

The Toothbrush Problem

December 01, 2008

In these columns, I have been discussing our “urban legends” — the often unspoken but widely shared understandings and misunderstandings about how to build a research-focused academic life in psychology. My goal is to look at how these legends, rooted in the past, may influence our various roles as journal readers, contributors, reviewers and editors, researchers, grant-seekers and grant-givers, perhaps in ways that undermine efforts to become an increasingly cumulative and robust science. First, I focused on legends and realities about getting published in high prestige journals in our science (September *Observer*), noting the pressures toward newsworthiness, novelty, and “definitive solutions,” as well as their implications for how research is done, communicated, and reviewed. The October column discussed legends about journal reviewers and editors, also addressing their multiple sins and offenses as guardians of the journal pages. In the November issue, I looked at legends about grant-getting and giving and the dilemmas that confront both peer reviewers and applicants in the competition for essential support to keep the science going.

In this column, I consider how the various legends may combine to create a problem for psychological science, or at least for the parts of our science that I know.

Years ago, a wit (I have forgotten his name) called it the *toothbrush problem*: Psychologists treat other peoples’ theories like toothbrushes — no self-respecting person wants to use anyone else’s. It’s amusing, but it also points to a conflict that we may be nurturing within our profession to the detriment of our science.

Tenure Legends

Because tenure is the most important decision that academic departments and institutions make, it is only reasonable to want evidence that the candidate can function as an independent scholar-scientist at the expected level. Less clear is whether or not that should require that candidates get their very own brand new model “toothbrush” by the time the tenure committee meets.

Ask new assistant professors in psychology about what they see as the route to tenure in most competitive research-focused universities. Based on their senior colleagues’ advice they may tell you to find your distinctive turf, phenomenon, or idea, preferably even a model or theory and disconnect it as much as you can from whatever you did with your mentors in graduate school. It is even better if this concept quickly becomes “highly visible” and clearly associated with yourself (for example, the Krakinsonn Model, if that happens to be your name) and labeled with a memorable sound bite, maybe something that includes both “Big” and “Paradox,” or at least “Dilemma.”

This prescription for developing one’s own “toothbrush” affects the careers that develop, maybe enhancing the chance of getting tenure in the place of your dreams. But the small print suggests that the list of possible side effects is long. Unsurprisingly, they include increased stress, headaches, ulcers,

relationship distress/neglect, and insomnia. You also may experience an intense desire to do almost anything that could seem original. So, within a short period of time you might get an NDS or two into the field's premiere journals. (As defined in my first column, an NDS is an original *Newsworthy Definitive Solution* to an important problem, conclusively resolved with a handful of experiments, published in a high prestige journal.) And if this desire lasts more than 6 hours, and if you still can't get relief, do NOT call your ex-mentor.

The Toothbrush Versus Cumulative Science

In short, tenure pressures, even if conveyed less crudely, or in less jungle-like settings, increase the toothbrush problem or at least premature toothbrush temptations. To reiterate, I don't know how widely that temptation operates across the broad range of areas now subsumed within psychological science. But if getting and keeping your job and status in a field requires achieving "originality" by not building on anyone else's work, it may directly undermine another goal shared by many in psychological science: building an academic community that works collectively, albeit competitively, to make psychology an increasingly cumulative basic science.

That requires connecting one's research and theory-building efforts to relevant theories or findings by others working on essentially similar phenomena and science-driven problems, currently and in the past. If building a cumulative science is the goal, one has to avoid parallel play or repackaging ideas and findings already available. When the science community is working well, it doesn't re-label, or at least it tries not to reward re-labeling. After the structure of DNA was discovered, nobody renamed and recycled it as QNA (or if they did, it was not published in *Science* or *Nature*). But in at least some areas of psychological science, excellent and honorable researchers with the best intentions inadvertently create a QNA or two, sometimes perhaps even a QNA movement.

Nurturing the Toothbrush Problem

It's not just tenure pressures that feed the toothbrush problem and undermine constructing a cumulative science. Much of psychology's past and current academic culture generously nurtures toothbrush production and gives clear messages about how to quickly build a successful career in the competitive academic world. I discussed how this plays out in three core pieces of the routes for tenure: the competition for space in some of our most sought-after journals (September *Observer*), in reviewing and editing practices (October), and in grant-seeking and getting (November). All three reward, and even demand, the drive to display novelty, newsworthiness, autonomy, and de novo theory building with novel ideas unconnected to anybody else's.

Even the structure of our disciplines and sub-disciplines, rooted in what made sense a century ago when psychology departments formed, feed the toothbrush drive and undermine current efforts to build a cumulative psychological science. Unintended parallel play and repackaging of ideas and findings cannot just be attributed to the impossibility of "keeping up" with the relevant literature as productivity escalates. Part of the trouble is that what one keeps up with, without going berserk, easily becomes limited to what is inside the boundaries of narrowly defined sub-fields within sub-disciplines, beginning in graduate school. One rarely gets to all those other handbooks and journals that cover much overlapping terrain, that may be dealing with essentially similar phenomena and concepts under slightly different labels. Even the different pre-conferences at large meetings like SPSA (the Society for

Personality and Social Psychology) routinely address the same basic phenomena (e.g., “The Self,” “Self-regulation,” “Self and Identity”), discussed at the same hours by different specialty groups in different sub-disciplines, more or less indifferent to each other. And each has its own non-overlapping reference lists, jargon, journals, leaders, and loyal membership. They are united in building a Terminological Tower of Babel across the sub-fields and disciplines that cements their disconnect, carving nature at unnatural joints.

Requirements for a Cumulative Science

For psychological research to flourish and develop into an increasingly cumulative basic science, there are some fundamental requirements. It’s essential to develop and use common shared tools and a common language, so that replication, and building on solid work becomes accepted practice and is valued. Connecting to closely related work, on science-driven problems regardless of disciplinary boundaries, rather than doing parallel play around it, must become normative. The science community should seek robust and replicable effects about important phenomena and processes and allow their speedy publication. In addition, it must publish well-done failures to replicate and take them seriously.

None of this is news to the psychological scientists who have been doing cumulative science, and wonderful work, for a long time without needing advice from this column. My concern is with the toothbrush temptations for those entering the field and facing current career-building pressures. If senior scientists are alert to the pressures from journal policies, the grant-getting and giving struggles, and the tenure race faced by the “junior faculty,” perhaps they can address the issues directly. In this fantasy, students and young faculty could be helped to see that they can build their new toothbrushes in ways that allow them to become competitive players within a collective scientific enterprise to which they can candidly connect and directly build, without jeopardizing their career-building. But that is unlikely if we expect beginners to have their own original theory or novel phenomenon, not only in their heads but also in the premiere journals, and to come up with another NDS within their first few years on the new job.

In these columns, I have dwelled on the legends and realities that may undermine the building of a cumulative psychological science to make them explicit for candid discussion and to consider how to get beyond them if they are not serving us well. My next column turns from the conditions that undermine building a cumulative science to consider those that are helping us to enable it, building the vigorous and rapidly emerging “hub science” so richly documented by former President John Cacioppo in last year’s columns.