

## PowerPoint, habits of mind, and classroom culture

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In lecture halls, in secondary school classrooms, during training workshops, and at research conferences, PowerPoint is becoming a preferred method of communicating, presenting, and sharing knowledge. Questions have been raised about the implications of the use of this new medium for knowledge dissemination. It is suggested PowerPoint supports a cognitive and pedagogical style inconsistent with both the development of higher analytical thinking skills and the acquisition of rich narrative and interpretive understanding. This paper examines how PowerPoint invites and seduces educators to reshape knowledge in particular ways, and subsequently how this knowledge is presented to students in the classroom. The particular forms of knowing, relating, and presenting with PowerPoint are decided in part by teacher habituation to the software tool's default patterns, but also by the very nature of the presentation medium itself.

**Keywords:** computer uses in education; lecture method; Microsoft PowerPoint; multimedia materials; phenomenology; visual aids.

A medium is a technology within which a culture grows; that is to say, it gives form to a culture's politics, social organization, and habitual ways of thinking (Postman 2000: 10).

Of late, PowerPoint<sup>1</sup> is suffering from more than a few detractors. On the heels of Tufte (2003a) declaring PowerPoint 'evil', the *Columbia* Accident Investigation Board partially implicates NASA's ubiquitous use of PowerPoint in the shuttle tragedy (Langewiesche 2003). And, despite musician David Byrne's (2003) much touted foray into PowerPoint 'art', some sitting in the audience would agree PowerPoint presentations often leave something to be desired. As a medium for teaching and learning, PowerPoint increasingly finds its way to school classrooms, lecture halls, and conference podiums. However, while some questions are being raised by media scholars, PowerPoint usage among educators seems to be relatively unreflective and taken for granted.

Much of the educational literature on PowerPoint has focused on 'how-to' advice and occasional exemplar uses in the classroom. Survey data suggest students find PowerPoint a useful cognitive tool and the provided electronic files and slide printouts helpful for review (Frey and Birnbaum 2002). Teachers using presentation software are described generally as

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‘more organized’. However, a recent poll of 4500 undergraduates in the US (Young 2004) reveals significant student unhappiness with the way technology, particularly PowerPoint, is being employed in lecture halls.

From a visual communications perspective, Tufte (2003b: 22) calculates ‘the PP [PowerPoint] slide format has probably the worst signal/noise ratio of any known method of communication on paper or computer screen’. This software package ‘elevates format over content’ (Tufte 2003a), turning everything into a sales pitch. Tufte maintains that PowerPoint supports a cognitive style inconsistent with the development of higher analytical thinking skills. Turkle (2004: 102) defers judging ‘a product of the cultural assumptions of the Western corporate boardroom’, yet she, too, has little doubt PowerPoint ‘affects our habits of mind’.

There has always been a deep link between humankind and our machines. Our tools or *techne* extend our reach, abilities, sensory perception, locomotion, and understanding. In adopting a tool, we invite it to enhance, or more dramatically, transform what we do and how we perceive the world. Wielding his famous hammer, Heidegger (1962: 98) points out that ‘the less we just stare at the hammer-Thing, and the more we seize hold of it and use it, the more primordial does our relationship to it become’. Each transformation is sealed quietly as the latest ‘life-altering gadget’ (Richer 2004) is woven transparently into the fabric of our lives as new activities and thoughts are enabled by it, and a measure of dependence is felt. The adopted tool becomes a necessary appendage, a happy burden (Borgmann 2002), allowing us to sustain our lives in the style to which we have become accustomed.

Thus, it may be naïve to perceive the new technologies arriving in classrooms as ‘just an assemblage of machines and their accompanying software. [Each new technology] embodies a *form of thinking* that orients a person to approach the world in a particular way’ (Apple 1991: 75). As teachers seize the PowerPoint hammer as a tool to enhance teaching practices, some questions should be examined:

- What forms of thinking, what styles of teaching and learning, are educators and students becoming accustomed to?
- Does PowerPoint privilege particular modes of knowing over others?
- How exactly might PowerPoint affect habits of mind?

### **‘Habits of mind’: Cathedrals and other architectures of experience**

The architectural spaces people design, build, and inhabit decide in subtle and sometimes significant ways their activities thereafter. For example, ‘when we walk off a crowded street into a cathedral, our whole demeanour changes even if we are not alert to it. We relax in its cool darkness that solicits meditateness’ (Dreyfus and Spinoza 2003: 346). Churchill suggests an even stronger thesis: ‘we shape our buildings and afterwards, our buildings shape us’.<sup>2</sup> However, it is not simply architectural structures that so shape us. All objects invite us to extend or change our relationship to our world. These enhancements or transformations can be minor to profound, but the

full spectrum of effects is often unanticipated and unseen until the object is integrated transparently into our lives. And by then, life is different; we may wonder only how we lived without this or that gadget. Mobile phones, for example, have altered dramatically the way some of us stay in touch with one another, challenging and reframing previously stable notions such as availability and autonomy, and public and private spaces (Arnold 2003).

Illich (1996) coins the phrase *le milieu technique* to refer to the irresistible embrace of the high technology environs we find ourselves dwelling in today. The technological milieu is shaping substantially—insinuating itself, habituating us, and simultaneously reinterpreting—how we act in and perceive the world. In order to understand how this occurs, Illich (1996: 64) asks us ‘to listen to what [modern] objects [of technology] *say*, rather than *do*’. To ‘hear’ what an object of technology might be saying to us, we must enter the realm of lived experience, and orient ourselves to pre-reflective or ‘pathic’ knowing.

Within the situated, relational, embodied context of lived space, all objects may be heard as invitations. Straus (1966) calls this invitation the pathic quality of a thing. Van Manen (1997: 21) illustrates this point: ‘cool water invites us to drink, the sandy beach invites the child to play, an easy chair invites our tired body to sink in it’. In an analogous fashion, Turkle (in Coutu 2003) suggests PowerPoint ‘is not just a tool but an *evocative object* that affects our habits of mind’. What then is PowerPoint’s vocative invitation to teachers, to students? And how might this presentation software shape ‘our habits of mind’?

### **The PowerPoint invitation**

Before tackling the question of how PowerPoint might shape people’s habits of thinking, I shall consider briefly the invitational address PowerPoint makes to a teacher as he or she constructs a PowerPoint presentation. I necessarily overlook the experiential subtleties that characterize PowerPoint’s invitation to a teacher in the immediacy of the classroom, as well as the multi-faceted address this medium presents to students: a careful exploration of these topics would extend well beyond this paper. However, a cursory inquiry provides both an initial flavour for the complex vocative appeal PowerPoint makes to a teacher and a glimpse of his or her response to that appeal.

It must be first acknowledged that the PowerPoint software package is a product designed primarily for the Western corporate marketplace. That the special interests and demands of this sector are built into virtually every design decision of PowerPoint’s architecture comes as no surprise. Indeed, this is hardly a failing of PowerPoint, but an historical fact. A useful analogy is to compare the architectural design of an office building with that of a school. Both buildings are recognized as different structures with different functions. In using this Microsoft Office productivity software tool, a teacher is in some ways charged with re-fashioning a space especially designed for office use into a liveable classroom.

Entering the PowerPoint application, a teacher is immediately invited to construct a presentation in one of the following ways. He or she may begin

with the 'blank' presentation consisting of a title slide, followed by a series of regular slides, each offered with a large, centred title above a box of bulleted, textual information or points. There are variations on this theme, of course. The presentation author is also invited to select a 'design template', one of a variety of professional quality, business-friendly backgrounds, with the option to vary the colour scheme. PowerPoint's third suggestion for new presentation creation is the AutoContent Wizard. Constructing a short teaching presentation using the AutoContent Wizard can provide a memorable demonstration of how PowerPoint's user-friendliness may at moments turn heavy-handed and highly prescriptive.

In the typical 'blank' default slide (see figure 1), PowerPoint presents a teacher with a relatively straightforward invitation. There are two enjoinders: 'Click to add title', and 'Click to add text'. A slide-set author is thus invited to first title the slide, and then to add information in bulleted format. Indeed, to not incur bulleted text at this juncture, an author must 'erase' the bullet and adjust the text placement, or de-select bulleting using the bullet tool, or delete or ignore the bullet text box and insert a regular text box in its place.

Each of these work-around actions requires a user to have some familiarity with this or similar software. Still, given the stipulation that the slide text is readable by all in a room, some abbreviation of the presentation material seems quite understandable. Thus, in preparing a presentation using PowerPoint, a teacher is confronted with two questions. First, what information should be presented on each slide? Clearly, information must be broken into discrete bits to fit on each slide. Secondly, how might each



**Figure 1.** PowerPoint default slide.

segment of information be best represented? PowerPoint *suggests* bulleted text.

Note that PowerPoint is merely inviting, not compelling, an author to format his or her knowledge as bullet points. Other formats and approaches may be tried. Yet, it must be admitted that the invitation in the default slide—to bullet—is taken up by many. As a general rule, heavy reliance on default patterns in design (a feature common to many user-friendly software packages) yields products bearing a similar look-and-feel, regardless of the creator. Some architectural software packages, for example, ‘urge architects to create roofs with lots of little peaks, under each of which arched windows are now the requisite fashion’ (Searls 1998: 3). The result is many houses that look remarkably similar to one another, each being a variation on a few default themes rather than a truly original creation. Although such software may allow homes to be built more inexpensively (less architect time is presumably incurred, and standardized materials are manufactured more cheaply ‘en masse’ corresponding to these defaults), templating may sometimes *get in the way* of responding creatively to individual homeowner’s needs and aesthetic preferences. On the one hand, PowerPoint default slides and templates ease the process of organizing a presentation, particularly if one is willing to use and adept at bulleting information. On the other hand, teachers wishing to tailor presentations to match their personal teaching styles may need to work actively around the defaults, which may sometimes take more than a modicum of thought and know-how.

Thus, in seizing hold of PowerPoint as a tool, a teacher is simultaneously aided, enmeshed, and constrained by particular design decisions embedded in this software. PowerPoint is, after all, part of a sophisticated, pre-programmed (that is, anticipated) conversation taken up by and with a teacher, urging him or her to organize and present knowledge in a certain way. This *particular way* is evoked primarily through ease of access to default patterns or templates. Moreover, the particularity of this way (the dialogue that develops between PowerPoint and an author working towards representing the subject matter at hand, and culminating in a .ppt file) may range from being highly regulated by the software (e.g. the AutoContent Wizard) to more teacher-decided (e.g. starting with a ‘blank presentation’ and flexing the software to meet one’s own teaching style or aesthetic sensibilities).

Indeed, it may only be a creative teacher, an experienced rhetor, or a thoughtful, practised user who thinks to venture much beyond the PowerPoint defaults. An unassisted novice, a new teacher, or a busy lecturer may be more inclined to accept as given the PowerPoint defaults in forming their presentations, and subsequently the ideas about how they will present their material. And this is understandably so because, particularly when we as humans are navigating an unfamiliar environment or are under time constraints, we gladly accept or *fall into* the most accessible, appealing invitation at hand. In the case of PowerPoint, ‘ease of use’ equates with high invitational appeal. As educators, we are inclined to choose the option that seems to offer the simplest, quickest path to our desired end—a good teaching presentation. With these considerations in mind, I turn now to the notion of habits, and ‘habits of mind’.

*How can PowerPoint shape 'habits of mind'?*

A habit is 'a constant, often unconscious inclination to perform some act, acquired through its frequent repetition; an established trend of the mind' (Houghton-Mifflin *Dictionary*). A habit is that which we as humans find ourselves doing. We become accustomed, habituated to things; we get used to them over time. Habit comes from the Latin verb, *habere*, meaning to hold, have, or possess. Taking hold of an object, we also take up residence in it; we *inhabit* it, but it also inhabits us. In the words of Merleau-Ponty (1962: 143), 'To get used to a hat, a car or a stick is to be transplanted into them, or conversely, to incorporate them into the bulk of our own body. Habit expresses our power of dilating our being in the world.' Habit allows us to expand and settle into the world, to extend ourselves. For example, to try writing with a keyboard is at first awkward. So much time is occupied looking at the lettered keys and checking the result on the screen; it is quite impossible to follow a complete train of thought. Over time, and perhaps improved by deliberate training, our fingers gradually learn the landscape; they become habituated to the keyboard environment. Merleau-Ponty calls this acquired habit or skill 'knowledge in the hands'. Our habituated fingers now serve us silently, falling transparently into our background, allowing us to settle into the higher-level business at hand: writing. However, now try replacing the familiar QWERTY keyboard with the unfamiliar Dvorak. Our poor fingers will demand attention immediately! Then once more (for a time) the activity of writing will not come so easily.

Habit gives 'our life the form of generality, and develops our personal acts into stable dispositional tendencies' (Merleau-Ponty 1962: 146). Our bodies tend towards the equilibrium of habit, forming patterns of familiarity and thus freeing us to build upon and project ourselves well beyond 'knowledge in the hands', to expand our being in the world. What is it then to become habituated to, to get used to PowerPoint?

With each new slide that a teacher composes, a certain habit, a knowing in the hands, is developing, slowly gathering confidence and transparently settling in as pattern. PowerPoint helps in the organization of a clear, concise, and complete lecture from start to finish. In the process, a teacher may take up PowerPoint's tempting invitation to reconstruct subject knowledge as bulleted information. He or she may be unused to arranging lecture materials in this manner. In doing so, a teacher becomes more and more accustomed to, and adept at, abbreviating the subject knowledge and its practices in short, pithy phrases rather than composing full sentences. Parker (2001: 78) humourously notes how PowerPoint seems to promote a certain mode of thinking: 'Last week I caught myself planning out (in my head) the slides I would need to explain to my wife why we couldn't afford a vacation this year'. As a teacher seizes hold of PowerPoint as a tool of teaching, he or she necessarily begins to think in terms of the form it suggests. At minimum, a teacher must think in slides, reconfiguring his or her knowledge in the new 4:3 rectangular landscape delineated by PowerPoint. The software readily assists in this project by inviting a teacher to consider certain formats: to title each slide, to re-form subject material as abbreviated, bulleted points.



Of course, PowerPoint allows for the representation and later presentation of knowledge in other modes than point form. For example, if a teacher has ready access to them, relevant digitized images, sounds, or videos are easily imported and integrated as slides or parts of slides. Complex narrative exposition or story may be distributed across several discrete slides to be later sewn back together through the continuous flow and knowing presence of the teacher's voice, or perhaps situated as an extemporaneous prompt on a single slide from which the presenter digresses and to which he or she later returns. Atkinson (2005), writing primarily to the business audience, entreats presenters to move 'beyond bullets' and invent presentations that take advantage of the tremendous possibilities the PowerPoint slide palette provides.

Nonetheless, it is important to notice how PowerPoint users seem to *fall* into certain ways of doing things, patterns of behaviour that suggest themselves right from the beginning. People talk about falling into step, falling in line. In a sense, falling is something that happens to us, or we happen upon it, something we *find* ourselves in or doing (as in falling in love). Habituation can also be exactly this: slipping into the easiest, most accessible, efficient path and seldom thinking to diverge from it. In this way, habit is both ability and disability. I have already explored a few of PowerPoint's appealingly simple invitations to a new user that are taken up by many: to use the Microsoft-provided templates to title and bullet slide-text.

Quite unintentionally, from the Microsoft software-designers' perspective, PowerPoint's user-friendliness (which relies on default patterning) is simultaneously foreclosing other forms of knowledge through lack of habitual (easy) access. Software-designers may recognize here one of their core design dilemmas: how to accurately and sensitively balance ease of use, and thus adoptability, against early constraint and lack of user freedom? A key challenge for the software-designer is how to progressively reveal all of the power of the software through short shallow transitions, as needed, and then to make it obvious and easy later on to access further transitions when the user is ready to exercise new possibilities. Often the trade-off between power and early adoptability may result in sub-optimal, overly constrained conditions for anyone who is not a master. Of course, this is also a core teaching and learning challenge: how to progress each student from minimal skill to mastery with the least effort? PowerPoint's AutoContent Wizard is just such an attempt at a software answer to this problem, with predictable results. Default patterns are another way to provide users with early success, although through less directive means than a typical wizard. However, defaults also impose constraints. Defaults are decisions made by the software-designer on behalf of the user, so that the user can get on with the task at hand.

For educational use in particular, it must be borne in mind that the default settings have been chosen for business and sales audiences. Again, it is not that PowerPoint necessarily precludes other ways of presenting ideas in a wide variety of knowledge forms; but rather, these other ways are less frequently represented, simply because it may not be immediately apparent to a teacher how to form them in this medium, how to step away from the default settings and explore other possibilities. To do so requires thoughtful

initiative, that is, wakefulness to the habituating trends embedded in PowerPoint's user interface and a willingness to flex it in other directions, or to choose not to use it when it is inappropriate to the teaching task.

Thus far, I have painted a rather accusatory portrait of PowerPoint, suggesting its architecture exerts a kind of soft determinism upon a sleepy teacher-user, by turns inviting him or her to try certain ways of preparing a lesson or lecture (and not others). I have further proposed that, through widespread user-habitation to the particular presentation practices inherent in PowerPoint default slides and templates, this software may be enacting real changes in the way teachers think about their subject matter and how their discipline is subsequently represented and presented to students. Such determinism, that is, 'the imposition willy-nilly of new cultural grounds by the action of new technologies', McLuhan and McLuhan (1988: 127–128) assert, 'is only possible while the users are "well-adjusted"—sound asleep'. The inevitable tendency of any given technology to enact its 'vortex of side-effects' is counterbalanced by each user's willingness to pay attention, to remain focused on the purposeful task at hand—in this case, teaching.

McLuhan (1964: 30) suggests that all media, indeed, all artefacts, exert invisible 'lines of force' that tend to develop into predictable trends. It is only by:

standing aside from any structure or medium, that its principles and lines of force can be discerned. For any medium has the power of imposing its own assumption on the unwary. Prediction and control consist in avoiding this subliminal state of Narcissus trance. But the greatest aid to this end is simply in knowing that the spell can occur immediately upon contact, as in the first bars of a melody.

I have made an initial exploration of the first bar of PowerPoint's melody. To venture further, McLuhan provides a framework for discerning the overall effects any artefact exerts on both its active and passive users.

### **McLuhan's power points**

*Laws of Media* is McLuhan and McLuhan's (1988) attempt to encapsulate the efforts of phenomenologists like Hegel, Merleau-Ponty, and Heidegger to reveal the hidden effects of technologies by employing a relatively simple formula. He poses four questions of every technology:

- What does [the medium] enhance or intensify?
- What does it render obsolete or displace?
- What does it retrieve that was previously obsolesced?
- What does it produce or become when pressed to an extreme? (p. 7).

The responses to these questions, known as the 'four laws of media', are then composed as a tetrad held in a complex set of poetic tensions. The tetrad intends to focus attention on dynamic 'situations that are still in process, situations that are restructuring new perceptions and shaping new environments, even while they are restructuring old ones' (p. 116). Thus, the tetrad indicates simultaneous (not sequential) effects:



All human artefacts are human utterances, or outerings, and as such they are linguistic and rhetorical entities. At the same time, the etymology of all human technologies is to be found in the human body itself: they are, as it were, prosthetic devices, mutations, metaphors of the body or its parts. The tetrad is exegesis on four levels, showing not the mythic, but the logos-structure of each artefact, and giving its four 'parts' as metaphor, or word (p. 128).

In composing a tetrad, it is helpful to reflect on the more extreme examples—both positive and negative—as well as on the more mundane of a technology's uses, in an effort to tease out unusual textures, the hidden trends. The purpose is to gain insight into how a given technology can both enhance and disrupt, and ultimately reshape current practices in unexpected ways.

Below, I venture my own tetrad for PowerPoint (figure 2). I then explore some of the dimensions of the PowerPoint 'utterance' through a series of textual vignettes. Each section is intended to declare not certainty but tendency of effect, drawing attention to both worrisome shoal and pedagogical possibility inherent in this software. Like McLuhan, I take poetic license with these observations, playing with figure, then ground, in an attempt to loosen some of the threads binding, and sometimes blinding, thinking. In doing so, my focus resides primarily on the tensions tugging among four medial laws of enhancement, retrieval, reversal, and obsolescence, for it is here that PowerPoint's dynamic lines of force are to be revealed.

## POWERPOINT

### Enhances

- pointing
- bulleting, point form
- outline
- hierarchical, linear thinking
- 4:3 rectangular, flat display
- monologue

### Reverses into

- pointlessness
- insignificance
- incoherence

- Plato's cave
- rhetoric in the academy
- sales pitch
- kiosks
- Cole's notes
- wall art

- overhead projector
- writing on the board
- note-taking
- divergence, digression
- narrative
- complex tabular data
- conversation
- Socratic dialogue

### Retrieves

### Obsolesces

Figure 2. PowerPoint tetrad.

## A PowerPoint tetrad

### *Pointing powerfully*

PowerPoint enhances, quite literally, the ability or power to point. Through this software, a teacher can now point more accurately, vividly, and rapidly at text and image—digitized photographs, diagrams, charts, film clips, web pages. Indeed, pointing, or the act of signifying, is a central activity of pedagogical practice. Teachers point things out, illustrate different points of view, and get straight to the point. They may even point wordlessly to the student with raised hand, not knowing or having forgotten his or her name. Or they may point enigmatically at the mere existence of something, the sheer wonder of something unnameable. One way or another, teachers hope they are pointing their students in a right or worthwhile direction.

A thing does not exist in a meaningful sense until it is signified, that is, an object has no significance until it is pointed out, at, or to. Our most basic communicative technology, language, may be understood as a sophisticated pointing device. Words themselves are not the actual things they name, rather words point to things. The word ‘chair’, whether uttered out loud or rendered in print, is not itself a chair, but points to the *eidos* chair. ‘Chair’ calls to mind or refers directly to an object used for sitting on. As such, naming evokes or calls a thing into existence. Pointing, whether accomplished with a finger or through the extension of some pointing instrument—linguistic, artistic, or otherwise—brings a thing to attention, and thus to significance.

The activity of pointing need not be direct. A metaphor, for instance, points to a thing by creating a poetic tension between two unlike, yet like, things. The metaphor, ‘teacher as midwife’, points by juxtaposing two unlike things to indicate a third other, in this case, a novel understanding of the role of a teacher. A metaphor is thus a ‘reference to absence’ (Levinas 1996: 36), a pointer to something not yet visible. A true or lively metaphor, one that has not yet fallen into the common lexicon, is a pointer or referent to that which currently has no direct label and is, thus, not usually perceived by others.

PowerPoint itself does not point to actual things, but facilitates the projection of pointers, for example, words and images. PowerPoint also allows for the projection of indirect pointers, like metaphor. However, this provision has limits. Metaphor refers to an absence through the relatively simple juxtaposition of two unlike objects. Metaphor orients by pointing at two things at once; these two referents can be easily listed as a single point of bulleted text. However, not all knowledge is so economically referenced.

### *If it isn’t on the PowerPoint, it probably isn’t important*

A college student recalls this moment in class:<sup>3</sup> ‘I am listening to a talk, and while there is no PowerPoint yet, I know there is going to be one [i.e. a PowerPoint presentation]. The equipment is set up, and the presenter was fiddling with it as I came in. I feel impatient for him to start it’ (November 2004). This student is impatient for the presenter to fire up PowerPoint

because, as he also relates, that is where the ‘real information’ is located. The preliminary ‘talk’ is mere preamble, not substantial. If it does not appear on a PowerPoint slide, it is indeed not significant.

For many students, PowerPoint slide-sets have become an efficient way to prepare for examinations (Frey and Birnbaum 2002). This presumption is accurate in a very practical sense. Knowledge that lends itself easily to a PowerPoint slide likely translates well into an examination question. Whether a teacher is intending it or not, PowerPoint’s message of economy to students is: if it is does not appear on a slide, it is probably not important because it did not warrant being pointed at powerfully. Here ‘important’ equates with high probability of appearing on a test. The overall effect is the devaluing knowledge presented orally or via media other than PowerPoint, for example, on the whiteboard.

### *The 4:3 tabula rasa*

PowerPoint is displacing overhead projectors and slide carousels. The whiteboard is also partially eclipsed, whether literally by a pull-down screen or when it is usurped as a projection surface. Nonetheless, the whiteboard is only partially rendered obsolete for it is sometimes used in conjunction with PowerPoint.

PowerPoint favours information that can be displayed on a single projected 4:3 rectangle. Knowledge that requires more space is disadvantaged. Consider a complex table of data. Such a display must either be abbreviated—and thus suffer loss of information—or be excluded. How to include a story on a slide? Distributing the associated text over several slides literally breaks it into fragments, disturbing its natural cohesion and thus coherence. On the other hand, stories in books are broken across many pages that are then rewoven into a seamless whole by a reader. Is there a difference? What if a teacher reduces a story to point form? How does that affect the telling, and equally, the received meaning of a narrative?

Some narrative forms simply cannot be rendered in PowerPoint at all. Clifford Nass (in Parker 2001: 87) reluctantly admits that he

actually removed a book from my syllabus last year because I couldn’t figure out how to PowerPoint it. It’s a lovely book called ‘Interface Culture’, by Steven Johnson, but it’s very discursive; the charm of it is the throwaways. When I read this book, I thought, My head’s filled with ideas, and now I’ve got to write out exactly what those ideas are, and—they’re not neat.

In this way, PowerPoint renders obsolete some complex narrative and data forms in favour of those that are easily abbreviated or otherwise lend themselves to display on a series of slides.

A specialized anecdotal form that makes regular appearances on PowerPoint slides is the comic. Single panel comics are decidedly best. They can be projected legibly, fitting well within the 4:3 PowerPoint default frame. The message is textually short, yet can often pierce straight to the heart of an issue. Comics running several frames are also used. However, longer comic sequences are seldom used, although they are certainly available.

What may be observed here is the privileging of information that is pithy (of few words and thus legible), requires little context, and happens to fit nicely within a single, 4:3 frame.

### *Focus and out of focus*

Picking up a camera and peering through its viewfinder, I am looking at the world in a very particular way. For one thing, my view of the world is suddenly reduced to a small rectangular image. And I am necessarily pointing the camera at something or someone. In the same moment, I am also *not* pointing at the rest of my world. I have but a single point of focus, or focal point. The rest of the world now resides more or less out of my focus. Practised photographers learn to keep both eyes open: one looking through the viewfinder, the other still gazing softly upon the rest of the world. Nonetheless, the camera is pointing. A photographer takes up an attitude of studied focus towards his or her subject, using the camera apparatus to organize his or her field of vision. The world is experienced through the lens of the camera.

Similarly, students witness a PowerPoint version of the teacher's rectangular viewfinder writ large. Snapshot after snapshot of the teacher's perspective is presented to the students, each slide portraying a particular *point* of focus or interest in the subject matter. The rest of the teacher's world is temporarily unavailable, and is thus out of focus—almost. 'Almost', because the single point of vision is enhanced, made more comprehensible, and given richer context as the figure of the teacher steps into the picture as pedagogical presence. In this way, a PowerPoint slide may serve as a source of shared perception, enabling each student the possibility of vivid entry into the world a teacher has chosen to point at.

### *PowerPunctum*

In his *Camera Lucida*, Barthes (1981) names two elemental qualities attributable to a photograph in relationship to the viewer: *studium* and *punctum*. These qualities describe a viewer's impression or response as he or she looks at a given photograph. Most photographs have *studium*: 'I glance through them, I don't recall them; no detail (in some corner) ever interrupts my reading; I am interested in them (as I am interested in the world), I do not love them' (p. 41). They are 'unary' (p. 41) representations of their subject. These photographs, Barthes explains, objectify their subject.

The presence of *punctum*, however, penetrates beyond the ordinary. *Punctum* is the photographic detail that catches the eye, interrupts, disturbs, or evokes an unexpected mood—pensiveness, delight, or even tenderness. It is 'that accident which pricks ... bruises me' (p. 27). *Punctum* returns subjectivity to the object. A photograph with *punctum* 'annihilate[s] itself as medium, to be no longer a sign but the thing itself' (p. 45). Here the pointer momentarily becomes a thing in and of itself. With PowerPoint, it may be reasonable to inquire of each slide: is there *punctum* here? Through this slide,

am I as teacher touching, penetrating, and evoking my students' interest? If not, then what is its point?

*'Knowledge in the hands'?*

Inasmuch as PowerPoint enhances the power of the teacher's pointer finger, the student's hands fall strangely passive in this equation. To observe a classroom with PowerPoint at its centre is often to watch a group of students with idle hands. Traditional note-taking becomes obsolete as lecturers make their PowerPoint slide-sets available. Students no longer need to be divided between the two complex tasks of note-taking and listening, but are now released to give their undivided attention to the lecture. The teacher's hands are also occupied differently: pressing the Enter key or mouse button or remote to advance to the next slide. In between, these 'knowing hands' find themselves freer with PowerPoint, to gesture, to point, or even to experience uncertainty in their idleness. Yet, while the teacher's index finger is dramatically enhanced, the flowing articulation of the writing hand—of both student and teacher—is atrophied.

*Teaching product or process?*

Borgmann (1984) claims modern technology is decisively separating means from ends. The activities or processes of creating things are progressively being hidden from view and replaced with the more singular activity of procuring end-products or commodities. 'What distinguishes a [modern] device is its sharp internal division into a machinery and a commodity procured by that machinery' (p. 33). As a result, some of the practices associated traditionally with creative teaching activities are ostensibly disappearing in the wake of sophisticated technologies.

The PowerPoint file is clearly a lecture product that students are increasingly expecting to procure from their teacher. As illustrated above, this file is essentially a product of a teacher's thinking in dialogue with the PowerPoint software, now solidified in single framed, sequential snapshots. Thus, a student witnesses more often the projected product, and less the *process* of the teacher's knowledge-in-action. Then again, each slide has the potential to trigger the embodied insights of an experienced practitioner in the immediacy of the now. This *punctum* or evocative capacity can 'save' a PowerPoint presentation from being merely a product.

Yet it may be that 'the ultimate success of teaching actually may rely importantly on the "knowledge" forms that inhere in practical actions, in an embodied thoughtfulness, and in the personal space, mood and relational atmosphere in which teachers find themselves with their students' (van Manen 1995: 48). Thus, a primary concern here is a bypassing of the experiential dimensions of practical knowledge, both in the discipline of the subject as well as in teaching practice. When educators try to capture and translate aspects of their tacit understandings to a series of slides, there is the danger of 'short-circuiting' the normally contingent

enactments of their ordinary teaching and professional actions. Of course, 'shortening the circuit' is precisely what devices of expedience, like PowerPoint, are designed to do: eliminate 'unnecessary' sub-steps (via hardware or software solutions) to allow the most efficient path to an end. Indeed, why struggle with *Macbeth* when I can 'get' the basic idea from Coles or Cliff Notes?

*Optimizing delivery, disrupting dialogue*

When we as teachers think of a presentation, we do not often think of it as a conversation. However, in fact, students also dwell in their own thoughts and feelings in response to a teacher's tonal quality, word choice, gestures, and, of course, to the ideas and images evoked. In a sense, the student carries on a listening sort of conversation with the teacher, just as the tactful teacher has a way of listening in a talking sort of way (van Manen 2004). 'Successful communication occurs only if the listener, instead of following the verbal chain link by link, on his [*sic*] own account resumes the other's linguistic gesticulation' (Merleau-Ponty 1973: 28–29). In this manner the student does not merely take in what is being said by a lecturer, but engages in an inner dialogue with the lecturer. The student *settles into* (becomes immersed in) the lecture conversation through listening, that is, through linguistically participating, albeit in many cases silently. One university student describes the conversational nature of a lecture in this way:

I had a lecture where it was just someone talking to us. It was weird. It took a lot more effort to stay focused without the visuals. It was odd. I mean, here we are just having a conversation. No one spoke but the lecturer really, but it still felt like a conversation. PowerPoint is different somehow. Actually, it turned out to be a great lecture. (March 2004)

How might PowerPoint presentations be 'different somehow'? Another university student recalls a PowerPoint lecture where he is pre-occupied with making sense of slides apparently incongruous with the teacher's talk:

He moves on to his second slide filled with several bulleted points, same design scheme. I read each one quickly, trying to make sense of them as he talks. I am surprised and confused they do not seem to match any of the sub-topics I have just heard. Maybe he's not presenting them in order. When I am done reading all the points, I shift my attention more thoroughly back to the lecturer. I realize I have missed the last bit of what he has been saying again. He flips to the next slide, pauses to look at it briefly and, before I can finish reading the second point, he flips to the next slide. Once more, I feel as if I've missed something crucial. ... We are now looking at the screen print of a website he had referred to at the very beginning. The site is familiar to me, and I turn back to listen to him. He talks for a time now, occasionally looking to his paper notes on the podium beside his laptop. I listen carefully, glancing periodically over at the same projected image, wondering whether he will refer to it again or whether it is just 'there'. I am slowly grasping the direction of his talk. A question occurs to me and I jot it down. The screen suddenly darkens, a screensaver starts bouncing randomly about. He doesn't seem to notice. (February 2004)



This student struggles to become engaged. He is caught between attending to the content on the slides or to the lecturer's speech. At last, he finds himself drawn into the talk, but is once more momentarily interrupted by a dissonant image on the screen. In this case, the projected images and text seem to detract from rather than enhance the experience.

Another college student finds herself surprisingly unaware that she is looking at a projected PowerPoint slide, and is instead caught up in learning something quite difficult:

I remember one day watching a lecture and realizing I had forgotten it was PowerPoint. I mean, I had forgotten about the particular slide I was looking at and was focusing on the content. It was partly I think because what was being covered required quite some thought and concentration on my part, but, strangely, I remember being conscious of the slides to that point. (March 2004)

In a PowerPoint-enhanced lecture, this student finds herself (surprisingly) engaged with the subject. Here the technology falls transparently into the background, supporting her learning experience. This moment is not unlike that of watching a foreign movie with subtitles. Initially, a dissonance may be experienced between attending to the movie (the moving images as well as the spoken foreign language with its nuanced expressions) and reading the subtitled text, but eventually most people adjust to the divided purposes and perceive the movie as a whole. However, with PowerPoint, such dissonance levels vary considerably across presentations and among different students, sometimes regularly disrupting a student's ability to enter or carry on the lecture conversation.

Understanding teaching as hermeneutics, as conversation or dialogue, however, is very different from thinking of teaching as delivery. As a teaching tool, PowerPoint reifies the notion of teaching as 'presentation, not conversation' (Turkle 2004: 101), favouring pre-determined monologue and teacher-centred pedagogy over unpredictable dialogue and other pedagogical forms. Socratic dialogue, a form of teaching and learning that involves the flowing juxtaposition of like and unlike ideas over time in complex discourse, does not easily transfer to a pre-determined slide format. True dialectic occurs in process, and thus can never be wholly anticipated in advance. On the other hand, it is quite possible for a thoughtful teacher to present a series of slides purposefully to invite dialogue. PowerPoint may, thus, become a springboard to discussion rather than solely a mechanism to deliver optimally a pre-set body of text and images.

### *Foreclosing the unbidden*

PowerPoint use can inadvertently hamper dialogue in another way. The pre-set linear course of the slide-deck does not usually allow for what May (in Sandel 2004: 31) calls 'openness to the unbidden'. A university student relates the following:

In my class yesterday, I asked a question and the professor said that she'd be covering that a few slides ahead. But then several slides later I remember

thinking, hey, she's forgotten my question. I felt annoyed and wanted to say something, but then I couldn't remember exactly what I was wondering about. The moment had passed. (November 2004)

Knowing what works in this moment, with these particular students, falls in the domain of tactful teaching. A tactful teacher is able to respond to the 'unplannable' situations, where, for instance, it becomes clear that the current tack is not being understood, and so a different approach is taken or other background information given. PowerPoint runs counter to this more *bricoleur* turn in teaching, instead compelling the lecture conversation along its pre-determined unidirectional course. Of course, a teacher need not defer to PowerPoint's pre-planned linear script:

To plan is not just to programme an inflexible script. To plan is to think through, to anticipate, to imagine how things might go, how these [students] might experience or see things. ... The more carefully an educator thinks through anticipated interactions with the [students], the more likely that he or she will be able to improvise on the planned script in order to be more responsive to the contingencies of a situation. A good teacher thoroughly plans lessons in order to be able to teach extemporaneously on the basis of this planning. (van Manen 1991: 188)

Indeed, a thoughtful teacher is willing to step away from the current slide-set—perhaps using the B key to temporarily shut off the current slide—and improvise, using whatever means or materials are at hand to tackle a new course if deemed pedagogically appropriate (and perhaps later to return to the original course lined up in the slide-set). Even the most thoughtfully composed PowerPoint presentation is not easily adapted to the unexpected question or the one that is 'answered' several slides hence, but is more aptly responded to in the moment.

PowerPoint's decidedly linear slide-sequence is both a strength and a weakness. The pre-determined deck helps map out a clear, singular course for both teachers and students to follow. It is efficient, expedient. However, this one-way-ness can also render a set of PowerPoint slides less valuable pedagogically if the students' learning ends up being forced mechanically along an inappropriate path. The slides tend to impel the lecture conversation along a pre-set unidirectional course, disregarding and sometimes blind to (witness a lecturer entirely occupied with the projected image) the unbidden: the unsolicited question or unexpected comment. Importantly, the decision to diverge, jump ahead, or remain on course resides in the hands of the teacher. However, it is not difficult to recognize the influence exerted by the pre-set course of the slide-show, and the reluctance of the teacher to abandon such a highly articulated (and thus difficult to alter) projected course.

*'The roundness of an apple'*

Exclusive use of PowerPoint renders obsolete tactile contact with substance, and, more generally, direct experience or apprehension of the world. With PowerPoint there is even less impetus, than say with a whiteboard alone, to

bring the artefacts of the subject to class. To study apples, for example, I may easily collect together and project via PowerPoint, images of different kinds of apples, apple seeds, apple trees in bloom, in fruit, and in winter. I may label them, list them. I can display a clear, predictable cross-section of an apple, with parts named and indicated accurately. I need not incur the messiness of knife and fruit, nor the clumsy inaccuracy of my finger indicating the parts to my gathered students. Indeed, I may even include a digital video-recording demonstrating an apple being cut open, and add pointers to label the parts exactly. PowerPoint facilitates the collection and subsequent access to a tremendous amount of information about a subject in a fast, efficient, clean, and safe fashion.

However, as the actual is more and more replaced by the virtual, some experiences, some ways of knowing are being lost. Lusseyran (1963: 27), blinded as a child, describes another way of knowing an apple, and the things of the world, directly through his hands:

If my fingers pressed the roundness of an apple, each one with a different weight, very soon I could not tell whether it was the apple or my fingers which were heavy. I didn't even know whether I was touching it or it was touching me. As I became part of the apple, the apple became part of me. And that was how I came to understand the existence of things.

The sweet smell of an apple, the smooth, cool texture, and sensation of its roundness, are essentially unavailable to a student learning about apples via projected image and text alone. The activity of pointing occludes (if only momentarily) the knowing touch. This occlusion is extended when the finger is pointing exclusively at pointers. Lusseyran's fingers are not pointing *at* an object, but learning directly through sensual contact with the object itself. Lusseyran's text, however, is pointing *to* a way of knowing in danger of being lost when projected against a bright flat surface. PowerPoint is not alone in this tendency to attenuate tactile relationships with the real; it is merely nudging it a little further along. Borgmann (1999: 232) claims all information technologies endanger human contact with substance:

[W]hile information technology is alleviating overt misery, it is aggravating a hidden sort of suffering that follows from the slow obliteration of human substance. It is the misery of persons who lose their well-being not to violence or oblivion, but to the dilation and attenuation they suffer when the moral gravity and material density of things is overlaid by the lightness of information.

Reality is not able to compete with the 'supernatural brilliance, limitless variety, and unreal availability [that] constitute the normative identity and charm of virtual reality' (p. 185). More specifically, information technology engenders a totalizing style of practices that threaten to:

restrict our openness to people and things by driving out all other styles of practice that enable us to be receptive to reality. This threat is not a problem for which we must find a solution but an ontological condition that requires a transformation of our understanding of being. For that, we need to understand technicity as our current mode of revealing things and people. (Dreyfus and Spinoza 2003: 341)

The totalizing style of practices inherent in PowerPoint presentations are importantly mediated in part by the pedagogical thoughtfulness of the teacher composing the slide-deck, and still later in his or her tactful presence in the classroom. McLuhan warns us, however, to be aware of the trends. Teacher presence importantly serves to counterbalance the PowerPoint presentation. However, the more a teacher relinquishes his or her authority as the significant teaching presence (e.g. by deferring to the pre-determined direction of the PowerPoint slide-show rather than diverge when it is pedagogically relevant to do so), the more PowerPoint serves to diminish both substance and human substance. According to Borgmann, this is equivalent to obsolescing meaningful activity, and more specifically here, the focal practice of teaching.

*A writing on the wall*

PowerPoint revives Plato's Cave (Rose 2004). Rather than the primitive shadows cast by a fire, students are now witness to the projection of bright, highly articulated light upon the wall. The teacher creates and then interprets the projection for the students. Whether the PowerPoint-enhanced teacher is to be understood as one of the prisoners still in the dark or the one returned after seeing the light is uncertain. Perhaps more important is the retrieval of this parable and its invitation to contemplate illusion, artifice, and the ephemeral nature of knowledge. It is a strong reminder that intellectual health depends in no small part on the ability to step away from the projected images and regard the world from new perspectives.

PowerPoint also reclaims the marginalized art of rhetoric or persuasive speech in the academy (Smith 2004); more specifically PowerPoint retrieves the sales pitch (Tufte 2003b). To pitch something is to throw it. PowerPoint allows the presenter to pitch directly, to aim straight at the mark with a negligible drop in the projectile course. This, interestingly enough, is the definition of the phrase 'point-blank'. To be in point-blank range is to be so close that when one fires, the object is thrown along a flat trajectory. The aim is thus perfect, but blunt. The hardware of PowerPoint allows for just such a perfect trajectory, duplicating the image on the personal computer screen to a large projection surface. The software of PowerPoint is primarily concerned with direct pointing that is a precise and perfect aim.

The danger implicit in the sales pitch is a willingness to sidestep logical coherence. Pitching a sale is often an appeal to emotional needs—real or manufactured. To this end, the sales pitch deliberately obscures at times thoughtful consideration and cogent argument. It is, thus, a special form of rhetoric, a consumerist brand, persuading not by logic *per se*, but by eloquent, charismatic language, and at times oversimplifying the truth. PowerPoint bullets serve the sales pitch especially well by making it easy to describe things in a 'true' but conveniently abbreviated fashion. The detailed fine print, written in more difficult, time-consuming narrative format, is located elsewhere. Through PowerPoint, it appears the whole truth is presented—vivid, large, and ultra-real. However, the truer, more detailed picture may in fact be obscured from view. Then again, there are instances

when it is pedagogically helpful to hide the details; for example, in order to grasp the larger structure in which certain ideas are situated. At other times, a teacher may want deliberately to paint a partial or exaggerated picture in order to entice students into a subject, to arouse interest. Thus, the sales pitch—eloquent, charismatic language, and appeal to emotions—may also be the stuff that good teaching is made of. PowerPoint may assist in this project, affording a teacher easy access to a wealth of appealing and provocative images and techniques aimed at evoking interest. Still, it is hard to imagine Richard Feynman's undergraduate physics lectures being helped by PowerPoint, or even Abraham Lincoln in delivering his Gettysburg address (Norvig 1999).

### *Significant insignificance*

PowerPointing ubiquitously, the presenter may end up pointing at everything, and thus at nothing at all. When everything is signified or significant, nothing has significance anymore. The *Columbia* Shuttle disaster demonstrates the tragic consequences possible here. Critical information presented in a series of PowerPoint slides by NASA engineers to executive decision-makers was lost in a sea of significance and, thus, insignificance. Information was broken into points within points of significance through nested bullets. However, the relative significance of the most critical point, 'buried' several levels deep, was apparently not discerned from all the rest, and the true import and meaning of this information passed unseen.

As information gets passed up an organization hierarchy, from people who do analysis to mid-level managers to high-level leadership, key explanations and supporting information is filtered out. In this context, it is easy to understand how a senior manager might read this PowerPoint slide and not realize that it addresses a life-threatening situation. (*Columbia* Accident Investigation Board 2003: 191)

The *Columbia* Accident Investigation Board, therefore, blames NASA's overuse of PowerPoint as one of the key factors leading to the shuttle disaster. 'The Board views the endemic use of PowerPoint briefing slides instead of technical papers as an illustration of the problematic methods of technical communication at NASA' (p. 191).

The NASA incident is a sober warning for educators to pause and reflect on the possible consequences of delivering a steady diet of PowerPoint presentations to students. Knowledge presented continuously in bulleted format tends eventually to homogenize and level information rather than underline the importance of any given point. Over-signifying is not unlike underlining everything in a book or speaking in a monotone. Crucial, too, is the recognition that regular, accepted use of any presentation medium fortifies a certain mode of communication and advantages particular ways of knowing. Used endemically, this same medium simultaneously attenuates and renders obsolete other modes of communication and forms of knowledge. In some cases, the loss of other methods can lead to unexpectedly deleterious results.

Finally, although individual teachers may claim only pedagogically-wise use of PowerPoint, it is important not to overlook the overwhelming influence of this software presentation tool on today's educational culture, particularly in redefining what a lecture looks like, consists of, and how it is experienced. When a particular communication medium becomes accepted as the norm, as was the case at NASA (like so many educational conferences and undergraduate classrooms), it then becomes necessary to have good reason *not* to use the technology rather than to use it. Indeed, that reason sometimes turns out to be quite practical: no other presentation tools are available.

### Conclusion

The peril of technology lies not in this or that of its manifestations but in *the pervasiveness and consistency of its pattern*. (Borgmann 1984: 208)

As we turn to accomplish our multifarious human projects, we seize hold of whatever tools we have at hand to assist us in our task, to extend our reach, to enhance our powers. PowerPoint has proved itself an excellent instrument of the lecture presentation, allowing teachers to gather and organize an astonishing array of digitized materials for that purpose into a single file. At the same time, PowerPoint comes with an appealing, and in many respects, irresistible invitation to its users. This invitation exerts invisible lines of force upon the choices teachers make everyday in forming and subsequently presenting their knowledge with this medium. These invitational lines are fortified through early habituation to a relatively small set of default options. The otherwise innocuous default patterns selected by Microsoft software-designers to ease new user adoption are unexpectedly but powerfully influencing how knowledge is being formed and presented across all disciplines.

The disappearance of the diverse flora and fauna of knowledge-forms native to specific disciplines is of particular concern here. PowerPoint may indeed be a 'killer app',<sup>4</sup> superseding a variety of classroom practices and potentially rendering obsolete valuable, perhaps critical, knowledge-forms. The habituating trends of PowerPoint may be redressed in part by consciously thinking 'beyond bullets', by taking creative advantage of the open palette PowerPoint affords. In this regard, it may be argued that new knowledge forms and teaching methods heretofore unavailable are now possible through PowerPoint. However, teachers must also continue to make room in classrooms for ways of knowing that are not well located in a PowerPoint slide-deck. And when issues of pedagogical import present themselves within the natural dialogue of the class—but exist outside the realm of discourse appearing on the current slide—there needs to be a willingness to diverge, to use the projector's on/off switch or the B hot key turning the screen black for a time.

Other pedagogically relevant questions about PowerPoint remain unexamined here. For instance, what habits of mind are being encouraged in students through the ubiquitous use of PowerPoint in their learning and class assignments? By reforming and presenting knowledge primarily as



bulleted items couched on Microsoft templates, are teachers inadvertently short-circuiting the tacit, mimetic, and dialogic dimensions of the teaching-learning relationship? Dewey's (1980: 132) admonition is relevant here: 'the "good" man who rests on his oars, who permits himself to be propelled simply by the momentum of his attained right habits, loses alertness; he ceases to be on the lookout. With that loss, his goodness drops away from him'. By not remaining alert to the constraining patterns of presentation embedded in PowerPoint—the very patterns that make it so easy to use—might teachers be unintentionally rendering obsolete important knowledge and potentially affective interests in knowledge, limiting students' access to deeper, more complex modes of knowing, understanding, and valuing a discipline?

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### Notes

1. PowerPoint is a computer software presentation tool distributed by Microsoft Corporation and comes packaged with the Microsoft Office Suite. It was first released in 1987 for the Apple Macintosh. Within the year, PowerPoint was purchased by Microsoft Corporation, and by 1988 Windows and DOS versions were made available. The tool allows users to develop and deliver presentations as a series of slides in the form of a projected 'slide-show'. The software includes a text and graphics editor. Digitized images, sounds, and video may be imported and subsequently displayed on a slide. Other software presentation tools are available (e.g. Apple Keynote, OpenOffice Impress), but it is estimated that PowerPoint is now employed in the creation of 96% of such software generated presentations (Cyphert 2004).
2. Winston Churchill made this statement on 28 October 1943 to the House of Commons, at a meeting in the House of Lords, in a bid to have the old Chamber, bombed on 10 May 1941, 'restored in all essentials to its old form, convenience and dignity' (The Churchill Centre 2005).
3. This and other student anecdotes appearing in this paper come from a related phenomenological research project investigating the lived experience of PowerPoint presentations for male and female undergraduate college students. The study, conducted in 2004, included interviewing 14 male and female subjects, aged 22–45. These participants were asked to recall personal experiences of PowerPoint as college or university students.
4. 'Killer app' is short for killer application. A killer app is a computer programme or application that surpasses and ultimately 'kills' its competitors.

### References

- Apple, M. W. (1991) The new technology: is it part of the solution or part of the problem in education? *Computers in the Schools*, 8(1/2/3), 59–81.
- Arnold, M. (2003) On the phenomenology of technology: the 'Janus-faces' of mobile phones. *Information and Organization*, 13 231–256. Available online at: <http://>

- www.hps.unimelb.edu.au/about/staff/michael\_arnold/Janus\_face\_of\_Mobile\_Phones.pdf, accessed 12 October 2005.
- Atkinson, C. (2005) Beyond bullets: people communicating with people. Available online at: [http://sociablemedia.typepad.com/beyond\\_bullets/](http://sociablemedia.typepad.com/beyond_bullets/), accessed 9 July 2005.
- Barthes, R. (1981) *Camera Lucida: Reflections on Photography*, trans. R. Howard (New York: Hill & Wang).
- Borgmann, A. (1984) *Technology and the Character of Contemporary Life: A Philosophical Inquiry* (Chicago: University of Chicago Press).
- Borgmann, A. (1999) *Holding on to Reality: The Nature of Information at the Turn of the Millennium* (Chicago: University of Chicago Press).
- Borgmann, A. (2002) On the blessings of calamity and the burdens of good fortune. *The Hedgehog Review*, 4(3), 7–24.
- Byrne, D. (2003) Learning to love PowerPoint. *Wired*, 11(09), September. Available online at: <http://www.wired.com/wired/archive/11.09/ppt1.html>, accessed 8 July 2005.
- Columbia Accident Investigation Board (2003) *The CAIB Report: Volume 1*. Available online at: [http://www.nasa-global.speedera.net/anon.nasa-global/CAIB/CAIB\\_lowres\\_full.pdf](http://www.nasa-global.speedera.net/anon.nasa-global/CAIB/CAIB_lowres_full.pdf), accessed 12 October 2005.
- Coutu, D. L. (2003) PowerPoint, robomanagers, and you: the growing intimacy of technology (interview with Sherry Turkle). In *Harvard Business School: Working Knowledge for Business Leaders*, online publication. Available online at: <http://hbswk.hbs.edu/pubitem.jhtml?id=3683&t=technology>, accessed 8 July 2005.
- Cyphert, D. (2004) The problem of PowerPoint: visual aid or visual rhetoric? *Business Communication Quarterly*, 67(1), 80–84.
- Dewey, J. (1980) *Theory of the Moral Life* (New York: Irvington).
- Dreyfus, H. L. and Spinoza, C. (2003) Further reflections on Heidegger, technology, and the everyday. *Bulletin of Science, Technology and Society*, 23(5), 339–349.
- Frey, B. A. and Birnbaum, D. J. (2002) Learners' perceptions on the value of PowerPoint in lectures. ERIC ED 467 192.
- Heidegger, M. (1962) *Being and Time*, trans. J. Macquarrie and E. Robinson (New York: Harper & Row).
- Illich, I. (1996) Philosophy ... artifacts ... friendship—and the history of the gaze. In T.-A. Druart (ed.), *Philosophy of Technology: Proceedings of the American Catholic Philosophical Association*, 70 (Washington, DC: National Office of the American Catholic Philosophical Association, Catholic University of America), 61–82.
- Langewiesche, W. (2003) Columbia's last flight: the inside story of the investigation—and the catastrophe it laid bare. *The Atlantic Monthly*, 292(4), 58–87.
- Levinas, E. (1996) *Emmanuel Levinas: Basic Philosophical Writings*, ed. A. T. Peperzak, S. Critchley and R. Bernasconi (Bloomington, IN: Indiana University Press).
- Lusseyran, J. (1963) *And There Was Light*, trans. E. R. Cameron (Boston: Little, Brown).
- McLuhan, M. (1964) *Understanding Media: The Extensions of Man* (New York: McGraw-Hill).
- McLuhan, M. and McLuhan, E. (1988) *Laws of Media: The New Science* (Toronto, ON: University of Toronto Press).
- Merleau-Ponty, M. (1962) *Phenomenology of Perception*, trans. C. Smith (London: Routledge & Kegan Paul).
- Merleau-Ponty, M. (1973) *The Prose of the World*, ed. C. Lefort, trans. J. O'Neill (Evanston, IL: Northwestern University Press).
- Norvig, P. (1999) The making of the Gettysburg PowerPoint presentation. Available online at: <http://www.norvig.com/Gettysburg/making.htm>, accessed 12 October 2005.
- Parker, I. (2001) Absolute PowerPoint: can a software package edit our thoughts? *The New Yorker*, 77(13), 76–87.
- Postman, N. (2000) The humanism of media ecology. *Proceedings of the Media Ecology Association*, 1, 10–16. Available online at: <http://www.media-ecology.org/publications/proceedings/v1/postman01.pdf>, accessed 8 July 2005.
- Richer, S. (2004) I scream for iPod: how long can an iPod addict stay at only 3,058 songs? *Globe and Mail* [Toronto], 4 December, R1.
- Rose, E. (2004) Personal communication, 25 November.
- Sandel, M. J. (2004) The case against perfection: what's wrong with designer children, bionic athletes, and genetic engineering [Electronic version]. *The Atlantic Monthly*,

- April. Available online at: <http://www.theatlantic.com/doc/prem/200404/sandel>, accessed 8 October 2004.
- Searls, D. (1998) It's the story, stupid: don't let presentation software keep you from getting your story across. Available online at: <http://www.searls.com/present.html>, accessed 7 July 2005.
- Smith, D. G. (2004) Personal communication, November.
- Straus, E. W. (1966) *Phenomenological Psychology* (New York: Basic Books).
- The Churchill Centre (2005) Quotes and stories: famous quotes and stories of Winston Churchill. Available online at: <http://www.winstonchurchill.org/i4a/pages/index.cfm?pageid=388>, accessed 8 July 2005.
- Tufte, E. R. (2003a) PowerPoint is evil: power corrupts. PowerPoint corrupts absolutely. *Wired*, 11(09), September. Available online at: <http://www.wired.com/wired/archive/11.09/ppt2.html>, accessed 7 July 2005.
- Tufte, E. R. (2003b) *The Cognitive Style of PowerPoint* (Cheshire, CT: Graphics Press LLC).
- Turkle, S. (2004) The fellowship of the microchip: global technologies as evocative objects. In M. M. Suárez-Orozco and D. B. Qin-Hilliard (eds), *Globalization: Culture and Education in the New Millennium* (Berkeley, CA: University of California Press), 97–113.
- Van Manen, M. (1991) *The Tact of Teaching: The Meaning of Pedagogical Thoughtfulness* (London, ON: Althouse Press).
- Van Manen, M. (1995) On the epistemology of reflective practice. *Teachers and Teaching: Theory and Practice*, 1(1), 33–50.
- Van Manen, M. (1997) *Researching Lived Experience: Human Science for an Action Sensitive Pedagogy*, 2<sup>nd</sup> edn (London, ON: Althouse Press).
- Van Manen, M. (2004) Personal communication, March.
- Young, J. R. (2004) When good technology means bad teaching. *Chronicle of Higher Education*, 51(12), A31. Available online at: <http://chronicle.com/free/v51/i12/12a03101.htm>, accessed 8 July 2005.

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