ISDSC Presentations that Captivate Mind and Soul

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Held alternately in North America and Europe, with occasional appearances in Asia and the Pacific Rim, our annual International System Dynamics Society Conference (ISDSC) introduces newcomers to the field, keeps practitioners aware of current developments and presents unique networking opportunities. We even use the World Wide Web to disseminate conference information and papers. Are you presenting at our next ISDSC? Will your talk captivate the mind and soul of our diverse audience? Will it appeal to the intrinsic motives of both newcomers and our field's experts? Talking about what you do is exciting, fun and good publicity. Imagine your success once you focus on the action loop at the heart of great presentations: purpose, plan, prepare, present and probe. Its purpose is to help us all become great speakers. Although initial results are not always dramatic, great talks bring recognition, eventual business and add to public relations. Remember: to captivate an audience, one must capture it first.

Keywords: Audience, Continuous Improvement, Planning, System Dynamics, Technical Talks or Presentations

Thank God it was dusk in Atlanta. Most 2001 annual International System Dynamics Society Conference (ISDSC) participants were feasting already, some of them planning a jazz-club adventure for the night, others the next round of our official pool competition. "Not just yet" I thought, not feeling very hungry or ready for the dining room bedlam.

Despite Georgia's scorching heat, one of my presentations was not so hot. Sure the poster session went fine. And the timekeeper at a parallel session added a one in front of the five on the five-minute time scorecard, giving me 15 more minutes to go on instead of five. All of us in the room took it as a joke, but what a compliment! That other session was dreadful though, to say the least. Jim said: "a bit too abstract, academic." Even Peter, he usually loves my presentations, volunteered a downbeat comment.

What went wrong? Was it entirely my fault? So annoyed was I when my turn came, I could not focus. A couple of presenters earlier had done such a lousy job that all my experience, planning and preparation did not seem to help much. "Bad presentations cause more bad presentations," I thought. "How can we break this ghastly loop so . . ."

"Nikko!" Roberta and Pål were smiling at me. I walked toward them. "We want you to help people improve their presentations," Roberta said. "Yes, we do!" Pål confirmed, as I looked at him somewhat baffled. At least someone else had picked up on the issue. I was not alone. A sudden calm of absolution run through my entire body. "I am honored!" I said, while rushing to join my friends in the dining room. I was hungry.

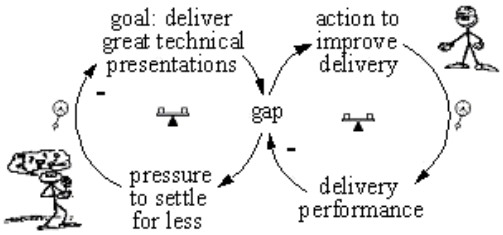
You can see now why you are reading this essay. It does not as much address what we present but how we present it. What you say is up to you, but great presentations take a bit more than a Valium. The essay's purpose is to help each one of our society's members build charisma, clarity, competence and confidence in technical presentations. Our society will benefit if all of us become polished speakers, truly dynamic and entertaining presenters. The essay can serve as a white paper on system dynamics (SD) technical presentations, starting a dialogue aimed at the continuous improvement of our society's annual conferences. The idea is to make each year's conference experience better than the last.

Motivation

Back to breaking the bad presentations loop. Bellinger (2000) sees our inability to achieve what we set out to achieve as the result of a drifting goal structure: two balancing loops interact so that one undermines the intended balance the other seeks to achieve (Fig. 1). The goal we set out to achieve interacts with delivery performance to create a gap. This gap adds to the action required to improve delivery. Action to close the gap adds to delivery performance and, as delivery performance gets closer to the goal, it subtracts from the gap making it smaller and smaller. But as delivery performance gets closer to the goal,

the gap gets smaller, causing less drive for action. With drive diminished, the closer one gets to the goal, the longer it takes to deliver great technical presentations. What a galling effect this is!

Figure 1
Presentation delivery drifting goal structure



And what of the games we play in our heads? The gap promotes those in the left balancing loop of Fig. 1. While it adds to action to improve delivery, the gap also adds to pressure to settle for less. Through time, the pressure subtracts from the goal, inducing one to want to settle for less. Because the action to improve delivery generally takes long to produce results, much longer than one's patience might tolerate anyhow, it seems easier and faster to close the gap by settling for less, thereby reducing the great pitch goal. Indeed, pressure to settle for less causes some hideous head games along the lines of: I don't deserve what I want, I can't have what I want, it takes too long, it's too hard, it's not really worth the effort, I'm not worthy, etc. The balancing loop on the left of Fig. 1 can turn us into our worst enemy.

An effective way to deal with this structure is to disconnect the feedback loop from pressure to settle for less to the goal. Then pressure will no longer subtract from the great presentations we want. Either we want our society's members to deliver great technical talks or we do not. Alternatively, increasing the action to improve delivery reduces the delay to delivery performance. Then pressure to settle for less might not have enough time to affect the goal. This requires extra resources, however, to increase action sufficiently for the great technical presentations we want to see at our society's annual conferences.

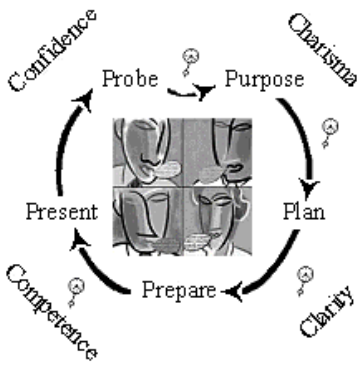
Extra resources? How? Doesn't the very acceptance of our field rely on how much all of us, both as a society and as individuals, contribute to accumulate the required resources? Given that the acceptance of SD is less than what we desire or expect, the two interact to produce our field's acceptance gap (Bellinger 2000). This gap dictates that we increase action to prevent a potentially vexing presentations problematic. Making it so will improve conference quality and increase understanding of the SD value. The increased understanding of the SD value can then add to the acceptance of system dynamics and thereby decrease our field's acceptance gap. Decisively!

Imagine the charisma, clarity, competence and confidence in technical talks our society's members relish as we contribute the extra resources. These benefits ensue from the painstaking, repetitive, but also fun process the action loop of Fig. 2 shows. Gather and arrange thoughts; collect facts, ideas and related stories; nurture them and think about a unique way to express them in a logical, organized manner. Good technical talks only grow through time. Prepare for weeks, sleep on it, dream about it and let thoughts sink into your subconscious. Ask yourself questions, write down thoughts and add new ones. It takes bundles of energy and time to establish the purpose of, to plan and to prepare for, to deliver and to probe great technical presentations. The process is a scrupulous one because great technical talks demand that we dig something out of ourselves (PLI & Laskowski 2001).

Outline

In addition to delineating benefits and required resource bundles, the action loop of Fig. 2 shows the essay's outline. Beginning at one o'clock, the purpose section blends a delivery paths framework with audience analysis for technical presentations. Moving clockwise on Fig. 2, the plan section unveils practical tips from neuroscience to help entice our audience. As you bob and weave facts, ideas and stories to activate interlinked neurons in audience members' brains, look for and create opportunities for immediate audience feedback. Room layout is critical for delivery quality, so planning also deals with space, the modern presenter's final frontier.

Figure 2
Action loop for great technical presentations



Wasn't it Mark Twain who spoke of two presenter breeds: the nervous ones and those who lie? Yes, experienced presenters do feel anxiety in front of an audience. It is perfectly normal. Acknowledge your fear as you prepare your technical talk. You are not alone. To reduce your fear, however, thoroughly prepare your talk. Rehearse to reduce your fear by about 75 percent; breathing techniques kill another 15 percent; your mental state accounts for the remaining 10 percent (PLI & Laskowski 2001).

The essay details a sequence and content crafting process to help prepare your talk. Technical talk mythology and learning to use *graphic advance* and *post organizers* can prevent mistakes and build quality into our talks. Talking of detail, this is where we must deal with SD-specific content. Choose among equivalent stock and flow representations creatively to impress both SD experts and newcomers to our field. Remember PLI & Laskowski's nine-P maxim: prior proper preparation prevents poor performance of the person putting on the presentation.

Next you present*;* just another step in the process. Act! It's show time. Open with a bang, play it right and learn from mistakes. If you haven't hooked your audience in 30 seconds or less, minds will wander off. Playing it right means that you tell them what you are going to tell them (outline), tell them (body), and then tell them what you told them (summary). Tell, tell and tell: is that simple. But you must work those tricky transitions from the outline to body to summary. Advance and post organizers can help.

One mistake is to wait for feedback until the end of a talk. Good presenters turn technical presentation delivery into an active contact sport. Use proper body language, eye contact, facial animation and voice to probe immediate audience feedback during your presentation. Don't let the arrow connecting the present and probe parts of Fig. 2 mislead you. Probing for audience feedback begins the moment you utter your first sentence. No substantial time lag or delay here. Remember: you have 30 seconds or less.

How do you feel about surprises? Are you not better off knowing what to expect? You are not alone here either. Most audiences want to know what is coming (Clark 1999).

Warning! You may discover that your technical presentation skills are far from perfect. I certainly did while writing this. Chin up and keep two things in mind: first, technical talk design and delivery is not an exact science. Much like SD models, learning how to design and to deliver great technical talks can take years of practice. Second, practice does not necessarily make perfect but does make bad habits permanent. Practice, but watch what you practice while building and presenting system dynamics models. Unless you are *it* already, then you are lucky. You can still have a ball learning and continuously improving in both areas. Now let's embark on our fun journey along the roadmap of Fig. 2.

Purpose: delivery paths and audience analysis

General purpose, specific purpose and central theme

No matter what you are presenting, your talk's general, unstated, but nonetheless vital purpose is twofold: to leave the audience with a clear picture of your contribution and to make them want to read your proceedings essay. Clarity is critical, particularly if the audience cannot ask questions during the talk.

Your listeners have only one chance to hear your talk and, most likely, they already have heard or will hear several talks on the same day you are presenting.

Two effective ways help build clarity into technical presentations. *First*, keep it short and simple. Focus on getting your main points across. *Second*, repeat insights: tell them what you are going to tell them (outline), tell them (body), and then tell them what you told them (summary). This is the three-pronged rule of clear communication (Osborn & Osborn 2000).

Audiences know and you understand that oral communication is different from writing. Your 15 to 20 minute talk cannot replace your proceedings essay. Allude to information in your essay you cannot possibly cover to whet the audience's appetite for it. To be successful, however, you must capture your audience's attention, interest and confidence. To captivate your audience, you must capture it first!

To make it so, focus on your presentation's specific, explicitly stated purpose. You worked hard on your model and proceedings essay, but have not established the specific purpose for which you are presenting. Have you done a decent job?

State your specific purpose as one of the first steps in outlining the talk you will eventually deliver. State it as a single idea expressed in a clear, declarative form that spells out precisely what you want to accomplish and what kind of response you want to evoke from your audience. Show awareness and understanding of your motives for delivering the talk. What the audience is to do, know or feel as a result of having listened to your talk determines your specific purpose, which also depends on audience attitude and ability to act, the specific occasion, your own personal goals and the presentation's time limits. To give but one example, your specific purpose might be to show the ethical and financial benefits clients enjoy from SD modeling support in personal injury and economic damages cases.

To accomplish your specific purpose, you also need a central theme. Compose a thematic statement and make it the heart of your message, the central idea you develop to accomplish your specific purpose. Connected to the specific purpose example above, your thematic statement might be to help listeners understand how easy it is to incorporate prime, discount and inflation rate actual and forecast data into a system dynamics model, in order to financially adjust a plaintiff's past and future economic damages.

While you develop your talk's specific purpose and central theme remember that audiences appreciate presenters who avoid safe, dull talks. Olympic divers receive high scores for completing difficult dives. Similarly, technical presenters who take chances usually earn respect (Haywood 2001).

Delivery paths framework

Depending on your talk's specific occasion, choose one of four paths to presentation development and delivery. Each has relative strengths and weaknesses. The four presentation paths are: impromptu, memorized, manuscript and extemporaneous (Fig. 3 and Table 1).

The closest I have ever come to witness a manuscript presentation at an annual ISDSC is when some (thank God!) presenters turn their back to the audience and read out loud long paragraphs from projected transparencies as if the rest of us were not there. Do they forget that we can read?

Turning your back to the audience momentarily might be all right if you must use your body to illustrate a point. But turning your back to the audience in order to read long paragraphs from your own transparencies shows your lack of preparation and total lack of respect for your audience.

Choose and follow one path per presentation. Don't get caught in the middle. The quad block arrow in the middle of Fig. 3 says so. Who wants to look at transparencies with long paragraphs anyhow?

The technical nature of our field makes it highly unlikely that we are going to witness any time soon spur-of-the-moment impromptu presentations of essays that describe SD models with three to four levels (stocks) and up. There are wonderful moments full of spontaneity, fun and even impromptu talks at our annual conferences, but these take place at playtime, not during system dynamics model presentations. Which leaves us with one question: to memorize or not to memorize?

No way! The first principle that binds us as a society is that structure causes behavior, closed-loop structure, of course. We even carry little red-plastic toys around to show that. Impromptu! They work wonders those little celts; don't they? Second, we are against trying to learn by rote. And memorized presentations require not only careful preparation by rote but also delivery (yawn!) by rote (Table 1).

Figure 3
Presentation development and delivery paths framework

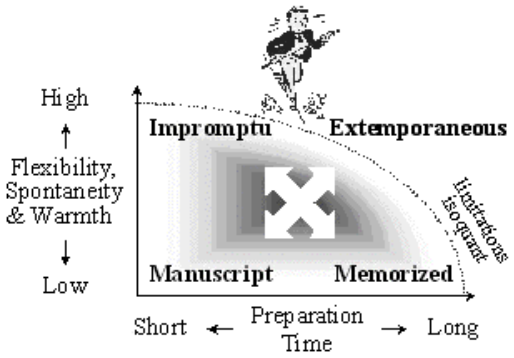


Table 1 Presentation development and delivery paths (adapted from Osborn & Osborn 2000)

Delivery Path	Relative Strengths and Weaknesses
Impromptu	Entails little or no preparation; usually the result of a spur-of-the-moment request to say a few words. Although it allows for little planning or preparation and conveys a sense of spontaneity, an impromptu talk places undue emphasis on delivery at the expense of content and often rambles. Things to do when faced with an impromptu talk: 1) jot down a memory-jogging word for each main idea, 2) summarize to conclude your remarks and 3) only talk about what you know well.
Memorized	Requires careful preparation and delivery by rote. It does encourage careful language control and organization, but tends to be inflexible and very difficult to deliver without sounding memorized, a wooden, singsong stilted delivery. It is embarrassing when the presenter's memory fails.
Manuscript	Similar to the memorized presentation, it entails reading word-for-word from a manuscript. It allows for ultimate control in language precision and organization, plus it does not place any strain on memory. But manuscript presentations are inflexible, limit physical delivery and require extremely skilled presenters to make even a single point seem warm and personal. If you must deliver a part of your presentation by reading, practice reading it many times so that you become very familiar with it. Try to maintain eye contact with your audience as much as possible. Personally, I regard manuscript presentations appropriate only for poetry and other literary works (e.g. Joyce 1922).
Extemporaneous	Combines spontaneous delivery with thorough content preparation. The only memorization required is the organization. Break your talk into pieces and talk each piece extemporaneously. Extemporaneous presentations are much more polished than impromptu ones because of the thorough preparation they require, but attain the warmth and spontaneity of impromptu talks. Extemporaneous talks are most flexible in adjusting to audience feedback and allow for more natural delivery than memorized or manuscript presentations do. Other than the time it takes to prepare, the only drawback of the extemporaneous presentation path is that you can have so much fun presenting that you get repeated requests to give more talks.

How wonderful! Our field dictates that our presentations combine spontaneous delivery with thorough content preparation. We enjoy the best of both worlds or, to be precise, dimensions of Fig. 3. Indeed, extemporaneous is the only delivery path outside the tradeoff limitations isoquant of Fig. 3. It allows striking a fine balance: thoroughly polished content, combined with a most humanly flexible, spontaneous and warm delivery.

To summarize, first memorize the instructions next to the first entry of Table 1, just in case a conference organizer taps you on the shoulder for an impromptu talk at our next annual ISDSC. If that happens, keep in mind you have not been asked to give a speech but to make some impromptu remarks. Second, focus on becoming a polished speaker, truly dynamic and entertaining presenter that consistently delivers great extemporaneous presentations. Remember: focus is the heart of a perfect presentation.

Audience analysis

System dynamicists are not afraid of perfection. We know how hard it is to achieve. We also know how critical it is to properly prepare our material early enough to make sufficient time to rehearse and fine-tune our technical extemporaneous talks. Unfortunately, being dynamically proactive does not guarantee that one's talk is well received. Your must also gather information about our tough ISDSC audience with its peculiar need to combine applied action research with academic rigor.

Audience analysis can help you give the right talk to the right audience. Professional speakers send their clients a multi-page questionnaire in order to gather enough information about the audience and presentation event to properly customize their speeches. Using A-U-D-I-E-N-C-E as an acronym, PLI & Laskowski delineate audience analysis categories that such surveys include (Table 2).

Table 2 Audience analysis categories (adapted from PLI & Laskowski 2001)

Category	Pertinent questions
Analyze	Who are they? How many will be there?
Understand	What is their knowledge of the subject? How does it compare to my knowledge?
Demographics	What are their age, sex, and educational and work background?
Interest	Why are they there? Who or what brought them there?
Environment	Where will I stand? Can they all see and hear me well?
Needs	What are their needs? What are my needs as the presenter?
Customize	What specific needs or issues do I need to address?
Expectations	How can I manage what they expect to learn or to hear from me?

Focus on the audience you are presenting to as you develop your talk's specific purpose and thematic statement. Our society is a unique mix of brilliant academics, consultants and practitioners who make ISDSC presentations both challenging and fun.

To motivate audiences, Zielinski (2001) suggests tailoring presentations to four broad personality types: analyzer, connector, networker and producer. Some of our society's members might be indeed typed as connectors who value stability, getting along and private, low-key recognition. Others act as networkers, value team activities, get energy from ISDSCs and thrive on public recognition. The producers among us typically seek control over their own life by being self-motivated organizers and planners. Not surprisingly for a bunch of system modelers and thinkers, many of us are analyzers who value data accuracy and prefer facts, figures and reasoned arguments over personal stories.

Consider addressing your audience in layers as you craft your talk's specific purpose and central theme. If you do not care much about personality types, try a different layering scheme. Some are experts in your sub-area, others are experts in the general area, and a few newcomers know little or nothing. Who is most important to you? Can you still leave the rest with something? For example, pitch your talk's body to the experts of your choice, but make the outline and summary accessible to all (Russell 1939).

Plan or be planned for
Russ Ackoff

Plan: the audience and you, in a room

Audience: your starting point

Making the audience your starting point enables you to give outstanding, career-boosting presentations (Reimold 2001). Strong presentations require a thorough understanding of your listeners, including their needs and limitations. Great presentations are radical in their focus on the audience. They address real people with real needs and ask them for a real response. Poor presentations, including some well polished ones, play out in thin air, removed from the audience, in an abstract space of facts and ideas (see Appendix A). Because they fail to address real people, they rarely get a real response.

Once you have established your specific purpose and central theme, plan to fit them into a universal sequence that works uniformly well for all presentations: extemporaneous, impromptu, informative, manuscript, memorized, non-technical, persuasive and technical. This universal sequence consists of three basic parts plus two transitions that always work wonders (Table 3).

Table 3 A universal sequence that works (adapted from Clark 1999, Perry 2000 & Reimold 2001)

Part			Content
O	=	Outline	Rapport builder, attention getter, main message and presentation plan (preview theme points).
T_1	=	Transition 1	Advance organizers can help audience think ahead and facilitate proactive behavior (see Prepare section).
B	=	Body	Use only a few main or theme points. Support each by varied forms of evidence, illustrations and examples. Bob and weave facts, ideas and stories.
T_2	=	Transition 2	Post organizers can help audience activate prior knowledge and build anticipation (see Prepare section).
S	=	Summary	Restate main message, theme points and state their significance to the audience; follow with a call to action or memorable concluding thought if appropriate.

The universal pattern OT_1BT_2S of Table 3 will always help reach your audience because its sequence grows out of three severe audience limitations (SALs) that, according to Reimold (2001), beset every audience in the world. The three severe audience limitations are: distraction, confusion and sleep.

SAL #1: Distraction. Audiences can miss or miss-hear what you say because of the situation's intrinsic noise. The air conditioning is too loud; someone's view is blocked; a noisy function is taking place next door. Some people may be distracted by others or by their very own thoughts.

SAL #2: Confusion. Complexity is an attention getter, but can easily confuse an audience. People listening to you cannot go back over what you said as they would if they were reading an essay. We have to understand everything the first time we hear or see it. As presenters we underestimate the complexity of our presentations because we know exactly what we want to say. Usually, we go over our material several times as we develop and rehearse it. Everything seems perfectly clear and obvious once we become familiar with it.

SAL #3: Sleep. Isn't it awful that as listeners we tend to alternate between napping and daydreaming? Our natural attention curve is like an upside-down bell. We start out quite awake, wondering why you are there and whether you are going to do anything interesting. Then we drag ourselves down swiftly to the bottom of the upturn bell. Don't be fooled by appearances. Many have learnt to nap with open eyes. We struggle back into wakefulness when we hear the magic words: "In summary," hoping to get what we missed during our nap. It can be a painful climb up the other side of the upside-down bell curve too.

R_x for planning your talk

The law of three can help you deal with SAL #1: distraction. The law requires that you present main points three times to cube the probability that your message gets lost to noise or information entropy. This law provides a reasonable chance for most listeners to hear you at least once (Reimold 2001).

The universal pattern of Table 3 can help cure severe audience limitation #2: confusion. State your message and preview main points in the outline. Restate and buttress your main points in the body, relating them clearly to your message. Briefly restate the message in the summary, tying main points together by underlining their significance to your particular audience. Preview a few main points, laid out simply and clearly in the OT_1BT_2S sequence; follow with discussion in the same order.

Every talk you give begins with a fabric of information in your mind, out of which you draw some important threads for the audience. The tapestry, the whole picture, is perfectly clear in your mind but the audience has only your threads. Those threads must themselves make a clear, even if schematic, picture of your message and its substantiating points for the audience to follow. The OT_1BT_2S pattern always helps.

Now, what are the implications of the sad SAL #3: sleep? First, let's look at the easy parts: the beginning and the end of your talk: outline and summary. These are the tips of the upturn bell curve. You have your audience's attention here without much effort. But remember: you only have 30 seconds or less to connect. Do you waste these natural high points of attention on trivialities? It's up to you. It's your talk.

Be firm! Use the beginning and the end to state the most important parts of your talk. The OT_1BT_2S sequence guides you to do this. But here comes the hard part: part B of Table 3.

Your talk's body, the very part where you get into the substance of your message, is naptime. It is the moment audiences nosedive to the bottom of the bell. Your biggest challenge here is to keep us awake. Your most powerful weapon against sleep is variety. Table 3 tells you to substantiate main points with varied examples, illustrations and evidence. Also, put variety into your voice, stance, gestures and visual aids. Variety startles and interests people; it gets our attention. Sameness puts us to sleep. Here is how:

R_x prognosis: neural system fatigue

Our brain is an astonishingly complex system of creases, projections, fibers, branching cells, colors and connections. Learning requires attention. Specific parts of our brain control attention. But the brain's neural subsystems fatigue quickly. Neurons become less responsive within three to five minutes of sustained activity (Perry 2000). Much like our muscles when we lift weights, neurons need a rest. They can recover within minutes too, but they are inefficient when stimulated in a sustained way.

Neurons are like pianos, not organs (Perry 2000). Like piano keys, neurons respond to patterned and repetitive, rather than to sustained, continuous stimulation. When you put your finger on a piano key and hold it down the piano makes one short note. Keeping your finger there does not produce any more sound. Why is this important for your presentation?

When you say: "This model took 24 months to complete," you activate one neural subsystem, say A, in each listener's brain. When you talk about an idea related to your previous fact: "All other models we built at this client company took less than six months to complete," you activate a slightly different, but functionally interconnected neural set, say B. When you relate a story: "At the darkest moment of our long, convoluted modeling process, when we were deep in despair, this one manager stood up and was able to pull us all back together," you activate yet other related neural subsystems, say C and D. These interrelated neural sets are all important in learning. Your audience members will stay alert and learn more from your presentation if you enable them to make changes, i.e. create memory, in all of these neural subsystems: A, B, C and D (Fig. 4).

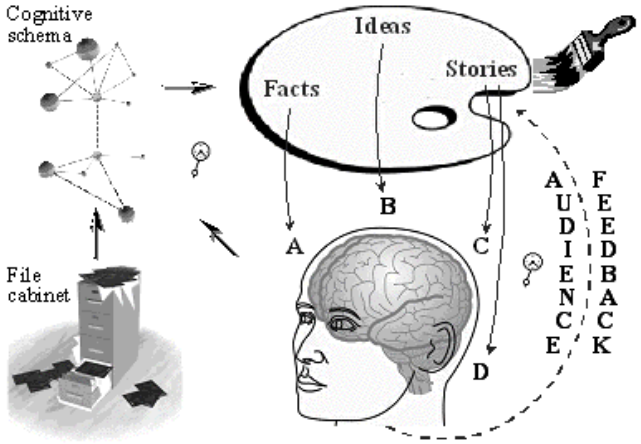
When an audience member is in the familiar and safe situation of an annual ISDSC, his or her brain seeks novelty. So, if this listener hears only facts, s/he will fatigue within minutes. Our brain can tolerate only three to five minutes of pure facts before it seeks other stimuli, either internal, daydreaming for example, or external: "Who is that walking down the hall?" If you do not provide that novelty, the brain will go elsewhere (Perry 2000). Continuous presentation of facts or ideas in isolation or in a nonstop series of anecdotes will all have the same fatiguing effect: your listeners will not learn as much, nor will they come to anticipate and enjoy learning from your talks.

Effective presenters move back and forth through interrelated neural systems, weaving them together (Fig. 4). As you begin to draw from your planning palette threads for your audience to follow, consider engaging your audience with a story to provide the context and to touch their emotions. This activates and prepares the cognitive parts of the brain for storing information. Information is also easiest to digest with emotional seasoning. Empathy, fear, humor and sadness make dry facts easier to swallow. Then add from your tapestry a fact or two; link them to a related idea. Move back to narrative to help the audience make the connection between this idea and the story. Get another fact. Reinforce the ideas. Reconnect with the original story. In and out, bob and weave facts, ideas and stories (Perry 2000).

Facts are empty unless linked to context and ideas. A story is a powerful means to package complex facts and ideas into something that is cognitively manageable and thereby memorable. Schank & Abelson (1977) give the example of the series of activities involved in visiting a restaurant. Activating this *schema* provides a basis for making inferences and suppositions about the meaning of related facts (Norman 1993, Piaget 1990). People do not usually state all the parts of a given thought they are trying to communicate.

Our mind uses schemata to fill in missing details (Fig. 4). Expect the memory of your audience to be poor if you fail to activate an appropriate schema when you present. Also, if you integrate facts into large schemata, the facts may no longer be accessible as individual entities: memory will be distorted.

Figure 4
With the file cabinet metaphor bunk, propositional nets or cognitive schemata now store our knowledge. Bob and weave facts, ideas and stories to activate interlinked neurons. Read audience feedback



Ingvar (1985) presents experimental evidence that temporally organized schemata, or *memories of the future*, act as perception filters, determining what we perceive. Going through life people spin stories in their mind about the future. This mental activity builds up the schemata through which we interpret subsequent facts. If your presentation does not provide appropriate schemata or memories of the future, then your audience's brains will go back to spinning their own.

Presenters who integrate facts, ideas and stories activate intuiting, the process of developing new insights (Table 4). Intuiting recognizes the role of tacit knowledge (Polanyi 1967) and expertise (Behling & Eckel 1991, Prietula & Simon 1989). Nonaka and Takeuchi's (1995) research on the conversion of tacit to explicit knowledge contributes to understanding how one's intuition becomes explicit and how it is shared with others explicitly. Make your intuition explicit to share it with your audience explicitly.

Moreover, people's novel insights crystallize through interpreting, the process of building cognitive maps (Georgantzas & Acar 1995, Huff 1990). Thought of as the stocks of individual learning that represent individual knowledge and competency, cognitive maps have become a focal point in organizational learning. Bontis, Crossan & Hulland (2002) see individual competency as the closest translation of learning from the educational domain to the organizational domain.

Table 4 Interactive learning framework (adapted from Bontis, Crossan & Hulland 2002)

	Throughput	Learning Process	
	Experiences/Stories		
	Images	Intuiting	
	Metaphors		
Presenter			Audience Member
	Language		
	Cognitive Maps	Interpreting	
	Conversation/Dialogue		

Interpreting requires more than competence and capability, however. It requires motivation, direction and focus. The nexus of what people can do (capability), what they want to do (motivation) and what they need to do (focus) enhances learning (Watkins & Marsick, 1993). Can room layout also help?

Room layout

You bet! Although space is the modern presenter's final frontier (Mucciolo 1998), most of us ignore the importance of the room, take what we get when we arrive and then wonder why our presentation failed. It is our job as presenters, however, to provide room layout specifications to our ISDSC meeting planners and hotel managers so that we get what we need. Figure 5 shows that the center rear of a room is NOT the best place for the screen. The room layout of Fig. 5a will help us present effectively, enjoy our presentations and learn from each other. Using it as a guide to positioning platforms, lights and chairs will suit us both as audience and as presenters. Make sure everyone's sightline to the screen is unobstructed, and that the image is large and bright enough for people all the way in the back to see.

Presenters must always stand to the audience's left because the English language requires reading from left to right. Properly standing at a 45 degree angle permits to face the audience, and to glance at and to point to the screen. The layout of Fig. 5a also ensures there is enough room to move without blocking the view of the person seated in the first seat on the left, as the broken sightline shows.

The A1 segment of the area presenters must use is safe. Occasionally, however, you must wade into area A2 to change a transparency. Unless the projector is off, be quick to wade back out because area A2 is your danger zone: you are obstructing some people's view of the screen.

Stage platforms (top of Fig. 5) give presenters great visibility. Most people see only the top third of a presenter who stands on the floor. In a setting of 25 people or more, it is preferable to use platforms to raise the presenter two or more feet off the floor to make it possible for those in the back to see more of her or him. The more visible the presenter is, the easier to communicate. High ceilings, free from obstructions, such as low-hanging chandeliers, allow for high platforms to form an L-shaped stage.

The presentation screen must be a 9' × 12' video-format, non-glare and matte-white surface for audiences of 100 or more, offset in the corner (Fig. 5a) as opposed to the center (Fig. 5b), and on top of the stage if ceiling height permits. The bottom of the screen must be at least 6 feet off the floor to let everyone in the room see. Although visually pleasing, a full-dress screen kit (side curtains, bottom skirt and top valance) is not recommended in case presenters or audience members are allergic to dust mites.

The room layout and the equipment must ensure that visual images are large enough. The table in front of the L-shaped stage is for the projector and other audio-visual equipment, including extension cord and power strip. Presenters who use portable computers expect at least a 1024 × 768 dpi LCD projector (XGA/XVGA). Eight times the height of the image is the optimal viewing distance to read 24-point type. A quick test is to stand back eight feet from your slides and view your presentation. If you cannot read some of the text, the type size is probably smaller than 24 points.

Lined up with the platform's edge (left of Fig. 5), the first seat maintains a proper sightline to the screen. A presenter crossing the sightline blocks the view of the person in that first seat. The seating is staggered and balanced, but if more chairs are needed, place them on the side opposite the presenter.

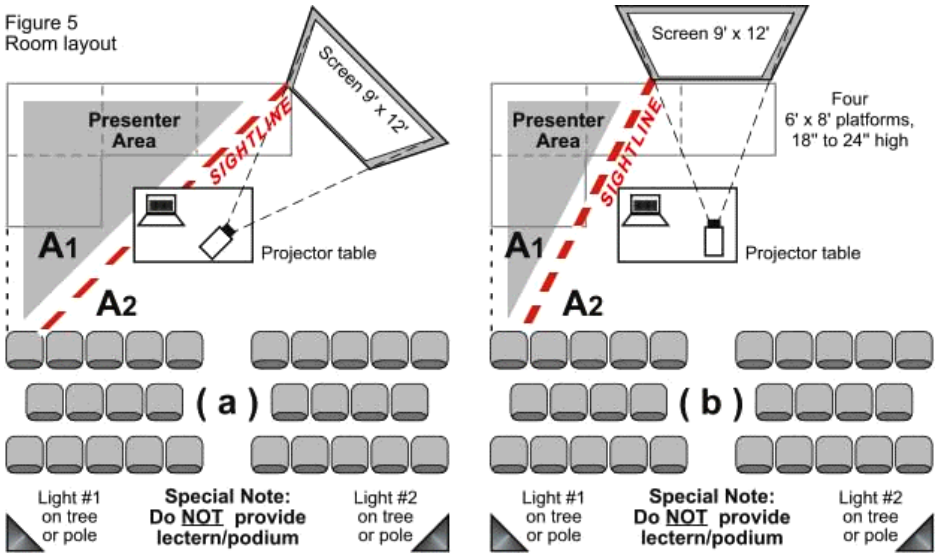
Use six- to eight-foot tables for classroom-style seating. Line up the outside edge of the first table with the edge of the platforms, similar the first seat shown on Fig. 5. Theater-style seating is typical for large groups, but if the event is more than a half-day long, provide tables for a classroom style. This reduces space by about 60 percent, but enhances audience comfort. Angling the chairs/tables (chevron seating) can increase the interaction among audience members. Interaction increases in smaller groups when people face one another, as they do in U-shaped arrangements.

Sound is also necessary for large groups. And good sound is unobtrusive sound. A wireless lavaliere microphone, one that clips to the tie or blouse, allows for mobility.

Cross light the presenter with good light for a good presentation. The audience must see as much of the presenter's face as possible (Carr & Dabbs 1974). Place two LEIKO stage lights on opposite sides of the room (bottom of Fig. 5), each mounted on a tree or pole, to cross-light presenters effectively. Add a dimmer to adjust the light so the presenter can still see the audience while speaking. The goal is to create an unequal light distribution, with most of the light in the room focused on the presentation area behind the sightline, some light distributed over the audience for taking notes and no light hitting the screen.

Fluorescent lighting washes out the screen and must be avoided. If fluorescent lights are the only option, then turn off or remove as many lights as possible around the screen.

Figure 5
Room layout



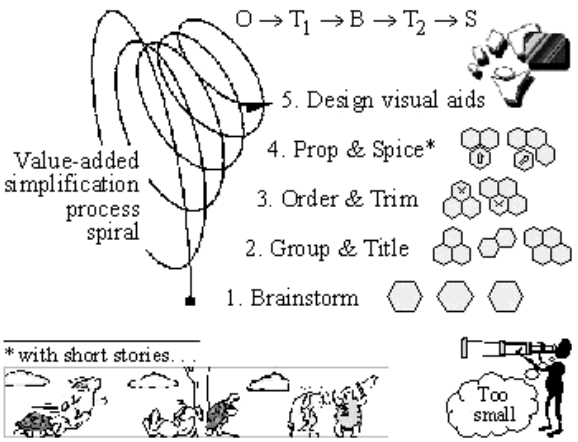
Good presenters avoid the lectern/podium contraptions. Using one can cover about 75 percent of the presenter's body and restrict movement. Some people use them to hold their notes and to hide behind them. If you must use one, make sure it is angled 45 degrees to the audience and can be adjusted to the height of different speakers.

It is beneficial to keep our ISDSC planners busy getting us what we need. First, we sometimes do get the presentation ambiance we need. Second, we also get the time we need to prepare, to craft the content and sequence of our presentations effectively.

Prepare: craft content and sequence

The value-added simplification process spiral of Fig. 6 can cure those severe audience limitations (SALs) that technical presenters are up against. Although itself nonlinear, it can help you craft and sequence your talk's content to fit the linear pattern of Table 3: OT_1BT_2S.

Figure 6
Content crafting and sequencing (adapted from Lindgren 2001)



1. Brainstorm. Set a time limit for your brainstorming to work (Lindgren, 2001). Brainstorm either alone or with a small group to augment your creativity. Capture all facts, ideas and stories you can think of related to your topic, flavored for your particular audience. Keep in mind that this is strictly a pure

free-association, idea-generation activity. Think freely, putting everything you want to say down on paper or on the glass of a computer screen, not hampered by a linear outline or a sequential format. Multi-colored sticky notes or hexagons on a flipchart make the creative process very fertile. Forget about relating now or even using all of the material you generate. Just capture anything and everything about your topic, one fact, idea and story per sticky or hexagon.

2. Group & Title. Mentally step back and look at your sticky notes or hexagons. Group them according to any natural associations you see. Give each group a title. Ask yourself: “Given my target audience, what do I want them to hear about first, in the body of the presentation, second, third, etc?” Do not force all entries into a group; some will be left over for the question-and-answer session. If a group has more than nine entries (see Appendix C), then split it into two, but also try to keep the number of groups relatively small (Miller, 1956). Some people believe that three is the ideal number of points around which to organize a talk, but Lindgren (2001) points out that this is not an absolute. Just make it user friendly, and keep it short and simple.
3. Order & Trim. Trim the entries within each group and put them into a logical order. Again, although some experts see three as the ideal number, you are not bound to it. Go back to your specific purpose and thematic statement to retool your talk's berth. Include and define in your talk's body the desired actions and audience benefits you state and restate in your outline and conclusion.
4. Prop & Spice. Add memorability, aid retention, enliven and provide interesting relief. Mix some audio, handouts, props, quotes, short stories, slides, video or earthshaking facts onto your spice palette. Mostly spice the most important parts in your presentation. Spice it all, but identify where the peaks (plot points) of your talk are and what type of spice to add.
5. Design visual aids. With the value-added spiral behind you, now you can work on your visual aids (see Appendix C). Follow the golden rules of Appendix B while you write and copy-edit text on them.

If you ever get stuck in the value-added simplification spiral of Fig. 6, two alternative outline formats can help you recoup and organize your talk (Fripp 2001). The first is the timeline Alcoholics Anonymous (AA) members use when they stand up to qualify their experiences. It tells your audience who you are and why you are qualified to present. Start at time t-1: "This is where I was." Move to the present (t): "This is where I am now." Finish with your journey through time: "This is how I got here." Using the AA-inspired outline you might open like: "A year ago, when our team started modeling this mess, we had no idea where to begin" (this is where I was). "Today, you are going to see version 47 of our model, which helped our client design and implement a most profitable strategy" (this is where I am now). "Let me show you how we accomplished that" (this is how I got here).

The second alternative is the question and answer (Q & A) format. List questions that prospects, clients and friends ask you most often about SD. Then open your talk with: "The question I am most frequently asked about system dynamics is..." Pose the question and answer it for the audience in a conversational manner, just as you would with a potential client or someone you met at a party. You may have never presented before, but you certainly have had some practice answering such questions.

Technical talk mythology

Even with these backup formats at hand, some presenters will show dozens of slides crammed with data and talk in a monotone, directly to the screen. Unfortunately, there isn't much any of us can do but simply tune out and nap. It's their talk, their loss, our naptime. Unless… Can we sensitize newcomers to how crucial it is to also communicate models persuasively to managers, clients and peers? Compelling presentations often decide whether we win contracts, receive funding or advance in our career. Marshall (2001) kindly unveils the three most common myths behind technical talks:

Myth #1: *My audience requires a lot of technical detail in order to evaluate my work* (s.a. Table 3).

This suggests that the technical nature of our field makes us hungry for a data dump. Hewlett-Packard Labs' and other empirical studies show, however, that technical audiences prefer easy to follow, well-organized talks (Marshall 2001). "Shouldn't I include all my equations and references to fully support my results?" the system dynamicist who wants to be taken seriously might ask. Sure, it is crucial to list all

your equations and references, but in your proceedings essay! Interested audience members will check your details later. During your talk, however, you must repeat and simplify your main points to create increased attentiveness to and retention of your contribution. The ability to distill technical information down to its essential core is the single most important delivery skill of a great technical presenter.

Myth #2: *Content is everything, style is unimportant and enthusiasm is offensive* (s.a. Appendix A).

Contrary to this popular myth, the Hewlett-Packard study again shows that technical audiences want both enthusiasm and effective style, including well-designed visual aids. Even if technical audiences seem skeptical of too much style and enthusiasm, tentative, unenthusiastic delivery always ruins a talk. Prepare to use facial expressions, specific gestures and vocal variety to communicate and to promote confidence and enthusiasm for your topic. Imagine yourself engaged in a heightened one-on-one talk. Engineering and science students often hear that if the science is good, the delivery shouldn't matter. Studies consistently show, however, that body language and tone of voice provide most of the message, while actual words supply less than 10 percent (Marshall 2001). Not only does delivery matter, but you must also prepare and build nonverbal communication into your presentations. In addition to your visual aids, your confidence and delivery style critically affect your audience.

Myth #3: *The text on the visual aids is more important than the speaker* (s.a. Appendix B).

Does the 'talking visual' sound familiar? The lights are dimmed, you are barely seen, but it is your voice narrating each visual. Please understand that you, the speaker, are always the focal point of your talk. Do not hide in the dark or behind a lectern. Position yourself under a light if you can, and use an effective delivery style to remain the center of attention. Use your visuals to control your pace and flow. Remember never to turn your back to the audience and never talk to the screen. Only 20 percent of what you say will provide 80 percent of the impact (Marshall 2001). Put this critical 20 percent on your visual aids which, by the way, are not meant to contain your talk's every word.

Visual aid (re)design: creating plot points (s.a. Appendix C)

By most standards, you designed your talk well. You even showed video clips with sound. The screens had the right colors. There were not too many words on any screen. The animation was cleverly done. All in all, your presentation looked good. Why then didn't the audience respond favorably?

The before and after visual aid example of Fig. 7 shows how you can reduce text, create vivid images and show information graphically rather than in moth-eaten bullet points. Redesign your visual aids to deliver a great technical presentation.

By contrasting movies to technical presentations, Wilder (2001b) concludes that the latter fail when *plot points* are overused. For example, one presenter had a sound play each time an arrow appeared on the screen. Had she used sound sparingly, it would have been effective. She used the sound on every diagram screen, however, causing an audience member to exclaim: "If I hear one more swish sound when arrows come on the screen, I'll scream!" Another presenter used beautifully enlarged pie charts, not once or twice in his talk but 11 times. Video clips are very useful to show SD modeling in action, testimonials from customers and employees, or company sites around the world. But one or two suffice. And the shorter the segments are, the better. Also, put the cues on the screen rather than relying on a script.

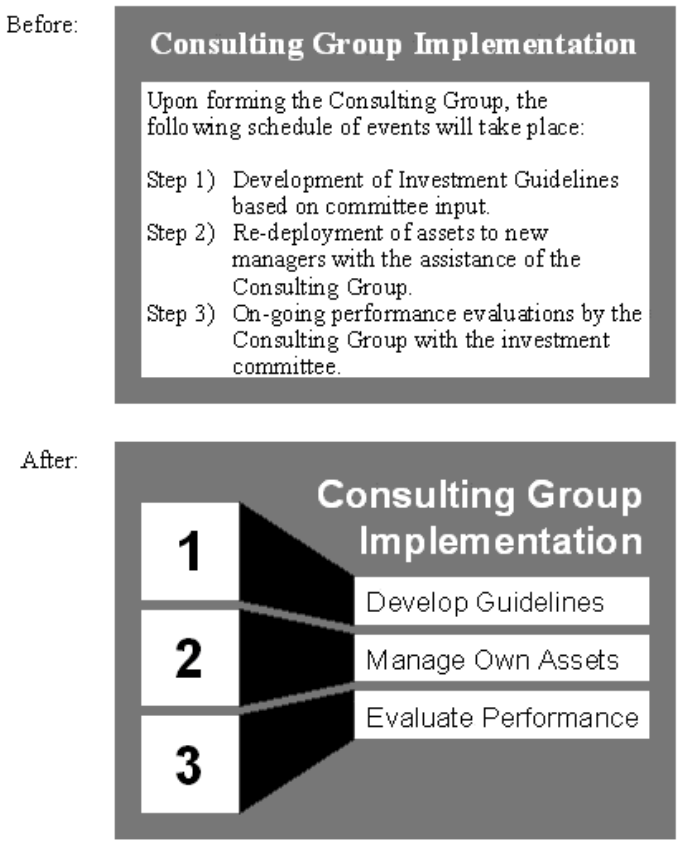
To build plot points in your presentations, use animation, sound and video clips to change your talk's dynamics. Design varied screens or transparencies so you can modulate your voice, giving your talk in style. Put cues on your transparencies to remind you to interact with the audience.

Wilder (2001b) warns against using every bell and whistle in the first five minutes of your talk. Although you certainly want to capture the audience's attention, the job is mostly yours. Build some plot-point slides, but not all of them to create plot point one. You can even add animation manually when you use transparencies. But if one computer slide or transparency lends itself to having bullets show up individually, let your bullets show up all at once on your next slide or transparency. Variety rules!

Change the background color of your visual aid at plot point two, if that makes sense. Presentations need a consistent look and feel, but they don't have to be boring. Save your best video clips, exciting build or plot point for last. Not only must you start, but you must also end your talk with a bang. And create

plot points with planned repetition. Movies teach us the tag line, for example, a single line repeated in a variety of ways. Use a visual or audio tag line at each plot point to emphasize your talk's central theme. Show a slightly different image, use a sound at each change, keep building on a visual that isn't complete until the end of your talk, or create a scene that changes as your presentation evolves. Signal to the audience your talk's forward dynamic movement.

Figure 7
Visual aid re-design example (adapted from Wilder 2001b: Example 4)



Smooth transitions ≡ advance and post organizers ≠ previews and reviews

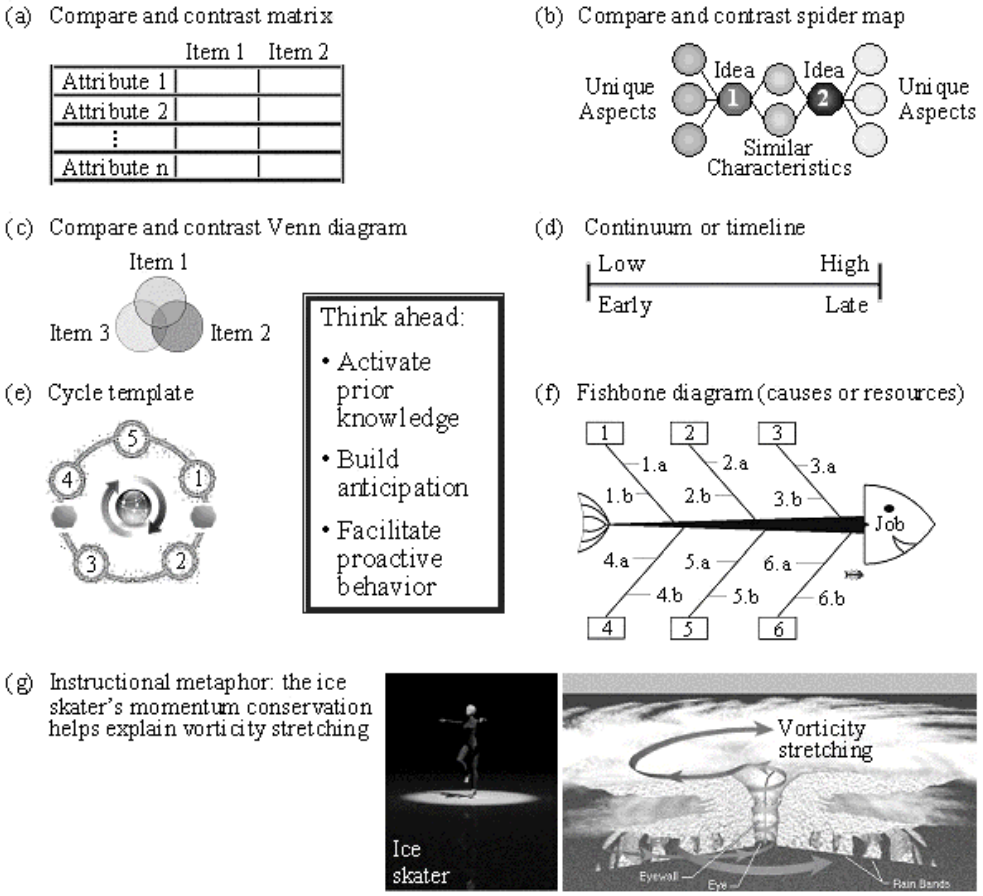
Table 3 and Fig. 6 allude to how transitions can move your audience smoothly from your talk's outline to body to summary. Transitions create a logical flow and build momentum for a dynamic close. They give your presentation the lobster-like external skeleton it needs. If time permits, you can also use transitions to channel your audience smoothly from point to point within the body of your talk.

A considerable research body shows that advance and post organizers are powerful delivery tools for smooth transitions (Kemp, Morrison & Ross 1998, Mayer 1979). Organizers activate prior knowledge, alert to presentation content and structure, build anticipation, clearly communicate presenter goals and expectations, facilitate proactive behaviors and understanding by connecting content to reality, and provide the intellectual scaffolding needed for learning. Advance and post organizers facilitate learning through the activation of cognitive schemata (Fig. 4).

Comparative organizers bridge old ideas to new by comparing and contrasting new ideas with existing knowledge (Kemp et al. 1998). For example, before presenting an atomic structure model, one could show the similarities between electrons circling a nucleus and moons orbiting a planet. Expository organizers set the stage for new information through a framework that becomes the basis for new content. For example, when modeling a country's revolution, introduce the stages common to all revolutions. These

stages become the framework for organizing new ideas and information. Graphic organizers explicitly reveal useful schemata (Jonassen & Hawk, 1984). The graphic advance and post organizer templates of Fig. 8 can help you design and present effective graphic organizers.

Figure 8
Graphic advance and post organizer templates (adapted from Parrish 1999)



Concerned with how we learn from real-life presentations, Ausubel (1960 & 1978) sees learning as superordinate, representational and combinatorial processes that occur during information reception. *Subsumption*, for example, a primary learning process, relates new material to existing schemata on a substantive, non-verbatim basis. Subsumption entails reorganizing existing schemata, not developing new ones as constructivist theories suggest. Cognitive schemata are the residue of learning. To facilitate recall, complex and accurately structured schemata provide alternate paths to reach information. Forgetting occurs when details lose their individual identity because they get integrated into large schemata.

In this context, Ausubel suggests presenting organizers at a higher level of abstraction, generality and inclusiveness than one's talk content. Each organizer must explain, integrate and interrelate the material you present. It must simultaneously satisfy substantive and programming criteria to enhance the organization of cognitive schemata. Ausubel emphasizes that advance and post organizers are different from previews and reviews that emphasize main points and are presented at the same level of abstraction and generality as the rest of the material. Organizers link already familiar constructs, whereas an preview need not necessarily make this link. Verbal or graphic, organizers act as a subsuming bridge between new material and existing knowledge.

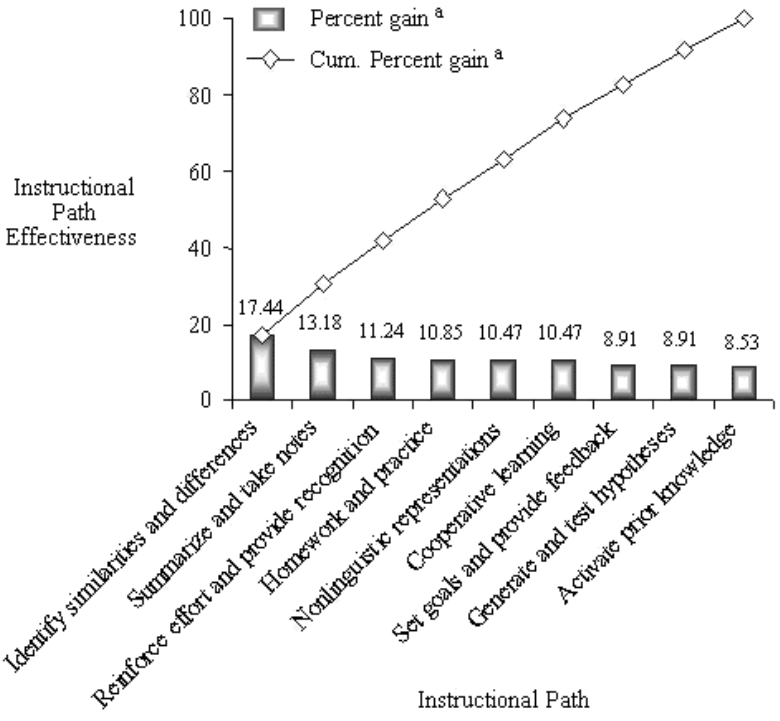
Mayer (1979) proposed six criteria to make advance and post organizers effective for smooth transitions. According to Mayer, each advance or post organizer you design must:

1. Be composed of a short set of verbal, or verbal and visual information.
2. Be presented before or after a large body of information.
3. Contain no specific content from that body of information.
4. Create general logical patterns and relations among the elements in that body of information.
5. Facilitate information encoding into and recall from existing cognitive schemata.
6. Combine contiguous verbal and visual cues to facilitate encoding and recall.

The compare and contrast matrix, spider map and Venn diagram templates of Fig. 8 make explicit the so-basic-to-human-thought process of comparing. They can help your audience see immediate similarities and differences among ideas or items in your presentation. The Venn diagram of Fig. 8c, for example, can help you show the similarities and differences among three items. The similarities live in the intersection among circles; the differences in the parts that do not intersect. The Venn diagram is particularly useful for highlighting the fact that the things you compare have some things in common, but not others. Yet, the compare and contrast matrix (Fig. 8a) and spider map (Fig. 8b) templates can graphically depict an even more detailed approach to the comparison process than Venn diagrams can. Instructional analogies and metaphors (Fig. 8g) also enable smooth transitions by identifying abstract similarities and differences between or among abstract ideas. Use them to facilitate complex mental operations that entail analyzing information at a fairly deep level.

The results of Marzano, Gaddy & Dean (2000) endorse the compare and contrast templates of Fig. 8. Based on more than 100 studies and 4,000 plus comparisons of experimental and control groups, Marzano

Figure 9
Pareto chart of instructional path effectiveness (adapted from Marzano, Gaddy & Dean 2000: Table 1.1)



[a] based on maximum percentile gains for students at the 50th percentile

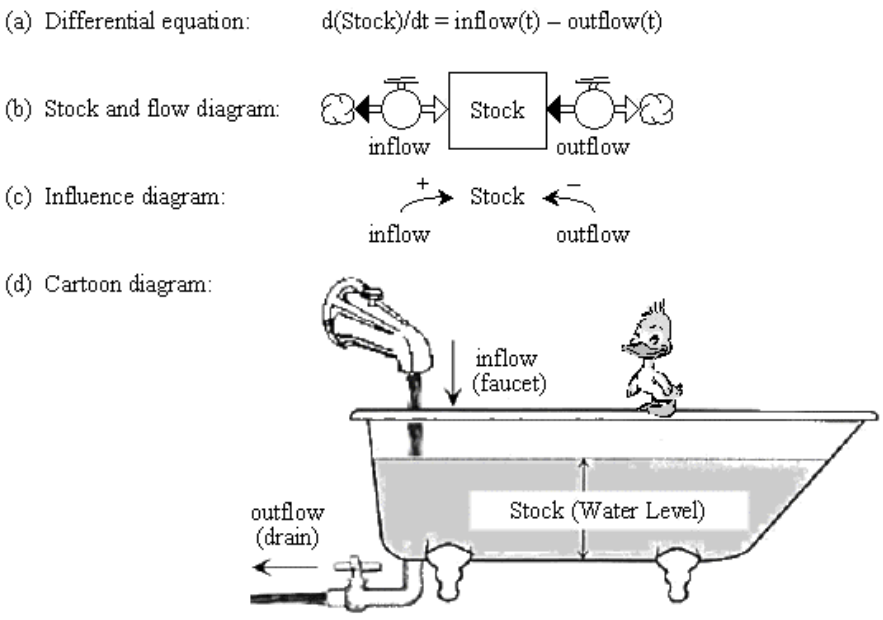
et al. (2000) declare instructional paths with the highest probability of enhancing student achievement for all students in all subject areas at all grade levels. To identify the most effective paths, Marzano et al. combined meta-analysis with the field experience of thousands of educators over 30 years. The Pareto chart of Fig. 9 shows the relative potential effectiveness of the nine instructional paths that research and

experience deem most potent for student achievement. The data exclude overlapping effects and thereby paint an accurate picture of each instructional path's relative effectiveness.

Equivalent stock and flow representations

Each stock and flow representation on Fig. 10 (differential equation, stock and flow diagram, influence diagram and bathtub cartoon) shows similar information. It is up to you to choose which representation you use to present your system dynamics model. Mathematically sophisticated modelers sometimes laugh at the idea of explaining a complex model using bathtub and pipe cartoons. Their otherwise brilliant models dither, however, when they show differential equation notation to an audience with people who have little technical background. Showing off your math skills will convince your audience that you care more about elegant mathematical formalism that about sharing with them how you help people solve problems (Sterman 2000).

Figure 10
Equivalent stock and flow representations (adapted from Sterman 2000: Fig. 6-2)



A stock and flow diagram is exactly equivalent to a differential equation's mathematical formalism, but the stock and flow diagram is easier to understand. Yet, some audience members find the stock and flow diagram too abstract. Even engineers with advanced mathematics background really understand how a business works only when they see a chart showing its stock and flow structure as tanks and pipes. SD experts always enjoy clever cartoons of tanks, pipes and valves used to excellent effect with complex model presentations. Sterman (2001, p. 209), for example, urges us to be creative with tank and pipe representations, but we must also guard against reducing our field into "The Pond-Draining Approach to Production Planning and Control" (Gaither & Frazier 2002, p. 521).

While technically correct, the causal or influence diagram (ID) of Fig. 10c can make it hard to see the physical flow of stuff through a system and the conservation of matter in a stock and flow chain. IDs can confuse an audience trying to interpret the polarities of your links. An increase in the inflow causes the Stock to rise above what it would have been otherwise, i.e. the Stock rises faster, so the inflow-Stock link polarity is positive. An inflow decrease, however, does not cause the Stock to fall. Rather, an inflow decrease causes the Stock to be less than it would have been. Your audience cannot tell if the Stock will be rising or falling based on the inflow change alone. The Stock will rise only when the inflow exceeds the outflow. Alternatively, the Stock only rises when we add to it faster than we remove stuff from it. Your

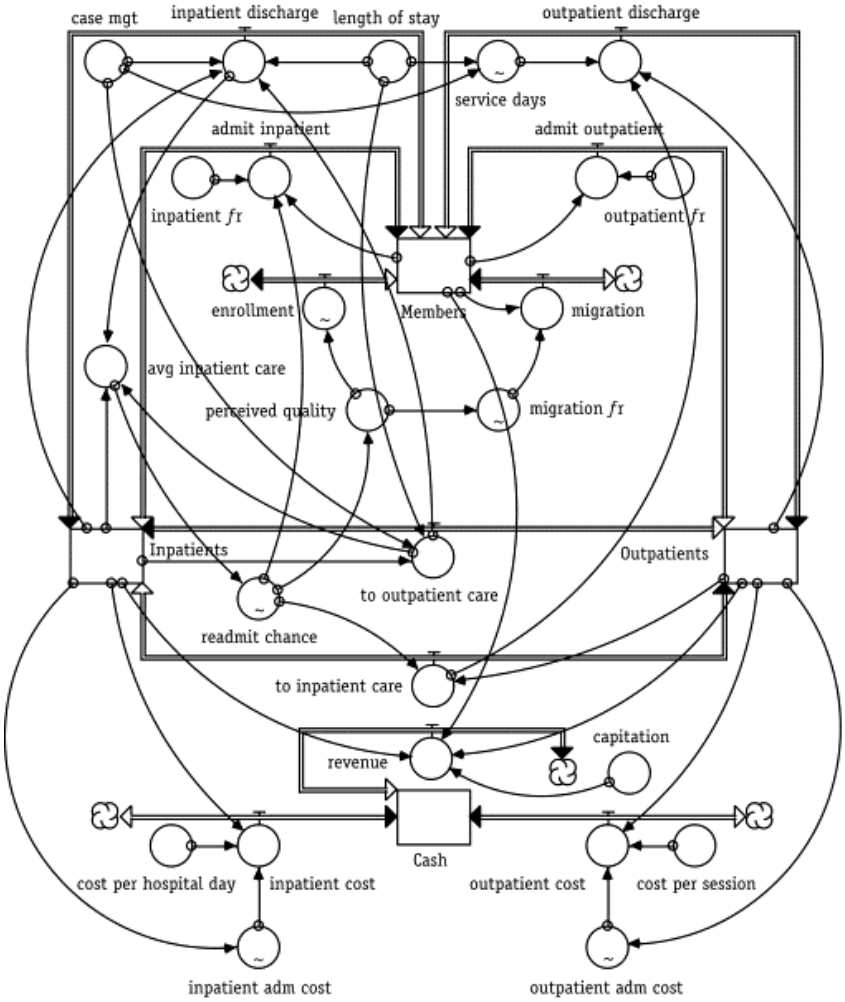
audience needs to know the values of all the flows affecting the Stock to determine its behavior. Richardson (1986 & 1997) carefully documents the pitfalls of causal-loop or influence diagrams, most of which entail the failure of IDs to show the difference between stocks and flows (Sterman 2000, p. 211).

That does not mean that you hide your equations or stock and flow diagrams from your audience. Always show your model to a curious audience. Prepare extra transparencies to explain the workings of your model in detail when asked to make it so. Besides, good system dynamicists constantly look for and create opportunities to share with audience members the SD modeling process.

Stock and flow representation examples

Becoming both creative and effective seems natural once you focus on your audience. The simple, quick and effective way to stop confusing your audience with IDs, while attaining the clarity of conserving matter in stock and flow chains, is to hide auxiliary variables, constant parameters and their links.

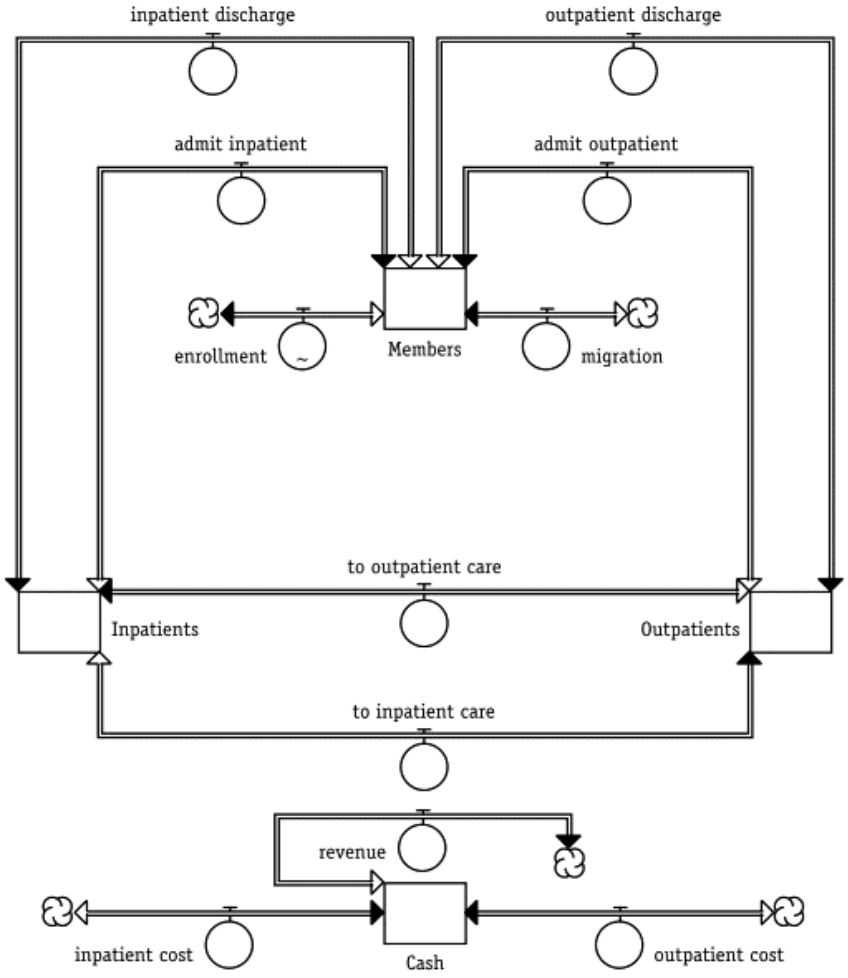
Figure 11
Managed behavioral care model (Georgantzas, Sever & Stell 1998)



Can you tell that a French mathematician was on the team that built the managed behavioral care model of Fig. 11? Naturally! He worked for a large American insurance firm at the time, our client.

Although valuable to the client, our model came out looking like spaghetti and I was the lucky one to present it at the annual 1998 ISDSC (Georgantzas, Sever & Stell 1998). I did, but I did not place the full-model diagram on the projector until an audience member asked for it. Instead, I presented the model's stocks and flows only, after eliminating its nexus of auxiliary variables and constant parameters (Fig. 12).

Figure 12
Managed behavioral care model presentation transparency



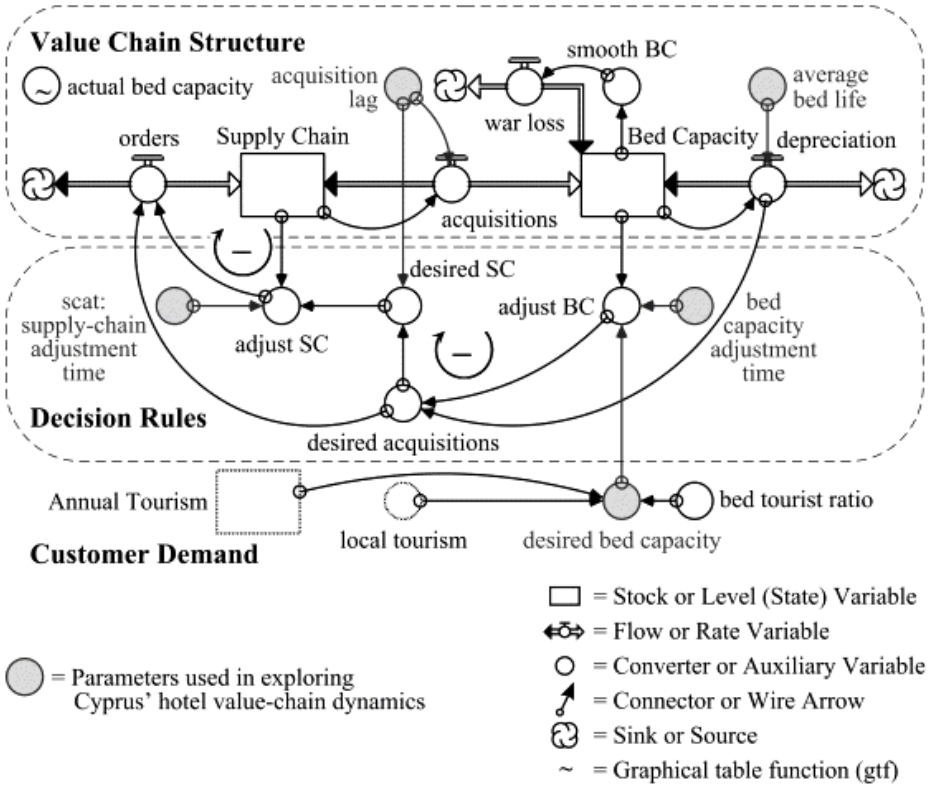
Having understood the model's stock and flow structure from Fig. 12, a curious and daring listener, a medical doctor I believe, asked if he could see the full model. Eager to please, I placed my backup transparency (Fig. 11) on the projector. What a memorable moment! Half the room was screaming and the other half, including myself, was laughing. A woman on the front row repeatedly lifted her arms high up in the air and then clasped her knees while screaming. Even the inquisitive doctor laughed while giving me a standing ovation. It is always fun when you are well prepared, ready, willing and able to satisfy a curious audience.

Although not all presentations leave positive memories, being prepared can prevent disasters in the making. It was pouring in Nicosia, Cyprus, for example, when I presented the Cyprus' hotel value-chain structure and decision rules model (Fig. 13) to my client, the Pancyprian Hotel Association. The weather was the main topic on the local news since Cyprus had not seen so much rain in decades. Also, I had a high-fever flu, compliments of the First International Regional Enterprise Network (REN) Conference, Prague, Czech Republic. I kept drinking water and chewing cough drops while setting up, hoping not too many people would show up. No luck there. Despite the bad weather, it was a full house.

Three things saved the day. First, the microphone in the auditorium where I presented was stationary. This enabled me to lean against its base discretely whenever the fever got me dizzy. Second, instead of presenting the value chain model of Fig. 13 (adapted from Sterman, 2000), I had modified its stock and flow structure by replacing the stocks with pictures that meant something to my audience, and by using

plain words and arrows for everything else (Fig. 14). The clip art in the center of the modified model's decision rules sector helped me relate its feedback loops to the hotel owners and government officials in my audience, who are routinely involved in Bed Capacity decisions.

Figure 13
Cyprus' hotel value-chain structure and decision rules model (Georgantzas 2001)



Last but not least, out of all those Internet pictures, I had to pick the hotel over which there were legal disputes between its owners and Cyprus' government. How lucky can you get? The Bed Capacity stock picture of Fig. 14 triggered such a heated debate in the audience, I was able to quietly retreat into a dark corner and blow my nose in peace. You can laugh all you want now, but that was precisely what I needed then to carry on and to deliver the simulation results, 35 computed scenarios total, and the summary with 14 action recommendations.

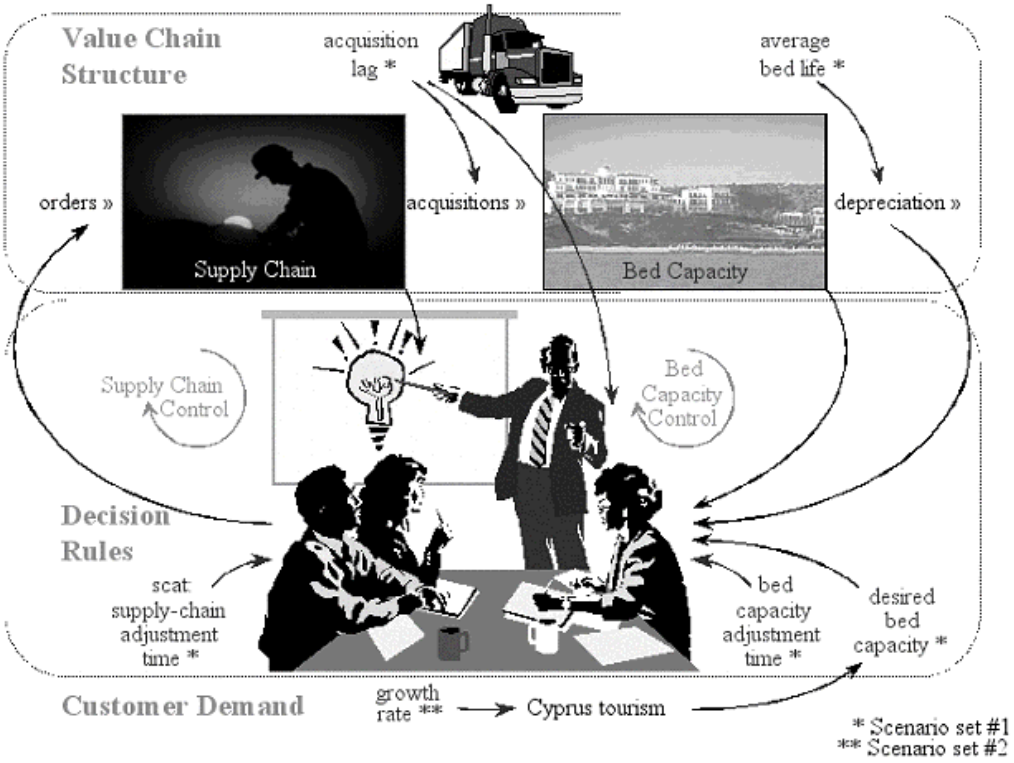
When I sent my Cyprus' tourism essay for review (Georgantzas 2001), I thought Fig. 13 would make the projector at our annual 2001 ISDSC. Figure 14 had survived so much adversity in Nicosia, however, I decided to use it in Atlanta. The result? The session's timekeeper added a one in front of the five on his five-minute scorecard, giving me in effect 15 more minutes instead of five. Although taken as a joke at the time, this timekeeper's response confirms the data of Marshall (2001), justifying her technical talk myths. It also backs Sterman (2000), who urges us to get creative with stock and flow representations.

You gathered facts, arrange your thoughts, brainstormed, grouped, titled, ordered, trimmed, propped ideas, spiced with stories, designed, dispelled mythology, redesigned, and created plot points and smooth transitions with stunning advance and post organizers. Your stock and flow representations are creative and you have double-checked every point on this essay's Appendix A, B, C and D. Are you ready?

No, you are not! You must now add the most crucial preparation ingredient. REHEARSE! Do it in private first. Then go for the acid test. Videotape yourself! Watch the results with a critical eye. Even if this turns out to be the most painful and humbling experience you had since the birth canal, then the results will be worth it. Next, try your talk out in front of a few friends. Ask for feedback and act on it. Se-

lect those who know a little about your topic, not those who know a lot. This will help you focus on explaining why you did what you did in simple terms, rather than encouraging attention to details only specialists care about. Prepare early. You need time to refine a talk based on earnest feedback.

Figure 14
Cyprus' hotel value chain presentation transparency



Present: take the role and act (or enact)

Open with a bang… Zorro

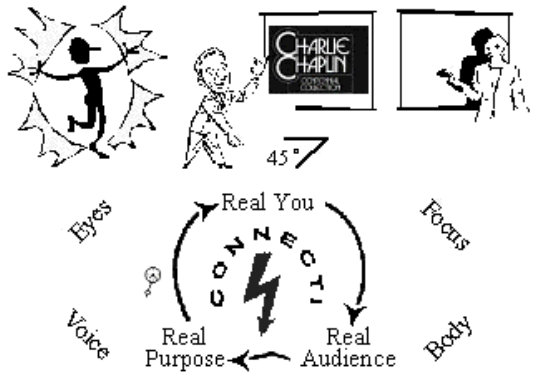
Open with a bang (Fig. 15). Think hard about the first and last 30 seconds of your talk. They have the most impact, so give them extra thought and effort. If you haven't hooked your audience in 30 seconds or less, minds are going to wander off. Whatever you do, do not waste any precious time with: "Ladies and gentlemen, it is a pleasure to be here…" Opening with a bang simply entails an intriguing or startling statement, such as "Half of us in this room might..." or "One question many of you frequently ask..."

Although humor is a great equalizer, opening with a joke or funny story is dangerous. Nothing falls flatter than inappropriate humor. Before you tell a joke, consider its appropriateness to the occasion and audience, its taste, and how it relates to you, your talk, the conference and our society's members. If in doubt, consider an alternate opening grabber, such as an inspirational quote or shocking statistic. Humor notwithstanding, Reimold (2001) argues that becoming an exceptional presenter does not require any special natural talent. Thorough preparation of course helps enormously. Well organized and tailored-to-the-audience material encourages a strong start and variety, making it easy to connect with listeners. The essay's prepare section guidelines yield a thorough preparation, effective visual aids included.

Most critical to a powerful delivery is a strong, positive, uninterrupted connection with the audience (Reimold 2001). The lower panel of Fig. 15 shows the elements of this connection loop. If you treat your talk as something artificial, then you fall into a trap where two unfortunate things happen: first, you divorce yourself from the situation because it is not really you giving the audience something. Your talk

becomes an abstract episode playing itself out with your merely a participant. You lose sight of your specific purpose, central theme and audience.

Figure 15
Open with a bang, connect and learn from mistakes



Second, your audience relates to your talk in the same abstract noncommittal way. They sense your lack of honest involvement and respond in kind. Consequently, you have a hard time reaching them.

To avoid this trap, Reimold recommends: connect the real you with the real audience, for a real purpose and do not let anything break that connection. That means stepping out of the abstract and into building honesty, trust and goodwill. That is what the connection loop of Fig. 15 is all about. Remind yourself of what you are there to achieve, dare to be yourself, at your best, and enjoy your contact with real people in your audience. We do not need any special skills to do this. We just need to focus. Once we learn how to stay focused within the connection loop, we can surpass any polished speaker who fails to understand the prime importance of real connection.

Figure 16
The eyes have it! Follow a 'Z' scanning pattern for proper eye contact with the audience (*s.a.* Appendix D)

Technical Presentation Assessment *

Making & Keeping Eye Contact	1	2	3	4	5	6	7	8	9
Speaking Loudly Enough	1	2	3	4	5	6	7	8	9
Speaking Slowly Enough	1	2	3	4	5	6	7	8	9
Speaking Clearly Enough	1	2	3	4	5	6	7	8	9
Banishing Space Fillers	1	2	3	4	5	6	7	8	9
Speaking with Conviction	1	2	3	4	5	6	7	8	9
Using Good English	1	2	3	4	5	6	7	8	9
Using Good Body Language	1	2	3	4	5	6	7	8	9
Having Central Idea & Purpose	1	2	3	4	5	6	7	8	9
Understanding the Audience	1	2	3	4	5	6	7	8	9
Organizing Logically	1	2	3	4	5	6	7	8	9

Total Points: _____

* Circle numbers from 1 through 9, with 9 being the best

To connect with your audience, you need the right attitude. Express that attitude with your body, voice and eyes (Fig. 15). Your attitude is most crucial. It shows. Focus on the audience you are speaking to. You will be amazed at what your audience will communicate to you nonverbally, but only if you are paying close attention to them. Focus on giving your audience something of value. Focus on liking each

member of your audience. Focus on respecting each member of your audience. Once you do, you will naturally do the right things with your body, face, voice and eyes. Reimold (2001) insists: other than the ability to focus, no other special skill is required. All we need is a willingness to like people and to do something for them. If we are willing to like people and to do something for them, then we can all become outstanding presenters; build charisma, clarity, competence and confidence through success.

The need to focus on the audience makes eye contact one of the most crucial concerns people have with technical presentations. It is the first item on the technical presentation assessment handout I give to my students (Fig. 16). To help them prepare for the real world, I ask them to play Zorro with their eyes when they present, i.e. to follow a Z scanning pattern for proper eye contact with the audience.

The leader must be an actor
General George Patton

Emotion: to act or to enact?

If you dare not be yourself, at your best, then act when you present (Slott 2001). This viable delivery alternative implies that technical talks are the wrong format to discuss neuroses, time in the military or problems at home. ISDSC talks are an opportunity to enthrall an audience with the best in you. So amuse us, anger us, calm us, excite us, frighten us, impress us, sadden us and wheedle us. We can take it. Do you want us to laugh, to cry or to carefully weigh a decision? Then learn to accept the necessity of acting and its basics: how to keep silent, to stay completely still and how to use emotion to facilitate learning.

Table 5 Role taking in technical presentations: Prudent or reckless? (Adapted from Slott 2001)

Role	Description
Concerned	Care about quality, guarantees, justice, Old Glory, risk and reward, tradeoffs, our society's reputation, expanding internationally, sharpness of the blade, salt content, secrecy of the formula, headache sufferers' pain, customer complaints. Care more than anyone else does! Act like you care more than your client. The person who hired you had lost both concern and enthusiasm. You got paid to care. Even if you don't care, act like you care! It is far better to care too much than not to care at all. Fake concern is better than real indifference.
Optimistic	Many count on a presenter to have the optimism they do not have anymore. People have lost their enthusiasm. You are expected to bring it back. Therefore, optimism is your ticket to ride. It is your ticket to presenting. Be optimistic about increasing sales, becoming No. 1, getting federal approval, being awarded a patent, or winning an Academy Award. If you do not believe any of these things will happen, act as if you do. Fake optimism is better than real pessimism.
Square	Inherent in every organization is the who's-the-squarest competition. You as a presenter can act and win this contest. You will have to act like the squarest one there even if the room is full of squares. Why? Because squares are universally trusted. If you are really cool and not square, act square!
Teammate	No matter whom you are presenting to, team spirit is the price of entry. Your audience wants to know they can count on you, that their problems are your problems and you are all in this together. Your role is to appear to put the uniform on and join the squad. Your role is to act like a member of the team.
Tough guy	A male term that means macho. But is it exclusive to Marines, jock-strappers, and steelworkers? Used to be. Now tough is unisex. It applies equally to both men and women. Both act tough on athletic teams, in foxholes and at various jobs in the workplace. Presenters who do not feel tough must act tough. Tough means focusing on the big picture, not sweating the details, keeping your end up, not complaining and being offhanded about what's important. Acting tough is better than being a wimp.
Worrier	Your audience expects you to worry if you are presenting as an employee of your own company. If you are presenting as a guest, your worry is hoped for. So take the role. Dress worried, look worried, seem worried, walk worried, act worried!

Emotion is useful but we must be unemotional about its use (Slott 2001). Be objective and choose the right emotion for the job at hand. Emotions can run away or you can easily pick the wrong emotion. Becoming too emotional costs goodwill, money and time. Rehearse!

Like emotion in acting, emotion in presenting is best when based on real life. Actors know that their performance is more believable if based on actual experience. In advertising, for example, a father used his son's emotions to present the ideal toy storyboard. They bought it (Slott 2001). In system dynamics, to show how childhood experiences teach us to ignore the supply line in value chain systems, Sterman (2000, p. 696) recounts his interaction with his two-year old son: "Juice please, Daddy," the child asks. "Coming right up," says Sterman picking up a cup from the shelf. "Juice, Daddy!" the child repeats, 10 times, until his little hands hold the cup of juice. The story shows how a caring parent can reinforce the false notion that we can ignore the supply line at no cost. Ignoring the supply line, children often ask for something many times before a loving parent fills their *order*. Accounting for the supply line, Sterman brings his son only one cup of juice, but most business situations do not provide any central value-chain management (VCM) authority to account for time delays and to prevent over ordering.

Table 6 Nine excellent presentation attributes (adapted from Harris 1994)

Attribute	Directives
Partnership	Create a sense of partnership through deliberate displacement to enable listeners to share in your talk. Bring in the audience with words like: you, your, we, us, our and let's. When we hide vulnerability behind a detachment posture, audiences think we are lecturing. Can anything kill a presentation faster than leaving listeners out?
Rhetorical questions	Create a dialogue of sorts with self-posed queries that do not expect audience answers but help listeners come close, focus and think. Pause at the end of each question to make listeners feel you are addressing them personally; to make them feel part owners.
Ability to be spontaneous	Meta-talk, i.e. remark about your presentation as it progresses, to provide something new and unexpected, making your talk spontaneous and free flowing. Improvise with short stories to disarm listeners. What a relief from the usual linear speech sequence!
Conversational style	Make your technical talk relaxed and informal, rather than a formal one. Add gestures (see below), motion, contractions, directives and conversational tidbits, such as: obviously, after all, and let's face it, to put listeners at ease. Audiences love those who speak our language, not the stilted ones.
Tone of voice	Increase attention, impact, and persuasive power through intonation variety or speech melody. Talk as if English tasted good (Anderson 2001). Most presenters are confident about their ideas, but stimulating ones also feel confident in expressing them. Pause! Silence helps your listeners digest what you say. Kill the "uh."
Involvement (gestures)	Involve listeners through hand gestures that show wordlessly eloquent commitment and vigor. Forego flamboyance and avoid understatement as you let your hands display your thoughts. Show numbers up to five, personalization of ideas, sizes, shapes, changes in direction, and action verbs, such as: boost and expand.
Creativity	Show imagination and resourcefulness to enliven your talk and to renew enthusiasm. Use analogies, alliteration, plays on words and rhyme to fight presentation burnout and to remain sharp and lively. Analogies, for example, can help you build a window through which you listeners can instantly see what you are driving at.
Acute relevance	Combine familiar examples with sharply defining gestures to convey main points with unmistakable clarity. Engineer your talk to strike a strong chord with listeners. Your success depends on how easily and personally your listeners can relate to your talk.
Lucidity	Help your listeners attain unambiguous understanding with unmistakably lucid images and meanings; with outlines and details not vague, but vivid. Clarity of expression compels attention. Message consistency helps everyone receive the same message and understand the same implications.

Both presenting and acting are based on experiencing emotion and both require rehearsing. Base your stories on your own life: what you say, do and how you feel. Use the former situation to make your talk come alive. Think of yourself as a member of a cast with a performance to stage. Table 5 shows roles you

can take on and play. Why let reality cause failure when you can act? Act if none of these roles is the real you. Act if you do not believe any of them (Slott 2001).

The only time you need not act is when your feelings are real. And they better be because although flat affect interferes with speaker credibility, false affect is even worse. When Slott (2001) delivered his goodbye speech after 26 years in advertising, 90 percent of his audience were strangers. He used the occasion to tell 500 people about the word *aloha* with real emotion. Looking at the audience he said: "Aloha means three things. Aloha means hello. Aloha means goodbye. Aloha means I love you." Slott claims that he used "I love you" as his last three words in the field of advertising because he understands the importance of real connection.

Although often overdone, being politically correct (PC) is essential. It is both polite and safe to call people what they want to be called. Refer to adult females as women and to adult males as men. Not every doctor is a he, neither is every nurse a she. Say physically challenged, not disabled, and so on.

Asymptotically Practical Excellence

After comparing and contrasting the attributes of good speakers and those of excellent ones, Harris (1994) concludes that good speakers have a goal in mind, stick to the point and talk in a reasonably interesting, clear and relevant fashion. The excellent presenter tends, however, to the nine attributes that spell out the acronym P-R-A-C-T-I-C-A-L (Table 6).

The nine excellent presentation attributes of Table 6 make up a road map for change. Take this road to empower you and to excel in presentation performance. As you draw on a wider range of tools to enhance the value of your message, your professionalism becomes increasingly evident and motivating. In short, you are well on your way from being a good presenter to becoming an excellent one.

Make your close the high point of your presentation. First, summarize your talk. Then plan to take questions from the audience and answer them. The last 30 seconds of your talk must send people out energized and fulfilled. Finish your talk with something inspirational that supports your theme. It could be as simple as your answer to the question: "What does it mean to be a system dynamicist?" Give us, your audience, what we want to get a standing ovation.

Probe: close the loop

Probe for audience feedback the moment you utter your first sentence. It is wrong to wait for feedback until the end of your talk. Turn your technical presentations into an active contact sport. Use proper body language, eye contact, facial animation and voice to probe for immediate audience feedback. Once you learn to focus on and to pay close attention to your listeners, then you see how much we communicate to you nonverbally. Learn to pause if you want audience interaction. Silence adds variety!

Probing for audience feedback is another way to create a plot point. Stop partway through your talk and take a question. This forces you to change your tone and interact with your audience. Turn up all the lights during this brief Q&A session. Technical talks must always have built-in opportunities for audience interaction. Technical presenters often worry about getting through all their data and forget to interact with the audience. The audience becomes attentive when you vary your talk's pace.

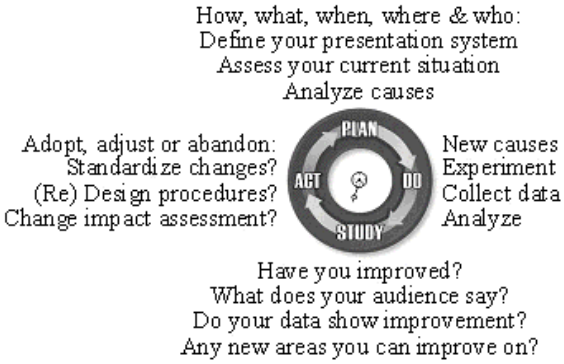
After you presentation, first relax. Then think through your talk. Single out parts you believe went well and parts you would improve if you gave your talk again. Ask an audience member, preferably someone you know well, to comment on your presentation. Perhaps your friends can suggest ways for you to polish your delivery, to make your main points more interesting, or to avoid going off on tangents unrelated to your central theme. Viewing a video of your presentation, if one is available, can be another way of obtaining useful insights that can help tighten your delivery and make it more powerful, i.e. less likely to bore or to irritate your audience.

Some presenters need help in keeping their voice lively, their tone enthusiastic and their energy high. We can all help. Look at others' presentations and ask yourself what you would do differently to energize the presenter and to capture the audience's attention. Volunteer your comments when you get a chance.

Figure 17 shows a stylized representation of the plan-do-study-act (PDSA) cycle, a tool for learning and continuous improvement (Deming 1994). Also known as the Deming wheel or Shewhart cycle, its

purpose is to apply the scientific method to learning from daily practice. Used in conjunction with Fig. 16, Table 6 and Appendix D, the PDSA cycle can improve our technical presentation skills continuously, no matter how advanced these are. When it comes to continuous improvement, the sky is the limit.

Figure 17
The plan-do-study-act (PDSA) cycle



At each PDSA cycle iteration, one can suggest improvements at the plan step, implement them at the do step, and then check their effectiveness in the study step. The act step rectifies any failures identified in the study step. Each iteration is similar to formulating a diagnosis and creating a treatment plan for a presenter's system. Figure 17 outlines this continuous presentation improvement process.

Start, for example, by formulating a plan to test your technical talk action loop system: identify improvement opportunities, diagnose problems, analyze causes and generate hypotheses. Do implement your plan to test it: try suggested treatments and experiment. Study the results during and after your presentation, i.e. observe and assess performance as you reply to the question: "How do I know if my plan works?" Then act. Adjust your talk system depending on audience response, modify it to work better or, if it works well, seek ways to sustain it. Modify or standardize changes to help yourself maintain what works. If your experimental results show a need for change, then modify your hypotheses, preparation protocol and delivery style.

Summary

Are Roberta and Pål smiling at you? Run! I had no idea what those two were getting me into that summer night in Atlanta. I am grateful though. It has been fun taking a quick peek into the vastness of professional communications, an area we all practice empirically but a few investigate thoroughly. Think of what you have been reading here as a professional communications essay written by a… practitioner!

Its conversational and directive tone shows my intent to write a primer, rather than a research essay. As a system dynamicist, I try to incorporate more than a single view from a single literature. As an educator, I urge you not to agree necessarily with every view, but simply to understand different views. Let them coexist peacefully in your mind for a while. Through time, the more talks you give, the more obvious it will become which view or delivery style best suits you, the real you, at your best. Experiment, discover and learn. But, there is one condition: if you are not having fun, you are not learning.

At the risk of sounding too square, optimistic even, I trust the essay helps our society's members build charisma, clarity, competence and confidence in our technical presentations. Charisma is a one-percent gift of the gods and a 99 percent hard work. Our society benefits as we become polished speakers, truly dynamic and entertaining presenters. The concerted effort of all members increases our field's acceptance decisively, an issue that concerns us all, at least as much as it concerns Bellinger (2000).

In conjunction with Fig. 16, Table 6 and Appendix D, the PDSA cycle of Fig. 17 can help us, both individually and as a group, improve our technical presentation and conference organization (e.g. Fig. 5) skills continuously, no matter how advanced these become. There are no inherent upper bounds to conference organization and technical presentation skills; are there? What do the dynamics of these multidimensional constructs look like? Are we dealing, for example, with continuous S-shaped growth or discontinu-

ous behavior patterns? If we were to simulate them, "What principles should guide the choice of modeling method and level of aggregation?" (Sterman 2000, p. 896).

As a safety valve, the essay can serve as a white paper on system dynamics presentations, starting a dialogue aimed at the continuous improvement of our society's annual conferences. Let's all stand firm behind one goal: to make each year's conference better than the last. Even if some members learn slowly, our society as a whole can "improve through evolution, as the higher-performing agents prosper and are imitated while the low performers are selected out…" (Sterman 2000, p. 896).

The action loop of Fig. 2 serves both as a dynamic framework or *clockwork* for great technical presentations and as the essay's outline. It shows the benefits some of our society's members already enjoy as we contribute the extra resources, the bundles of energy and time required to *pains*takingly establish the purpose of, to plan and to prepare for, to deliver and to probe great SD presentations. These activity bundles are neither mutually exclusive nor collectively exhaustive. Even their recursive sequencing is necessarily subjective, revealing my personal biases. The pains, however, I am sure, come from digging our minds and souls for nuggets to captivate the mind and soul of our audience.

Clarity is critical no matter what your talk's content. Clarify your specific purpose and central theme both for yourself and for your audience to see and hear. Clearly, the delivery paths framework and preliminary audience analysis of the purpose section merely scratch the surface of what technical talks entail. Yet, the extemporaneous path wins the talk-development-and-delivery-paths contest both clearly and cleanly. It is the only path that combines spontaneous delivery with thorough content preparation.

The plan section digs deeper than the purpose section to unveil practical tips from neuroscience that help stimulate our listeners' brains. As we integrate facts, ideas and stories to activate interlinked neurons, we must look for and create opportunities for immediate audience feedback, even if nonverbal. Human beings are storytelling primates. We are curious, and we love to learn. The challenge is to share stories that engage the child within and take advantage of the novelty-seeking property of the human brain that facilitates learning.

Although a bona fide planning issue, room layout might have felt a tad dry and tangential after our fascinating voyage into cognitive schemata, interlinked neurons, intuiting and interpreting. Yet, it serves as a mental pose, a smooth sail back to the pragmatism of technical conference organization. While we craft the content and sequence of our talks, let's keep the pressure on our conference planners to always get the setup we need to deliver our presentations effectively.

Every system dynamicist knows the nonlinear, value-added simplification process of Fig. 6. Its spiral trajectory resembles the system dynamics modeling process (Randers 1980). When used to prepare model presentations as opposed to models themselves, this spiral trajectory leads to the linear antidote against severe audience limitations. The linear OT_1BT_2S pattern of Table 3 is at once the universal nostrum and the three-pronged rule of clear communication we need to thoroughly craft and sequence our talks' effective delivery. And that is just one third of the prepare phase.

The second third entails dispelling technical talk mythology, learning visual aid (re)design (Fig. 7 and Appendix C), using graphic advance and post organizers for smooth transitions, and creatively choosing our stock and flow representations. People with no technical background can then see the value of SD. We can communicate and share with them how system dynamics can help them solve real problems. Only then can our work appeal to the intrinsic motives of both newcomers and our field's experts.

The last third of the prepare phase requires access to good media technology and accessible friends. Once done rehearsing in private, then videotape yourself and try your talk in front of a few friends. And you must do all this early enough to give yourself time to polish you talk. Then…

Open with a bang and focus! Focus on the audience you are speaking to. The need to focus on your audience makes eye contact crucial for technical presentations. If Zorro can do it with a sword, you can certainly do it with your eyes: follow a Z scanning pattern for proper eye contact with your audience.

Focus on connecting the real you, at your best, with your real audience for a real purpose, and stay focused within the connection loop you create. Focus on liking each member of your audience. Focus on respecting each member of your audience. Focus on giving us something of value. Step out of the abstract and focus on explaining why you did what you did in simple terms, rather than on details only specialists

care about. Focus is the only special skill you need to deliver excellent talks. To stay sane, however, focus on one thing at a time.

If you dare not show the real you at your best, then you must act. Although viable as an alternative, acting too requires real connection, real emotion. You need emotion to activate and to prepare the cognitive parts of your listeners' brains to store the information you present. Your information is easiest to digest with emotional seasoning. Empathy, fear, humor and sadness can make dry facts easier to swallow. Even if you manage to stay unemotional about emotion, emotion works best when based on real life. Get real. No matter what you do, you cannot escape the real you.

Neither can you escape the fact that you are probing for audience feedback the moment you utter your first sentence. You have an excellent starting point, for example, when you make your talk a vehicle for promoting action research. You want people to know how terrific your work is, but no one is eager to listen to a sales pitch. Focus on the SD modeling process and on client service instead; even if these indirectly relate to your proceedings essay. If you give people a pleasant experience at the presentation, then they will look for your essay in our *International System Dynamics Conference Proceedings.*

All of our society's members come to Earth to sample happiness and system dynamics essays. As an ISDSC presenter, your job is to bias our sampling.

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Appendix A

How to give a bad technical talk (adapted from Patterson 1997)

1. *Thou shalt not be neat*. Why waste research time preparing slides? Ignore spelling, grammar and legibility. Who cares what 50 people think?
2. *Thou shalt not waste space*. Slides are expensive. If you can save five slides in each of four talks per year, you save $5.00/year!
3. *Thou shalt not covet brevity.* Do you want to continue the stereotype that engineers can't write? Always use complete sentences, never just key words. Use whole paragraphs and read every word.
4. *Thou shalt cover thy naked slides*. You need the suspense! Overlays are too flashy.
5. *Thou shalt not write large*. Be humble. Use a small font. Important people sit in the front. Who cares about the riff-raff?
6. *Thou shalt not use color.* Flagrant use of color indicates uncareful research. It's also unfair to emphasize some words over others.
7. *Thou shalt not illustrate.* Confucius says: "A picture = 10K words," but Dijkstra says: "Pictures are for weak minds." Whom are you going to believe? Wisdom from the ages or the person who counted GOTOs first?
8. *Thou shalt not make eye contact*. You should avert eyes to show respect. Blocking screen can also add mystery (right panel of Fig. 15).
9. *Thou shalt not skip slides in a long talk.* You prepared the slides; people came for your whole talk; so just talk faster. Skip your summary and conclusions if necessary.
10. *Thou shalt not practice*. Why waste research time practicing a talk? It could take several hours out of two years of research. How can you appear spontaneous if you practice? If you practice, argue with any suggestions you get and make sure your talk is longer than the time you have to present it. (Even if you break the other nine commandments, this one can save you.)

Appendix B

26 *golden rules for visual aid text* (Anonymous source)

1. Don't abbrev.
2. Check to see if you any words out.
3. Be carefully to use adjectives and adverbs correct.
4. About sentence fragments.
5. When dangling, don't use participles.
6. Don't use no double negatives.
7. Each pronoun agrees with their antecedent.
8. Just between you and i, case is important.
9. Join clauses good, like a conjunction should.
10. Don't use commas, that aren't necessary.
11. Its important to use apostrophe's right.
12. It's better not to unnecessarily split an infinitive.
13. Never leave a transitive verb just lay there without an object.
14. Capitalize only Proper Nouns. also begin a sentence with a capital letter and end with a full stop
15. Use hyphens in compound-words, not just in any two-word phrase.
16. In letters compositions reports and things like that we use commas to keep a string of items apart.
17. Watch out for irregular verbs that have creeped into our language.
18. Verbs has to agree with their subjects.
19. Avoid unnecessary redundancy.
20. A writer mustn't shift your point of view.
21. Don't write a run-on sentence you've got to punctuate it.
22. A preposition isn't a good thing to end a sentence with.
23. Avoid clichés like the plague.
24. Never start a sentence with a number.
25. Always check your work for accuracy and completeness.

Appendix C

Illustration principles for technical presentations (adapted from Parrish 1999)

1. Present all information in small digestible units to accommodate the limited capacity of working memory, the part of our memory where conscious mental processing takes place. A digestible unit contains no more than nine separate items of information because our chunking limit is seven plus or minus two items of information at a time. As the complexity of the information increases your audience's chunking limit decreases (Miller 1956).
2. Reduce complexity by eliminating unnecessary elements. Complexity draws attention but loses its benefits beyond a threshold. More often than not, you benefit from complexity reduction.
3. Group necessary elements and limit the number of elements in groups to reduce complexity. Otherwise, audience members can come up with their own misleading organization. Ostensibly, our perceptions must make sense to us. This is why we see constellations in the sky and why lists of almost anything fascinate us. Grouping also helps recall information from long term memory by storing it in manageable chunks. If you label each chunk, recalling the label will help recall the entire group (Fleming & Levie 1978).
4. Make critical elements conspicuous and de-emphasize non-critical elements, if you cannot eliminate the latter. Sometimes non-critical elements are necessary to establish a context for the critical ones. Use bold lines, color or even a high level of detail to make sure your critical elements stand out.
5. Concreteness aids retention. Organize each illustration to reflect the conceptual or real-world organization of your information. Visual organization must reveal the process, hierarchy or spatial organization of depicted elements. Graphically represent processes that show cause and effect, cycles, decision trees and chronologies. Lines and arrows connecting words or pictures help reveal the direction and sequence of a process. In Western cultures, left-to-right and top-to-bottom positioning implies sequence, even if unintended. Illustrations with right-to-left sequences strongly frustrate learning. Show hierarchies in top-to-bottom format with line or arrow links, or decrease the widths of boxes to show spans of control or definition (Winn and Holliday 1982).
6. Make sure each figure stands out from the background. Figure is the portion of an image perceived to be in the foreground. It is the element that commands attention, a critical element. What is perceived to be in the background must be as unimposing as possible to accentuate a figure. Stand back and judge readability to determine good figure/ground contrast. Black and white line drawings often cause figure/ground problems when elements receive equal treatment. Audiences perceive elements closed within complete outlines as figures, and those with incomplete outlines or fading at the edges as ground (Fleming & Levie 1978).
7. Encourage interaction with your illustrations by using captions or questions and references to your proceedings essay. Do not assume your audience will study or even look at your illustrations just because they are there. Asking questions about an illustration will get your audience to interact with it. Ask questions that cover all the important information presented. Your audience may also conclude that your questions cover your main points and thereby focus only on information your questions cover (Winn and Holliday 1982).
8. Your pictorial elements and words must complement each other. Dual-coding theory suggests that information is stored in memory in both verbal and visual forms (Paivio 1971). This does not mean that your must duplicate all information by reading out loud everything on your visual aids. People avoid redundancy and conserve effort by attending to only one mode of delivery if they suspect they gain nothing by attending to other modes. Label items or process steps to help your audience build strong associations among items and labels. Lengthy descriptions, however, only distract from the power of your visual aids. Similarly, long text items in a list defeat its purpose, which is to aid retention through chunking. List items must contain as few words as possible and cue larger amounts of verbal information not present it in its entirety (e.g. Fig. 7).
9. Test your illustrations with subjects representative of the intended audience. Illustration design is not an exact science. Going through this or as many other checklists as you like still does not ensure that your visual aids will show your audience what you intend. Evaluate your presentation before you assume it is effective. Find subjects similar to your audience in their knowledge of and experience with your topic, and ask them to explain what each illustration shows. Ask questions you expect them to answer after studying each visual aid. Based on their responses, you can diagnose illustration problems and determine possible improvements (e.g. Fig. 17).

Appendix D

Additional Technical Presentation Assessments (adapted from Wilder 2001a)

Here are some additional concerns people have with technical presentations (s.a. Fig. 16). Circle numbers from 1 through 9, with 9 being the best. Then see which presentation skills to improve.

Table D.1 Rate yourself (adapted from http://www.wilderpresentations.com/steps/individual.html)

#	Concern	Score								
1	I do not appear nervous sounding and acting.	1	2	3	4	5	6	7	8	9
2	My objectives are clear and concise: I have a format for my objectives.	1	2	3	4	5	6	7	8	9
3	I am organized, and do not give too many details.	1	2	3	4	5	6	7	8	9
4	My visuals enhance my talk.	1	2	3	4	5	6	7	8	9
5	My delivery and speaking look and sound confident.	1	2	3	4	5	6	7	8	9
6	I keep the audience's interest.	1	2	3	4	5	6	7	8	9
7	I conclude with conviction and excitement.	1	2	3	4	5	6	7	8	9
8	I know how to answer difficult questions.	1	2	3	4	5	6	7	8	9
9	I organize and present recommendations with conviction.	1	2	3	4	5	6	7	8	9
10	I do not miss vital information when I talk.	1	2	3	4	5	6	7	8	9
	Total score:									

Table D.2 Rate others (adapted from http://www.wilderpresentations.com/steps/company.htm)

#	Concern	Score								
1	Sound and look confident when they present.	1	2	3	4	5	6	7	8	9
2	Set clear objectives for their presentations.	1	2	3	4	5	6	7	8	9
3	Organize talks to contain just the right amount of information.	1	2	3	4	5	6	7	8	9
4	Create visuals that give concise, results-oriented talks.	1	2	3	4	5	6	7	8	9
5	Sound and look energized and enthused when speaking.	1	2	3	4	5	6	7	8	9
6	Keep the audience's attention when speaking.	1	2	3	4	5	6	7	8	9
7	Conclude with conviction and excitement.	1	2	3	4	5	6	7	8	9
8	Answer difficult questions with ease.	1	2	3	4	5	6	7	8	9
9	Make concise recommendations at the end of their talks.	1	2	3	4	5	6	7	8	9
10	Customize their talks to each specific audience.	1	2	3	4	5	6	7	8	9
	Total score:									

Total score recommendations

10 to 30 points: Must not present until more confident and knowledgeable. Look for a coach and train. Must improve and feel good in front of an audience.

30 to 50 points: Still need training and practice in developing presentations, designing visuals and delivering main points. Train without procrastination: presentation skills can make or break one's career.

50 to 70 points: Getting there. Pick two concerns that, once improved, will please the audience.

70 to 90 points: Excellent presenter that audiences like to listen to. Pick one concern and focus on it during next presentation to improve even more.

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