

Changing the Paradigm of Graduate Medical Education: Lessons Learned from The Watchman's Rattle

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"I feel that our education has been sacrificed in order to improve patient care" – Anonymous Internal Medicine resident (2013)

Rebecca D. Costa, in her book entitled "The Watchman's Rattle: A Radical New Theory of Collapse", argues that societies and systems facing escalating complexity will eventually reach a "**cognitive threshold**" – a point at which the system can no longer think its way out of the complex problems it faces¹. The two earliest signs that a cognitive threshold has been reached are *gridlock* and *the substitution of beliefs for facts*. The appearance of these two early signs predicts outright collapse of the system in the near future.

We currently face a congruent situation in healthcare, as costs spiral out of control and the delivery of clinical services remains uneven, ineffective, and unsafe.²⁻⁴ As medical educators in the United States with years of experience in clinical practice in outpatient and inpatient settings, we find ourselves deeply concerned with what patient care outcomes reveal about our current system of medical education: it is either poorly conceived, poorly executed, or both. Changing the system seems overwhelming at times. To address these inefficiencies within our current practice settings, we have introduced innovative, systems-based methods of medical education and delivery in an attempt to realign medical education with what we believe are its ultimate goals: to pursue the Institute for Healthcare Improvement's "triple aim", delivering safe, timely, effective, efficient, equitable, patient-centered care. We believe that we already possess the human, technological, and financial resources necessary to achieve these goals. Our early experience with these changes has led us to believe that the true struggle resides in transcending our cognitive threshold.

Despite clear evidence to the contrary, housestaff and faculty alike maintain the entrenched belief that the long history of the current format of medical education makes it *de facto* the best form. They seem to hold on to the hope that the same system of medical education that has failed for the last 50 years to achieve the Institute of Medicine's goals will soon magically achieve them.

To illustrate this belief, one valued housestaff member responded to the changes being implemented in her continuity clinic by telling her attending, in essence, that patient care was getting in the way of her "education". Although this quotation has been recited and repeated amongst faculty as absurd evidence of housestaff intransigence, apathy, or ignorance, deeper scrutiny points to systemic and potentially anthropological hurdles that educators will need to grapple with if we hope to improve the quality of education and train future physicians to lead the revolution necessary to improve our healthcare system.

Dr. Costa invokes the concepts of *memes* and *supermemes* to explain the intransigence we experience in extremely complicated systems on the verge of collapse. A *meme*, a term coined by evolutionary biologist Richard Dawkins, is any widely accepted information, thought, feeling, or behavior. Like genes, memes can increase or decrease their reproductive success through variation, mutation, and inheritance as they migrate from organism to organism. They can be factual or false, but successful memes become entrenched in societal beliefs regardless.

In important ways, Graduate Medical Education [GME] programs can be viewed as organisms, each year raising new offspring beholden to the memes of the previous generation of residents. For decades, housestaff have been exposed to the same methods of delivering care and education.⁵ One could argue persuasively that despite incremental cultural changes to training programs, the essence of what and how we teach residents has remained essentially untouched.

Now however, our medical trainees are being asked to deliver outcomes that these methods of education were never explicitly designed to provide – safety, value, and quality to name a few. At our hospital based continuity clinic, medical leadership has embarked on a wholesale transformation into a level 3 Patient Centered Medical Home [PCMH]. Our hospitalists have spearheaded the development of explicitly engineered, highly integrated, multidisciplinary clinical microsystems called Accountable Care Units [ACU]⁶ in the hospital. Both changes represent efforts to streamline complex systems and educate current trainees about ways to provide the type of patient-centered, interdisciplinary, outcomes-driven care that we believe is imperative to improve healthcare.

Unfortunately, we have seen evidence that the evolutionary capacity of our housestaff and faculty has been exceeded. Creation of PCMH and ACU has accelerated the *awareness* of complexity in an already difficult process of training, and many learners have begun to look for ways to reestablish order and comfort in the workplace, regardless of whether the problems we face are addressed by these strategies. When such a cognitive threshold is reached, memes can evolve into *supermemes* - memes that become so pervasive and stubbornly embedded that they contaminate or suppress all other beliefs or behaviors in a society or organism. Costa describes five powerful supermemes that have the potential to destroy any good solutions, no matter how insightful or effective they might be, and which thus pose tremendous threats to progress. Our experience has given us useful illustrations of how these emblematic supermemes will manifest in GME programs across the nation as more and more of them embark on these essential transformations.

1. Irrational Opposition

The first supermeme Costa describes is ***irrational opposition*** – *when the act of rejecting, criticizing, suppressing, ignoring, misrepresenting, marginalizing, and resisting rational solutions becomes the accepted norm*. Most leaders who have led organizational changes have encountered this hurdle. In increasingly complex environments, it becomes much easier to oppose change than embrace solutions. In our experience, housestaff and faculty invariably accede to or even embrace the fact that our current system of healthcare delivery is unsustainable, unfair, and unsafe. They understand this on an intellectual level and also on a personal level while caring for patients of their own who are often “failed” by the “system”. Yet, they tend to initially reject any and all solutions to potentially improve the system.

How to reconcile these seemingly paradoxical interests? Costa believes that they can be explained through the concept of the cognitive threshold and the inevitable gap between the slow evolution of the human brain and the rapid rate of increasing complexity in our environments. There is ample neuroscientific evidence to support the assertion that we are hardwired evolutionarily to avoid the risk that comes with change. The introduction of change itself generates a reflex to oppose it. Most of us *are hardwired to* retreat to what is familiar, regardless of whether it will solve the problem at hand, because the potential change is so frightening.

This has been consistently demonstrated during numerous meetings between leaders of our new systems and learners at all experience levels. When asked whether our current system of medical education produces the patient care outcomes it was meant to teach, all involved agree that it does not. However, when faced with a new paradigm of education, they invariably bemoan, sometimes violently, the loss of the “better” or “real” educational structure it is replacing. Even after data is presented that unequivocally shows the improvement in meaningful patient outcomes compared to “old” systems, most continue to maintain their position that the old way was “better” and represented “real medical education”. This is a perfect example of gridlock. When faced with increasing complexity, we invariably try to retrofit the size of the real problem to the solutions we already have at hand – the solutions that have already proven to fail.

2. Personalization of Blame

Costa uses the example of the attempted bombing of a Northwest Airline flight by an al-Qaeda agent to explain her second supermeme, ***personalization of blame***. She describes the reversal the United States Administration made as it ignored previously identified systematic and widespread

communication failures to look for individual culprits to blame. Hardly a new tactic, nor unique to politics, the “blame game” explains the succession of many systematic problems from generation to generation. Like other supermemes, this often unconscious tactic results from being unable to address, or often even comprehend, all of the complex factors involved in massive societal and systematic problems. In fact, Costa asserts, frequently the facts are largely irrelevant to who is eventually held to blame. Patient safety and quality of care experts have relentlessly cited overcoming this cultural hurdle as key to achieving meaningful and lasting improvements in our medical systems.

In our personal experiences leading these changes, we have noticed a tendency for learners to lash out at the “messengers” of improvement. While our quoted resident was attempting to express concern about losses incurred to her medical education, what she really uncovered was a deep and systematic misunderstanding of what medical education truly is and to whom we are accountable. Regardless, we heard from program leaders early on that teaching evaluations deteriorated dramatically after institution of our new system on the wards. What was missing from these assessments was acknowledgement that the evaluations were designed to measure the quality of a narrow and outdated version of medical education. The substitution of the *belief* that this historic system was the “right” system to evaluate for the *fact* that the system had failed for decades to produce reproducibly high quality medical care is telling. Our attendings were, for a time, personally blamed for a “deterioration” in medical education rather than lauded for attempts to improve a deeply flawed system.

It is a fact that the purpose of medical education is to teach *methods and delivery* of high quality, highly efficient patient care, an imperative that has been traditionally underemphasized in formal training at the expense of *clinical knowledge*. And it is a fact that in order to function effectively in new models, housestaff and faculty will need to learn about them firsthand. However, all these facts are substituted with the single immovable belief that “the old way was better” than the changes. Learners respond by blaming the leaders of these initiatives for destroying that “old way”.

3. Counterfeit Correlation

Counterfeit correlation – the third supermeme - occurs as a result of *accepting correlation as a substitute for causation, using reverse engineering to manipulate evidence, and relying on consensus of opinion to determine facts*. The irony here is that the environment in which we have seen this supermeme manifest espouses the fundamental value of an evidence-based approach to problems. Nonetheless, it is far easier to substitute correlation for fact in increasingly complex situations.

We have seen Counterfeit Correlation expressed in our training institution in multiple ways. One of the more vociferous manifestations has been the reflex response to link changes driven by the realities of our current system with perceived base profit motive. By all accounts, attempts to date to deliver dependably safe, high quality patient care have missed the mark, yet delivery systems have managed to consistently generate profit. The correlation often made by trainees as well as experienced providers is that hospital and physician leaders are in no small part to blame because of their preoccupation with profit.

Recently, however, small scale projects – from Core Measures to readmissions penalties – have begun to realign profit and revenue with the core values and results we are trying to achieve in healthcare. The expectation is that this realignment will continue and expand. In a healthcare system where financial incentives are beginning to align with quality and safety, it is simply a fallacious argument that profit – in and of itself – should be held up as a reason for dissent. However, this kind of correlation has been applied to the introduction of our new educational and delivery models. We have heard that many, if not most, housestaff believe that the changes we are currently introducing in the hospital and the clinic were driven by the need to improve revenue and not by our fervent desire to improve patient outcomes and produce a more successful physician. Housestaff and faculty have reverse-engineered the intent for these changes through counterfeit correlation.

With the storyline of greedy healthcare executives as an internal compass, labeling well-meaning, but extremely difficult and disruptive, changes as “profit driven” allows people to dissent and avoid engaging in these important projects on “moral” grounds. Simple correlations are attractive, but serve as dangerous barriers to the collaborative progress in unraveling the complexity of the failures of our current health care delivery systems.

4. Silo Thinking

Silo thinking is the fourth supermeme mentioned by Costa in her book. It is predicated upon *the innate desire of humans to simplify and organize the world around them despite living in an environment that is becoming increasingly complex*. The concept of silos is not new to anyone working in healthcare. Our systems and services are often compartmentalized with respect to processes, budgets, and personnel. This leads to suboptimal communication and collaboration. Silo thinking is often reinforced by misaligned incentives that reward the success of an organization’s parts rather than the success of the organization as a whole and results in focusing one’s attention narrowly rather than considering the entire organization.

In the case of medical education, housestaff have historically been incentivized to build their knowledge base and eventually pass their board exams. This is not to say that healthcare delivery and patient care were not valued or taught. Rather, from the narrow perspective of a resident, if they do not pass their boards or learn enough “medicine”, their medical education would be for naught. Given the fact that the Boards have focused almost exclusively on knowledge of diagnostic and therapeutic “answers”, focusing attention within this silo makes perfect sense in the short term.

We have heard time and again from housestaff and faculty that “real” medical education is somehow separate from patient care. What meaningful outcome is medical education meant to achieve then? When challenged, it is difficult for these dissenters to cogently defend their thesis. Perhaps surprisingly, this has not made it any easier to persuade them of the necessity of learning in these new delivery systems. The cognitive threshold they have reached allows them to remain hunkered down in their silos and maintain seemingly oppositional beliefs—understanding that the goal of medical education is to learn to deliver care to patients, while arguing that *learning* how to better deliver care to patients is not the way to achieve it. It is easier to keep doing the same things – and failing the same ways – over and over than it is to consider new and different solutions to our problems.

It is no surprise that residents and other learners have difficulty seeing the “big picture” considering that their day to day activities focus on acquiring medical knowledge and skills. Until educators make delivery of care an important part of evaluation, it will be impossible for innovation in both education and healthcare delivery to occur.

5. Extreme Economics

The 5th and final supermeme that Costa identifies is **Extreme Economics**, *when simple principles in business, such as risk/reward, profit/loss, become the litmus test for determining the value of people, processes and institutions*. Armed with what we know about human nature, we believe that meaningful business metrics could be used to drive meaningful outcomes. However, we find ourselves in a hybridized model of old and new methods of reimbursement. – partially fee for service and partially pay for performance. Hospital administrative leaders may find it particularly difficult to navigate a complicated path.

Our Accountable Care Unit leaders have made a point of assiduously demanding and reviewing real time quality and safety data in order to evaluate the benefit (or lack of benefit) of our new model. We have followed quality and safety outcomes, process measures, and balancing measures. Our results have been consistently positive, particularly in comparison to non-ACU locations in our hospital. One early result we found was that length of stay was significantly reduced on these units alongside

decreases in readmission rates, mortality, and complications of care. This led us to project a potential cost savings of over \$1,000,000 over the first 9 months of our project.

However, due to our current system of hospital reimbursement and the “good payor mix” that our hospital enjoys, this revelation was met with concern regarding lost revenue. Working in a community teaching hospital within a national for-profit hospital system, our hospital administrators have always been highly successful stewards of their investors’ money and their organization’s financial needs. One administrator noted that our \$1,000,000 “savings” for patients and insurers translated into a potential *loss* to the hospital’s bottom line.

Thankfully, our hospital Administration was able to look past this potential short-term hurdle in continuing to support our project. But comments like these can also have an unintended effect on other members of the hospital community. When medical and hospital staff hear comments like these from their leaders, they interpret them as a slavish commitment to profit above all else. This has the potential to drive Counterfeit Correlation – in this case, the belief that hospital Leadership support must be solely because of its potential to benefit the hospital financially – and further hinder meaningful change.

Conclusions.

Radical system changes in GME are not for ambivalent leaders and will inevitably lead to struggle. Even so, we have found simple comfort in finding a framework (albeit after the fact) for understanding the conflict. We work in a rapidly changing environment. As leaders of change initiatives, we must be prepared to confront anthropological barriers to radical solutions to our problems. When our learners – from medical students up to seasoned faculty – reach a cognitive threshold, they will consciously and unconsciously rebel in ways that feel comfortable to them, but which can sabotage critically important innovations. While understanding Costa’s concept of *supermemes* and *cognitive threshold* will not avoid these responses, it can help leaders prepare thoughtfully for them. Leaders must be ready to encounter, appropriate, and react to these predictable responses for our improvements to progress.

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