

# A Scientific Love Affair

February 01, 2007

We like to think that ours was the first romance between psychologists fomented by mathematics, by probability theory to be precise. We met at a scientific conference in Boston; introduced by a mutual friend — Phil Salapatek, of happy memory — after having just missed each other a few weeks before in Minneapolis. One of us had just written a hefty tome that applied ergodic Markov chains to probability judgment, while the other was deep into experimentation on people's understanding of probability terms. The result was an instant meeting of the minds, revolving around aspects of psychological theory that both of us had been thinking heavily about and culminating in a conversation in which we finished each other's sentences. Clearly, this was a marriage made in heaven.

It took quite a while to figure that out, of course. Our cultural backgrounds could not have been more different — Valerie is a sophisticated big-city girl from the east and Chuck is a farm boy from the mid-west — and that may have contributed. Then, too, we lived a few thousand miles apart, which is hardly ever a good thing for romance. Somehow, though, we had the good sense to collaborate on some projects. We eventually discovered that when it came to the credos we live by, the planets were in complete alignment:

**Data rule.** Or, as Holmes told Watson, twist your theories to suit the facts, not the facts to suit your theories.

Good research must be theory-driven. If results fail to confer theoretical understanding, you are condemned to rediscover them in different guises.

**The best research is 10 years ahead of its time.** So, don't throw in the sponge when people don't get it. You're not in trouble unless Estes, Shiffrin, Tversky, and Kahneman don't get it.

**Explanation is the easy way out.** Good theories are not comfortable faiths. They must be predictive, and the predictions ought to trouble our intuitions — not confirm our prejudices.

With all this to build on, could love be far behind? Ultimately, it caught up with one of us and then with the other. Since then, an enduring foundation for our marriage and our research collaboration has been that each of us can count on the other to be an honest but sympathetic sounding board for our ideas and hopes. On the scientific front, in particular, each of us has someone who will react candidly yet sensitively to work that is risky and innovative. Doing that sort of work, when the field is not there yet, can be downright fun when you have someone to share it with who is understanding, supportive, and utterly open to new ideas.

Another cornerstone for us, as the story about probability judgment illustrates, is that our respective areas of intellectual focus have complemented one another from the start and have provided a firm basis for collaboration. These complementary areas are quite apparent in fuzzy-trace theory, for instance. The main areas in question are, on the one hand, psycholinguistics, memory, and judgment-and-decision-

making (Reyna), and, on the other hand, mathematical modeling, cognitive development, and higher reasoning (Brainerd). Over the years, those influences have meshed in various ways: psycholinguistics and judgment-and-decision-making have given us important ideas about memory; mathematical modeling has been central to our theoretical work; higher cognition has been studied with a memory slant and memory has been studied with a cognitive slant; adult experimental research has accompanied parallel developmental research; and most obviously, much of our work has cut across disciplinary boundaries. From the first, though, we were bound together by our mutual interest in Estes' and Piaget's work, and there are certain psychologists who have personally influenced us and whom we regard as role models, especially Kay and Bill Estes.

Science is evolutionary, which means that one must keep current as the field transforms. Happily for us, this has not caused any divergence of intellectual interests. We have moved in similar directions. Some would say that this is inevitable, considering that most of our projects are collaborative, but we think it is more closely connected to our shared scientific values. We read the field and how it needs to evolve in the same way because we are applying the same principles. Taking up the study of false memory and risk and rationality are good examples. Another good example is our very recent work in neuroscience — something that neither of us started out doing but that both of us thought must be done just as soon as the right tools were in hand.

The real truth about our collaboration, though, is that we are odd ducks in some respects. Both of us find shared scientific work to be quite romantic, as well as intellectually satisfying. Each of us writes quite intentionally for the other's eyes. Each of us is never more thrilled than when the other voices a pithy idea or writes a perspicuous turn of phrase. And, we are each firmly convinced that the other is the smarter one.

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