# Meetings with a Snake

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A video or CD-ROM brings to the classroom almost promiscuously rich vignettes from nature — images and sounds that would otherwise remain unavailable to students. If the curriculum calls for nature studies, it seems just niggling and petty to suggest that anything is missing from the remarkable video footage available today. What more intimate and revelatory window onto nature could there possibly be?

But now listen to a true story:

> *Yesterday my eleven-year-old son and I were hiking in a remote wood. He was leading. He spotted a four-foot rattlesnake in the trail about six feet in front of us. We watched it for quite some time before going around it. When we were on the way home, he commented that this was the best day of his life. He was justifiably proud of the fact that he had been paying attention and had thus averted an accident, and that he had been able to observe this powerful, beautiful, and sinister snake.*

Barry Angell, the father, then asked exactly the right question: “Wonder how many armchair nature-watchers have seen these dangerous snakes on the tube and said, “This is the best day of my life.” And he concluded, “Better one rattlesnake in the trail than a whole menagerie of gorillas, lions and elephants on the screen.” (Talbott, 1995:160)

Virtually everyone, upon hearing this story, recognizes intuitively the dramatic difference for the child between the snake on the trail and a snake on the screen. It is a difference quite obviously containing profound implications for learning. Getting a clean hold on the difference, however, is not easy. I would like to offer a few simple reflections upon the story.

**Representational Images Are Abstractions**

First, it is often claimed that, whereas the printed word is an abstraction from experience - objective and indirect-the visual image is concrete, subjective and immediate. In an extremely important sense this is false. Whatever we may think about the two-dimensional, decorative surface as such, something further needs saying about the representational image: Relative to what is represented, it is abstract in the extreme - reduced, selective, mostly emptied of meaning. To the degree we substitute such images for the world they represent, we move with our consciousness down the same road of abstraction along which we were already traveling with the printed word - or, at least, down a parallel track.

Angel’s son, in navigating the CD-ROM, would not be at risk of spraining a toe against the exposed roots in the trail. He would not find the tree trunks rough and creviced; but rather smooth as glass. The musty smell of moss and pregnant decay would not greet him. That fullness of being which led the ancients to an experience of nature ensouled - of dryads and naiads, gnomes and elves - and against which our Renaissance forbears shielded themselves by beginning to purge their sense experience, their language and their images of all interior qualities - this fullness would not be there for the little boy. The slithery snake consciousness that looked out through those baleful, unblinking eyes on the trail do not look out through the illuminated pixels on his screen.

It is, in short, the difference between Nature and a picture. After immersing ourselves so fully in a reality of pictures and training ourselves to see the world as we see a picture, it is not surprising that a particularly striking anecdote should be required to remind us of the difference between the two. But difference there is. On the trail the boy met something of his personal destiny - a destiny that might have

turned out very differently had he not seen the snake as soon as he did. If education is about anything at all, it is about helping us to meet, understand, embrace and enlarge our personal destinies. This requires more than the visual and textual abstractions of an electronic global village; it requires a world.

**Teacher-Mediated Education**

The second thing I want to say about our opening story is that it points to the importance of a living and present teacher. Imagine that the boy's father had begun tormenting the snake, and that together they had thrown rocks at it, finally leaving it killed or injured. We can be quite sure that the boy would not have celebrated the best day of his life. In fact, assuming that all natural feeling had not yet been deadened within him, we can guess that he would have felt distinctly out of sorts by the end of the day.

But that, of course, is not what happened. The father clearly felt wonder at the snake's presence, admiration for its beauty, grace and power, and a receptive curiosity about its nature. Without this context, the boy's experience could not have been what it was. What counted was not only that he met a snake on the trail, but that he found something of the snake's meaning in his father's responses. The boy learned about the snake by seeing its image, not upon a screen, but reflected in a living teacher.

To learn, a child must find an inner connection to the subject at hand. This is not the same thing as experiencing a "cool" sensation or a powerful emotional jolt. Screen images, as long as they are continually pushed toward the new and unexpected, readily produce such jolts. But the pleasure of mere unexpectedness is not the same thing as an inner connection. It is more like a drug that calls for a steadily increasing dose. On the other hand, a fellow human being with whom the child already shares an inner landscape can help the child spin the threads of meaningful connection to the surrounding world.

So there are two things in the educational picture we've been sketching, beside the boy himself: the world, and a teacher. Interestingly, there is a modest but growing body of research about the influences that make people choose careers as environmentalists, naturalists, ecologists and so on - careers suggesting a concern for the natural world. Louise Chawla of Kentucky State University, having recently reviewed this literature, reports a remarkable consistency regarding two of the dominant influences: wild places directly experienced (usually at a young age), and adult mentors. (Chawla, forthcoming; see also Sobel, 1995)

*That is hardly a counter-intuitive finding. Yet it does raise serious questions about today's powerful drive toward technology-mediated education. Are we proceeding with our eyes wide open?*

**All Education Is About Our Humanity**

When we think about the teachers who most decisively influenced us, what we remember is above all the teachers themselves, not some striking piece of information they conveyed. We saw in them what it meant to be a human being facing certain aspects of the world.

It is backward to say that we must develop young minds so that they can master particular subject matters - although nearly everyone who talks about developing human capacities yields to this utilitarian story in the end. Rather, we need particular subject matters so that we can learn yet further, from our teachers and from our own experiences, what it means to be human.

The informational content of our learning is almost never as important as the intensity and qualitative vividness with which we work over this content as we bring it to life within us, or as the degree to which we exercise and extend our capacities in doing so.

It is remarkable how forgetful of ourselves we have become. Messrs. Clinton and Gore - supported by high-tech corporations and far too many educators - drill into us that we must train children for twenty-first century jobs. But that gets it backward. Our real task is to raise mature individuals who will be able to decide what sorts of jobs are worth creating and having in the twenty-first century.

**Content Versus Capacity**

Before continuing, I need to address an apparent contradiction. On the one hand I've said that real content - the world rather than various abstractions - must be the foundation for education. But, on the other hand, I've claimed that inner activity and the development of capacities - not the imbibing of content - is what really counts.

But, as you will have recognized, there is no contradiction. The content mentioned here is essential precisely because it provides, first, an attraction and then the resistance against which the student can exercise his capacities. Nor is the attraction a mere matter of entertainment. What attracts us rightly to the world is the fact that we meet ourselves and we meet real destinies there. That meeting is the condition for our development, educational or otherwise.

Yes, I can meet something of my destiny in front of a video screen. Computers, too, are part of the world. But what they give us, beyond their own existence as objects, is a drastically reduced, abstract version of the rest of the world. If I develop repetitive stress injury (RSI) while trekking through the Sierras on CD-ROM, we should remember that I got the RSI, not from the rigors of a mountain path, and not from a snake bite, but from a mouse while sitting in front of a video screen. The two surrounds are as different as their consequences.

**What Is Educational Research?**

Our story also invites rumination about the nature of educational research. It is surprisingly difficult to say what such research is - this, despite the fact that countless academicians and scholarly journals claim to be pursuing it.

Educational research is widely classified as either qualitative or quantitative, with the vast bulk of it falling into the latter category. It is tempting to dismiss as essentially worthless the flood of quantitative research claiming to demonstrate the computer's value in primary and secondary education. In fact, some insistent voices are doing just that. Richard Lookatch, an educational psychologist with the Agency for Instructional Technology in Bloomington, Indiana, has written:

> *There is no evidence that computers and multimedia improve learning... I have closely monitored the literature on teaching technologies since the bloom of computers in the classroom in the early 1980s and have yet to see a study that was without a fundamental flaw. It's called the "Type 1 Error," and it means the researcher has found benefits that aren't really there. (Lookatch, 1995)*

Thomas C. Reeves, an educator from the University of Georgia, looked at the frequent claim that computers can improve learning by giving the student more control over the learning process. After reviewing the literature, he concluded that

> *contemporary research studies on learner control in computer-based instruction constitute "pseudoscience" in that these studies fail to live up the the theoretical, definitional, methodological and analytical guidelines of the positivist, quantitative paradigm they purport to follow. (Reeves, 1993)*

And, again, Richard E. Clark, a professor of educational psychology and technology at the University of Southern California, has for a long while - and with considerable impact - argued that "the evidence is overwhelming that the media do not influence achievement." (Clark, 1991) His point is that improvements normally attributed to a particular technology have been confused, due to faulty experimental design and analysis, with the observed improvements resulting from other causes: temporary novelty, disproportionate investment in the technology-based curricular materials, differences in teacher preparation, and so on.

While I sympathize with at least some of these claims, I believe it is important to appreciate the two necessary and complementary movements of thought we can discern behind the ideals of qualitative and quantitative research. I will set down several brief remarks intended as no more than possible aids toward such appreciation.

**Research and Story**

The story of the boy and the snake is just that - a story. I have not presented it as research. Interestingly, however, Neil Postman would blur the distinction between storytelling and research. In fact, Postman - who has been writing about educational and media issues for three decades - suggests that even the typical quantitative research in the social sciences is a form of storytelling. This research never gives us immutable laws of the sort physicists prefer to deal with. Instead,

> *both a social researcher and a novelist give unique interpretations to a set of human events and support their interpretations with examples in various forms. Their interpretations cannot be proved or disproved but will draw their appeal from the power of their language, the depth of their explanations, the relevance of their examples and the credibility of their themes.*

Postman illustrates his contention in various ways, one of which is as follows:

> *A novelist - for example, D.H. Lawrence - tells a story about the sexual life of a woman - Lady Chatterly - and from it we may learn things about the secrets of some people, and wonder if Lady Chatterley's secrets are not more common that we had thought. Lawrence did not claim to be a scientist, but he looked carefully and deeply at the people he knew and concluded that there is more hypocrisy in heaven and earth than is dreamt of in some of our philosophies. Alfred Kinsey was also interested in the sexual lives of women, and so he and his assistants interviewed thousands of them in an effort to find out what they believed their sexual conduct was like. Each woman told her story, although it was a story carefully structured by Kinsey's questions. Some of them told everything they were permitted to tell, some only a little, and some probably lied. But when all their tales were put together, a collective story emerged about a certain time and place. It was a story more abstract than D.H. Lawrence's, largely told in the language of statistics and, of course, without much psychological insight. But it was a story nonetheless .... Its theme was not much different from Lawrence's - namely, that the sexual life of some women is a lot stranger and more active than some other stories, particularly Freud's, had led us to believe. (Postman, 1992)*

Postman allows that the researcher's and the novelist's stories may differ. The fiction writer creates metaphors "by an elaborate and concrete detailing of the actions and feelings of particular human beings. Sociology is background; individual psychology is the focus." Researchers, on the other hand, tend to reverse this, viewing a wider field so that "the individual life is seen in silhouette, by inference and

suggestion." But the interpretive role of researchers remains central, even if, as is usual, they "consent to maintain the illusion that it is their data, their procedures, their science, and not themselves, that speak.

In what follows it is the differences of emphasis between the two kinds of story - not their commonality - that I am most concerned to highlight.

**The Pole of Profound Meaning**

As a sample of one, the boy in his encounter with the snake doesn't give us much material for quantitative research. If you or I were present at such a single encounter, our understanding of it would hinge in the first place, not on our counting things, but on the depth and fullness with which we could enter into the qualities of the experience. The more we understood the kind of thing that transpired between the boy, his father and the snake, the better off we would be in comparing it to, and numbering it among, other experiences. Without a profound appreciation for the qualities of this particular transaction, we would not know what we were comparing or in what respects our numbering was meaningful.

This is a rather simple and obvious fact, yet its centrality for any kind of educational research, qualitative or quantitative, is not often enough noted. The in-depth, qualitative pursuit of concrete particulars is one of the two poles between which the researcher must live. It is, you might say, the pole that gives us meaning and profundity. Recall the well-known saying of Nobel prize-winning physicist Niels Bohr:

> *The opposite of a correct statement is an incorrect statement, but the opposite of a profound truth is another profound truth.*

There's another way to capture the second half of this aphorism. It's been attributed to John Gardner, one of the elder statesmen of Waldorf education in America:

> *If you want to know whether something is a profound truth, ask yourself whether its opposite is also a profound truth.*

Does this apply to my remarks above? I said, for example, above that a living and present teacher is decisive to the educational context. But couldn't I also have said, with equal truth, that all learning occurs within the quiet solitude of the individual heart and mind? This would have led us to the thought that, while a teacher can show and illustrate, only a creative receptivity and inner stillness on the student's part can transform what is offered into something distinctive of his own. So the wise teacher always leaves a space around the individual student wherein the student can "come to himself" in the presence of the subject at hand. It is within this space of self-determination and solitude that all learning finally occurs.

This, then, is one characteristic of the pole of profundity: It invites us to think imaginatively, so as to discern the unity in contrary movements of thought. Qualities are like that; while the wavelength of a particular red just is what it is - and is not any other wavelength - the quality of red is a different matter. Be loath to say, "Red is aggressive" until you have also glimpsed something of a retiring potential in it.

**The Pole of Accuracy**

Chasing after profound meaning doesn't do us much good if we cannot grasp the meaning rigorously and precisely enough to apply it in new circumstances or communicate it to others. This means, for example, that we must understand exactly how the meaningful situations X and V are like each other, and how they differ. Only through sharp-edged analysis and reduction do we escape imprisonment within the uniqueness of the concrete, particular experience we have so deeply sunk ourselves into. Where before we were alert to unexpected unities (between, for example, the learner's solitude and the companionship of a

mentor), now we must pick apart and distinguish (solitude does not mean the same thing as companionship and should not be confused with it). In pursuing the ideal of exactness, we do not seek meaning so much as the rigid, unambiguous separation of truth from falsehood.

The kind of accurate analysis that says, in exhaustive detail, "X is like Y in such-and-such a respect, and differs from Y in these other respects" is fully as necessary as the unifying insight that brings together profound "opposites." The two movements of thought - the search for imaginative unities and the search for analytic precision - are both essential, and they serve each other. Profound meaning does not conflict with detailed accuracy; while in a sense they work against each other, the friction is generative, producing true understanding.

So, looking at Bohr's statement again, we need to respect the more humble part of it as well as the more striking part.

> *The opposite of a correct statement is an incorrect statement, but the opposite of a profound truth is another profound truth.* (Quoted in Heisenberg, 1971)

The opposition of correct and incorrect statement is fully as important as the opposition of profound truth to profound truth. Of course, when Bohr speaks of the relation between profound truths, he does not strictly mean "opposite." This work, after all, belongs to the logically and quantitatively biased domain of precision, where "correct" is the opposite of "incorrect." But Bohr's whole intention is to point us to a different domain, where precise opposites like "correct and "incorrect" do not so easily apply. Taking our previous example, it is not hard to see that the importance of a teacher and the importance of solitude are far from being simple opposites. It would be mere foolishness to say that pure logical contraries could both be true. Bohr, I think, intended to say something like the following: "Things we might easily take to be opposites if we looked at them superficially, shutting out their rich depth of meaning, actually turn out to be complementary sides of a larger truth." By contrast, opposing thoughts that tend toward the mathematical and logical do not give us this sort of flexibility. They are brittle, gaining a surface precision at the cost of meaning.

Do you see what we've been doing? Bohr's observation has been our "school lesson" for these last few minutes. We may have grasped immediately and intuitively that it is itself a profound truth. But in order to make the truth usable - in order to apply it to one thing or another - we needed to begin analyzing it: This word is like that one in such-and-such a respect, but different from it in another respect. In turn, the analysis helps us "put the saying back together" in a fuller and more richly articulated manner.

In reality, the two "contrary" movements of thought alternate rapidly and continually in the nearly seamless weaving of our routine mental activity. The philologist, Owen Barfield, has characterized these two movements as "poetic" and "analytic." In his extraordinary book, *Poetic Diction* (1973), he shows how the poetic principle, operating through imagination, gives us meaning, and the analytic principle, operating through the discursive intellect, displays, unfolds and wears down meaning. In our life of understanding, both principles must operate. Without the poetic, we become destitute of meaning; without the analytic, we cannot articulate and make use of our meanings.*

**The One-Sided Search for Precision**

It is hardly disputable that our age leans heavily upon the pragmatic value of analysis, which is the reigning principle of much science. One might almost say "despotic principle," for analysis, in the process of clarifying our insights and rendering them more precise, can only wear down meaning. In the end, we achieve the precision of pure arithmetic or logic, but somewhere along the way we fund that we have lost whatever it was we began trying to be precise about. We know a great deal (mostly in the form of

equations and statistical distributions) about the atoms constituting water, but are quite inattentive to water. Not surprisingly, the characteristic problem of our age is the problem of meaning.

If the bulk of quantitative educational research is nonsense - and it surely is - it is because it arises from the one-sidedness of our day. Counting, for us, is the easy way out. It is precise from the word go - is precision itself - and can be done mechanically, with lithe effort. But if we begin with precision, we have nothing to be precise about. We pretend that the things we are counting are obvious and uniform, and so we fail to seek out the profound "opposite truth" standing in creative tension with every unexamined assumption we make.

Suppose a researcher compares a virtual reality-based curriculum module to a conventional module, and at the conclusion of the experiment records that 79 percent of the students who used virtual reality say they liked it more than the conventional approach. Seventy-nine is as precise as it can be, but what is it precise about? Was it the mere fact of novelty that these students liked, implying that the experimental result would not last for long? Was it the teacher's unusual enthusiasm and involvement? Was it the subject matter, brought to life by the technology of virtual reality? Or was it the technology of virtual reality itself, overshadowing the subject matter?

But even more fundamental questions arise about the term "like" itself. What does it mean to like something? Most of us have had this unsettling experience: At a time of conflict with another person, we found ourselves taking pleasure in - liking - an occurrence where our antagonist was humiliated. Yet later we realized how this liking was the product of a disordered inner state; we recognized upon deeper inspection that our pleasure was hardly a pleasure. We may even have discerned in it a "cover" for a profound unease. In recollection, it seems more a misery than a pleasure.

So the precision of "79 percent" tells us nothing at all until we know what it is about; but as soon as we begin pressing this question of meaning, we can no longer speak simply and naively of 79 percent. Endless qualifications are necessary, so that our precision loses its grounding.

It is not hard to imagine the consequences when we bring to the child and his behavior a one-sided concern for precision. Utter silliness results, because we have no deep grasp of the realities we have reduced to number. The problem is perhaps greatest where we try to measure "learning outcomes." But what is learning? lam reminded here of a fundamental tenet of Waldorf education: Much that is taught to children is not understood - and rightly so; it becomes a seed that, years later, sprouts and blossoms in unexpectedly rich forms. Children need these seeds that do not come already full-grown.

Of course, this view is rooted in some strong notions about what kind of teaching carries this future potential, and the answer has a lot to do with the Waldorf teacher's emphasis upon imagination over abstraction. But my point here is not to argue the truth of the Waldorf position. Rather, it is merely to point out the obvious: Measures of learning outcome that have not addressed this question, answering it one way or another, are (to the degree the question is a serious one) at risk of being not only meaningless, but destructive. And this is only one of a potentially infinite variety of questions that require a profound grasp of the child if we are to pursue our research analyses with any hope of revelation.

**Analysis Is Essential**

Once we recognize the dangers of analytic one-sidedness, we can make an extremely valuable exercise out of analysis. Every analysis - even at the numerical extreme - forces us to "protect ourselves" by asking just the sort of question posed above. The analysis, in other words, becomes a challenge to "get our analysis right," and this requires us to return continually to Barfield's poetic principle: What do these numbers represent, and could they represent something else - perhaps something dramatically different or

even “opposite” to our first interpretation? The numbers - if we have driven our analysis all the way to number, which, incidentally, is not a requirement for good analysis -function as “mnemonics” for that seamless, qualitative reality we have struggled to apprehend in depth. By alternating between analysis and the effort to reconstitute in our imaginations the meaningful terms, or objects, of the analysis, we steadily deepen our grasp of the truth. The “things we have seen” become useful.

It is well to keep in mind, however, that one-sided analysis, not balanced by any drive toward meaning, is the besetting sin of our day. Few of us are fortunate enough to escape its insistent distortions. When our numbers run away with us - when we “crunch the numbers” in forgetfulness of the luxuriant array of qualities they both represent and obliterate - when we do not spend at least as much time trying to enter into the individual boy’s concrete experience of the snake as we do collecting statistics about generalized collections of encounters - then educational disaster will follow.

On the other hand, the Waldorf milieu is a strongly formed one, with its own sub-cultural biases. Emphasizing imagination as much as it does, it stands at risk of its own sort of one-sidedness. If unbalanced analysis yields meaninglessness, an unbalanced quest for meaning and profundity yields obscurantism.

**Smile When You Take That Photograph**

Some peoples traditionally have resisted being photographed, fearing that the mechanical reduction of themselves to an image poses a danger to their souls. It is a quaint thought for most of us. But, having trained ourselves for several hundred years to ignore the qualities of things - that is, to ignore precisely what would tell us about the differences between reality and image, and the significance of those differences - perhaps we are not in a very good position to ridicule the folk whose nature is to note the differences and worry about them.

In any case, it has been the point of this paper to suggest that we might profitably spend some time worrying about what becomes of a snake when it is “captured” and projected upon a screen.

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