). These two types of sketches are reflected in the two types of design cognition noted by Ulric Neisser, whom McKim (1980) quotes: "…all cognition consists of a two-stage act of construction: 'the first is fast, crude, wholistic, [sic] and parallel, while the second is deliberate, attentive, detailed, and sequential'" (pp. 147–148).

The earlier, exploratory stage is most closely associated with Simon's (1996) gap, mentioned above, in which design drawing serves as one bridge between the mind of the designer and the real world. McKim (1980) defines exploratory drawing as "a means of probing [the designer's own] imagination, seeking to touch and record the vague and elusive imagery that usually accompanies the conception of a new idea" (p. 134). Verstijnen et al. (1998, p. 520) point out that these exploratory idea-sketches have an important role in the creative process so often associated with design. It is to the exploratory process that McKim alludes when he says, "…drawing and thinking are frequently so simultaneous that the graphic image appears almost an organic extension of mental processes…Drawing not only helps to bring vague inner images into focus; it also provides a record of the advancing thought stream" (p. 11). Hanks and Belliston (1977) seem to be referring to exploratory design drawing when they say, "Since ideas and mental images are foggy, fleeting, and incomplete, it is imperative that they be captured and studied. Drawing is one way this can be done. Drawing allows you

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to bring the idea to life. It allows you to change, judge, and evaluate your thoughts."

In the later, developmental drawing of the first stage, by contrast, the idea evolves through its embryonic concept into a mature form by repetition and refinement. McKim (1980) says "Developmental sketching is less schematic and more concerned with concrete details." The developmental phase is described by Arnheim (1995) as "a series of approximations, each one incorporating more relevant information and evolving until the final form emerges." McKim notes the memory-supporting facility of design drawing in his description of the developmental stage: "Drawing provides a capability that memory cannot: the most brilliant imager cannot compare a number of images, side by side in memory, as one can compare a wall of tacked-up idea-sketches." In fact, this developmental stage is where design may begin to be shared with other designers as per Lockard's second recipient-based stage: inter-professional communication.

As these drawings progress, they become less free and more formal, less vague and more concrete. At some point the drawings cease to be clarifications, and become proposals: attempts to convince or persuade others of their value. It is at this point that they move to the third stage of communication and beyond: client communication, builder communication, and public communication. "[A]ll further drawings become a persuasive device, 'commercials,' to inform and persuade [the designer's] professional associates, his client, builder and the general public that his design is the correct, reasonable, and beautiful solution to the problem" (Lockard, 1977). Once the client has been convinced (which Lockard says comes by compromise and negotiation) the design is "set" and the drawing "finished." The design drawings are used to communicate with builders (Robbins & Cullinan, 1994). The design has crystallized or "hardened" where it is unlikely to see major change. Finally, it may be used to communicate directly with the public. Robbins (1994) says that,

for an architect, this form of design drawing often takes place after the building is built!

Later forms serve as the long-term memory of the design. Unfortunately, the earlier rough sketches "rarely survive for future generations to inspect" (Bucciarelli, 1994, p. 118). This is unfortunate because, as Lockard (1977) observes, that the importance of design drawings to the creative aspect of design dwindles as the drawing becomes more refined. In a book for aiding architects and designers he laments,

In surveying the drawings I have used to illustrate my ideas I find that they are all rather stiff, studied works… I have never habitually saved the first rough sketches precisely because they are only a means—their only value being an interim visual statement toward a final real building… Except for the need to communicate the architectural idea more formally to other people, the purpose of drawing the space is fulfilled with these little sketches.

Up to this point, we have used Lockard's stages to discuss stages in design and design drawing. These stages use the recipient of communication to identify the stages of design and design drawing. It will be our approach that the progression from stage one to two, from two to three, and so forth, are often indicated by a change in purpose, as much as a change in recipient. These changes in purpose do not map perfectly onto the changes in recipient, but clearly show the same progression:

1. Ideation,
2. Negotiation,
3. Persuasion,
4. Crystallization, and
5. Dissemination.

Both design and design drawing occur in stages that represent the recipients of communications, and also the purposes of communication. Lockard points out that the movement among these is not strictly linear. More often than not, the designer will cycle through previous stages as the design

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takes form and shape. Earlier stages are gradually abandoned in these cycles as negotiation and persuasion are accomplished; the design crystallizes and the sketches become means of dissemination. The sketches become increasingly formal and set, more useful as communication than ideation.

CATEGORIZING DESIGN DRAWINGS BY FORM

Design drawings may be categorized by their form, that is, by their shape, as well as the purposes for which they are drawn. Four examinations of form are reviewed and the list of groupings described by the chapters in a book by Laseau's (1986) serve as the best characterization of a taxonomy of design drawings in the early, abstract stages of design. To this is added a category for representational graphics (after Massironi, 2002) to serve as a taxonomy of design graphics by form.

Simon (1996) observed that "An early step toward understanding any set of phenomena is to learn what kinds of things there are in the set—to develop a taxonomy. This step has not yet been taken with respect to representations. We have only a sketchy and incomplete knowledge of the significance of the differences" (p. 133). This section will examine different kinds of abstract design drawings to formulate the beginnings of a taxonomy, based on form.

Massironi (2002) has specifically attempted to create a taxonomy to classify and identify various kinds of graphic representations (See Figure 1).

When considering design drawings, Massironi's most helpful contribution is his division between representational and non-representational figures—the two heavy horizontal lines in Figure

Figure 1. A taxonomy of graphic productions (Massironi, 2002, p. 3)

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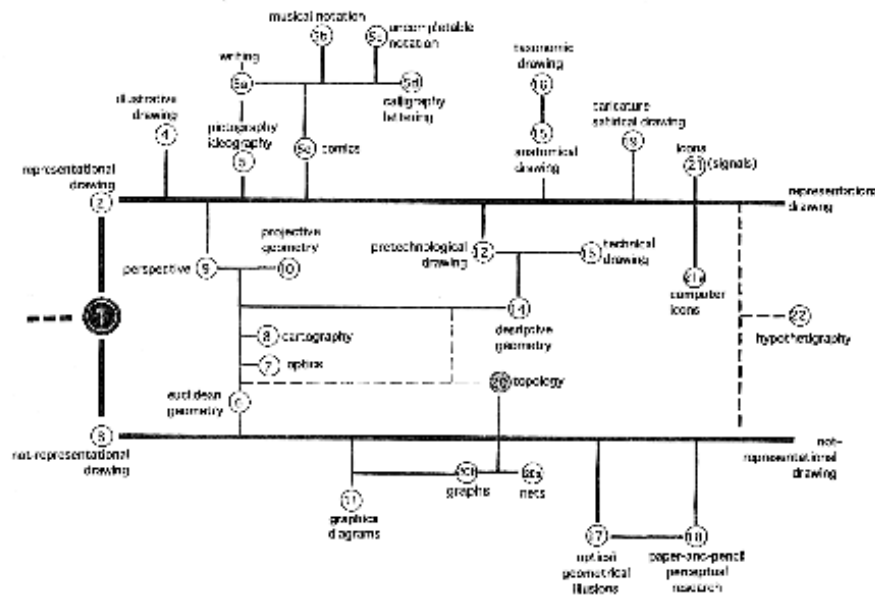
Figure 2. Progression from a bubble diagram (A) to architectural plan (D). (Laseau, 1975, pp. 28–29)
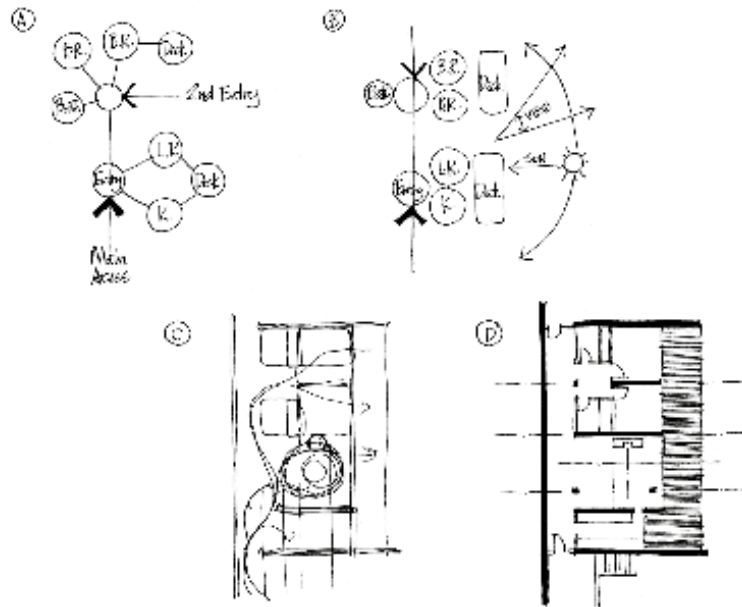
1. Many design drawings represent a physical reality, others are used to illustrate abstract concepts. As illustrated in Figure 2, the one may develop into the other. In this case, a conceptual bubble diagram evolves into a rough floor plan. Note that the diagram of Massironi (Figure 1) includes several types of drawing that lie between the two and are connected to both. Figure 2 shows how ideas in the form of a bubble diagram progress through stages to become a rough architectural plan. Development from that stage to a complete blueprint is not difficult to imagine. Concrete, and even fully representational drawings may begin their existence as loosely-drawn, abstract forms.
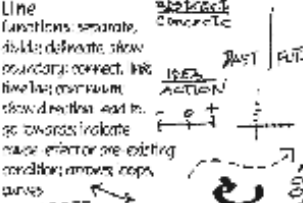
Hansen (1999) proposes a basic abstract drawing language built from the symbols found in Figure 3. A quick review of these symbols will reveal that many of them are common sense (such as using lines to separate or connect, and squares as containers). Hansen provides the primitives (the "words" or symbols) and only hints about the "grammar" that would allow their combination into meaningful expressions. In this simple illustration, Figure 3, Hansen has captured many of the important elements and ideas of the abstract side of design drawing.

In chapter 21 of his book *Thinking Visually*, McKim (1980) provides common examples of what he terms abstract graphic languages. While McKim did not set out to build a taxonomy, his set of examples is valuable because the types of diagrams he includes specifically serve design and planning, at the same time giving designers ideas of where and how to use them. Though the types identified are very specific, his treatment of them is liberal enough to include instances that may lie on the periphery of each type. He does

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Figure 3. Hansen's "Graphic Tools" (Hansen, 1999, 193-220)

not imply that the list is in any way complete; on the contrary, you get the idea that this is just a sampler. His list includes the following types of abstract graphic languages:

1. Venn diagrams
2. Organization charts
3. Flow charts
4. Link-node diagrams
5. Bar charts and graphs
6. Schematic diagrams
7. Pattern languages (As per Alexander, 1979)

In a similar, book-length treatment, *Graphic problem solving for architects and designers*, Laseau (1986) condenses all types of abstract design graphics into four basic groups. These groups are inclusive of McKim's abstract graphic languages. Each of Laseau's categories is covered by a chapter, with lots of examples:

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1. **Bubble diagrams:** Squares, circles and other shapes ("bubbles") are containers for concepts; lines and arrows between them as well as their overlap represent relationships among the bubbles. Organization charts and flow charts are examples of these.
2. **Area diagrams:** Like bubble diagrams, drawn shapes are containers, but in this case the area of the bubble is representative of some kind of size or importance. Venn diagrams are the most obvious of these, but bar charts and graphs also exhibit characteristics of this type.
3. **Matrices:** In a matrix, the horizontal and vertical positioning of elements represents meaning. It is a way to show complex relationships in two or more dimensions. Schematic diagrams are occasionally of this type, as are graphs and tables. A text outline may be a type of matrix.
4. **Networks:** Networks are essentially bubble diagrams where the arrows and lines take on more importance than the bubbles, forming complex maps of lines showing relationships. Link-node diagrams are clearly of this type, though organization charts and flow charts may also be.

The value of the list of Laseau's chapters, as summarized above, is that it includes the various forms of abstract representation (such as all of McKim's abstract graphic languages) and groups them into understandable categories according to common characteristics. If we add an item for concrete or representational graphics as well, (from Massironi's first division) Laseau list a good, basic system for organizing design graphics by form.

Value of Vagueness in Sketching

One of the advantages to abstract forms of representation is their ability to portray an appropriate level of ambiguity or vagueness—at least until the design has crystallized. The drawing must represent the current level of refinement, but not more. The sketch notates decisions made, while leaving ambiguous those areas of the design where decisions have not yet been made, leaving the door open for further refinement. Arnheim (1995) goes so far as to say that such a sketch, "…shows [its] vagueness with a desirable precision." This vagueness and ambiguity, according to Bucciarelli, not only enables design, but it is the very essence of design:

… a healthy measure of ambiguity and uncertainty makes room for designing… Participants envision and construe the uncertain as options, but behind the mask, the unknown lies waiting—and that too, is valued by participants. Uncertainty is what gives life to the design process and makes it the challenge that it is. If the process lacks uncertainty, then you can be sure it is not designing but copying (Bucciarelli, 1994, p. 177).

Tang and Vero (2001) empirically confirmed the importance of vagueness in design representations. They observed that:

…a depiction has more than one meaning graphically and semantically after being created. It carries groups of meanings and relationships. Designers utilize this characteristic to generate different concepts and to reason about functional issues through sketches. Consequently, sketches become affordances of meanings in the design process (p. 279).

These "affordances of meaning" make it possible that, even though sketches are made with certain ideas and goals in mind, designers may fortuitously "…see new objects and configurations in their sketches. These encounters produce welcome but unintended discoveries, and may be a fruitful source of new design ideas" (Tversky, 2002).

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Arnheim believes the vagueness of the sketch accurately reflects the ambiguity in the related mental image. He casts this vagueness as a plus, because, "…it has the positive quality of a topological shape. As distinguished from geometrical shapes, a topological shape stands for a whole range of possibilities without being tangibly committed to any one of them. Being undefined in its specifics, it admits distortions and deviations… This same vagueness is frequently apparent in the designer's sketches" (p. 71-72).

Design as Ill-Defined Problems.

This ambiguousness in both the sketch and the mental image reflects the way designers tend to think about design problems in general. From the earliest cognitive studies of design (Eastman, 1969), to the present, design has been thought of as a process of solving of ill-defined problems. Cross (2001) declares, "It is widely accepted that design 'problems' can only be regarded as a version of ill-defined problems." (Design has also been called a wicked problem [Rittel & Webber, 1973], which is an expansion of the term *ill-defined*.)

Though the term ill-defined is described in various ways (Newell & Simon, 1972; Reitman, 1965; Zimring & Craig, 2001), what most definitions have in common is that ill-defined problems have "variable problem spaces" (Zimring & Craig, 2001), meaning that these problems require constant restructuring to arrive at a solution. Unlike well-defined problems, where the solutions can be obtained by reduction, transformation, or optimization of the data in the requirements (Archer & Roberts, 1992), ill-defined problems resist these systematic approaches to being solved, or are at least approached as though that were the case. In ill-defined problems, both the problem and the solution are moving targets, and solution and problem co-evolve in relation to each other (Dorst & Cross, 1996).

This is interesting in light of what Simon (1996) says about solutions to problems being found in their representations of whatever form:

All mathematics exhibits in its conclusions only what is already implicit in its premises…Hence all mathematical derivation can be viewed simply as change in representation, making evident what was previously true but obscure.
This view can be extended to all problem solving—solving a problem simply means representing it so as to make the solution transparent. If the problem solving could actually be organized in these terms, the issue of representation would indeed become central. But even if it cannot—if this is too exaggerated a view—a deeper understanding of how representations are created and how they contribute to the solution of problems will be come an essential component in the future theory of design (p. 132).

Simon's speculation certainly seems to hold true for well-defined problems like those of mathematics, but what if the problems are ill-defined, like design problems are characterized to be? What would then appear to be needed is a mode of representation that is capable of leaving undefined those portions of the design concept that have yet to crystallize while at the same time representing clearly what has crystallized. Sketching in the hands of a skilled designer would seem to meet this requirement.

Another aspect of ill-defined problems and design is that designers, especially expert ones, tend to treat all problems as though they were ill-defined, even when those problems are well enough defined that they might reasonably respond to analysis. Cross (2001) observed that "designers will be designers, even when they could be problem solvers": they tend to approach all problems as though they were ill-defined, as though the problem was as negotiable as the solution. More specifically, designers tend to start off quickly with proposed solutions, however rough they may be, and refine them as they proceed, rather

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than analyzing the data thoroughly in order to formulate a solution:

Many studies suggest that designers move rapidly to early solution conjectures, and use these conjectures as a way of exploring and defining problem-and-solution together. This is not a strategy employed by all problem-solvers, many of whom attempt to define or understand the problem fully before making solution attempts. This difference was observed by Lawson (1979), in his experiments on problem solving behavior in which he compared scientists with architects: '...[The scientists] operated what might be called a problem-focusing strategy... architects by contrast adopted a solution-focusing strategy'(Cross, 2001, p. 83).

In many cases design representations—usually sketches and drawings—fill the role Simon suggests, to make the solution transparent. According to Lockard (1977):

In the design process, we need to display tentative design proposals which we can continually compare to the restated design problem. These graphic representations will suggest restatements of the problem, and those restatements will in turn suggest more drawings (p. 10).

Then, it is back to the drawing board (literally!) to modify the proposed sketch to reflect a new understanding of the problem and the solution—in a repeating cycle that results in constantly more refined drawings, and problems. This cycle between what is and what should or could be, as it applies to the representations, has been referred to as "the dialectic of sketching" (Goldschmidt, 1991).

THE DIALECTIC OF SKETCHING

In her much-cited study about the dialectic of sketching, Goldschmidt (1991) first breaks down

design thinking into observable units which she calls *movements*. She observed that progress in the design alternated between one type of seeing to another and back again through these movements. These two types of seeing each support a different type of thinking. One type is analog or metaphorical thought which deals with seeing new meanings in the sketch. She calls this *seeing as*. Creativity is provoked in this reinterpreting of the sketch. The other type of thinking deals with the consequences of the newly perceived meanings—of judgment—which Goldschmidt called *seeing that*.

The importance of Goldschmidt's study is that she observed empirically a phenomenon which has been proposed by others in theory or self-reporting (See, for example, Lockard, 1977; and McKim, 1980). Verstijnen et al.(1998), also observed a dialog, between combining and restructuring of concepts which could be viewed as virtually the same dialectic from a different perspective.

It is Arnheim's (1995) opinion that without drawing, the dialectic that Goldschmidt observed does not happen; and without the dialectic, design does not happen; ergo, drawing is essential to design.

Drawing & Narrative

As important as drawing may be to the design process, it rarely stands alone. Design drawings are nearly always accompanied by narrative, which supplements and adds meaning to the image. Bruner (2003) has stated, "We organize our experience and our memory of human happenings mainly in the form of narrative—stories, excuses, myths, reasons for doing and not doing, and so on" (p. 44). Visual representations, on the other hand, "...can render phenomena, relationships, and ideas visible, allowing patterns to emerge from apparent disorder to become detectable, and available, to our senses and intellect" (Hansen, 1999, p. 198). The two, together, are better at communicating than either is alone.

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McCloud (1993) has observed that while, historically, pictures and words have become separate entities in modern culture, they are actually exist together in a larger continuum. He argues that it is their natural state to be mixed together (as indicated in the name of the Kindergarten activity, "Show and Tell.") He elaborates, "Words and pictures are like partners in a dance and each one takes turns leading…. When these partners each know their roles and support each other strengths…" they are powerful.

Bucciarelli observed the important relationship between narrative and drawing:

Drawings …show the characteristics displayed in narratives and, indeed, are themselves essential to narrative [italics added]. They show hierarchy, are abstract, bounded, measured, and so on. These are not just characteristics of the formal drawings stored and saved for posterity …but they also structure the hastily rendered sketch made to assist in the story telling of the moment (p. 118).

Schōn's (1987) protocol studies of architectural students makes visible the kind of dialogue that occurs between designers and their designs (as well as among designers). These dialogues show that neither the narratives nor the design drawings would be completely comprehensible without the other. Another example can be found in motion pictures' use of narrative and the storyboard. A storyboard is nearly always accompanied (at a minimum) by snippets of the script written under the drawings, or in some cases, full impromptu performances used to complete the conveyance of the information in the drawing (See Hart, 1999).

The narrative associated with design drawing may be text found in the diagram itself (such as labels in boxes, etc.), it may be written nearby (as captions or explanations) or in may be from spoken words (in performance). Regardless of their relative location, words and stories—narrative—often accompany design sketches. These narratives complete and supplement the design drawings, and are, in fact, essential parts of fulfilling the purposes of design drawings.

Drawing as a Catalyst for Social Agreement/Commitment

One thing that makes the combination of words and graphics powerful is their ability to engage others in the act of design. Some have romanticized design in to a solitary act, shared only after it is perfected by the designer (Lockard, 1977). But, as already noted, design and design sketches go through stages of negotiation and persuasion with others: other designers, clients, patrons, builders, collaborators, etc. If they are focused on common goals and outcomes, drawing serves as an important catalyst to draw these people together, or at least give them a common focus of discussion.

Bucciarelli's (1994) ethnographic study of design engineering situations observed that, "Despite differences among individual interpretations and constructions …participants do communicate, negotiate, and compromise; in short, they design" (p. 81). Later, he concludes:

Shared vision' is the key phrase: The design is the shared vision, and the shared vision is the design. Some of this shared vision is made explicit in documents, texts, and artifacts—in formal assembly and detail drawings, operation and service manuals, contractual disclaimers, production schedules, marketing copy, test plans, parts lists, procurement orders, mock-ups, and prototypes….The shared vision, as some synthetic representation of the artifact as a whole, is not in the documents or written plans [emphasis ours]. To the extend that it exists as a whole, it is a social construction—dynamic, plastic, given nuance and new meaning at each information gathering of two and three in a hallway or at formal meetings such as scheduled design reviews (p. 159).

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As he notes in another place, "The final chart is hardly interesting, and rarely referred to, unless it later shows a bug or is challenged by further developments. But if that happens, the negotiation process starts anew" (p. 189). This view is reflected by Robbins (1994, p. 29) where he says, "Drawing and the worlds it represents are a product of social and cultural agreements among architects and others."

Final design drawings and documentation serve as the long-term memory of the design and show commitment. These documents are required to stand on their own in spite of the fact that only those who participated in the negotiation that resulted in this design will be able to derive the full context and meaning from them. They become reference works to which the designers and producers refer. Formalization and crystallization are intended to strengthen and solidify the documents as tools of communication, but it requires careful skill to weave the meaning into these reductions in order for them to convey that meaning through the artifact.

SUMMARY OF RESEARCH ON DESIGN DRAWING IN DESIGN STUDIES

In summary, we have observed that designers in most design fields accomplish their work by means of design representations, of which design drawing is an important type. As noted, the basis of design drawing's importance in those fields lies in its flexibility and power for creating design representations. This flexibility and power is due to a number of characteristics of which make it appealing to designers, including its ability to represent design thinking, its language-like characteristics, and the fact that it can represent all stages of design with a number of expressive forms. Design drawing also has the advantage of being appropriately vague when a vague representation is needed to further the design, or concrete when a concrete representation is needed. This flexibility makes it well suited for working with ill-defined problems—like design. Without "the dialectic of sketching," some authors believe that design itself is in jeopardy. Drawing is often accompanied by some kind of narrative, to act as an artifact for a shared vision of the design—which identifies the true locus of design, in the minds of the creators.

CONCLUSION

This brief review of the many uses and roles of design drawing in fields outside of ID as demonstrated in the literature of design studies. It illustrates the depth of interest that this topic has in that literature. With both a long history and deep connections to practice, design drawing is a staple of most design fields. Unfortunately, that is not the case with ID. As we have shown elsewhere (see Chapter XVII) design drawing in ID lags behind most other fields in exploiting the value of design drawing for designing.

We began this chapter by discussing the similarities between ID and other fields of design. Given these similarities, and the reliance of these other fields on this basic method, ID practitioners would be wise to consider the characteristics of design drawing as they develop and use VIDLs. These characteristics go to the very heart of what makes a VIDL useful to the design process.

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ENDNOTE

[1] This chapter was adapted from parts of Stubbs (2006, unpublished dissertation)

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