



AUA

Association of University Anesthesiologists

Update

Winter 2007

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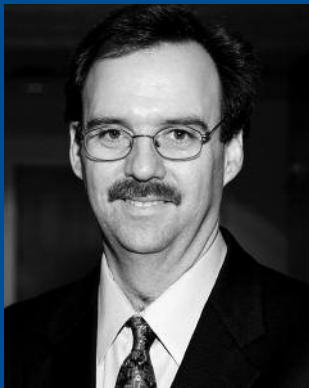
Lee A. Fleisher and Emery N. Brown Inducted Into IOM

Dr. Brown receives an NIH Director's Pioneer Award, Too

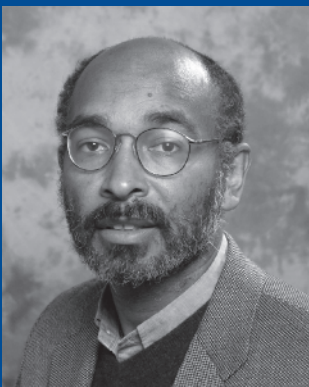
Two anesthesiologists, AUA members **Lee A Fleisher, M.D.**, of the University of Pennsylvania, and **Emery N. Brown, M.D., Ph.D.**, of Harvard University (Massachusetts General Hospital), have been announced as among the newest inductees into the Institute of Medicine (IOM).

As described on the IOM Web site, the nation turns to the IOM of the National Academies (www.nationalacademies.org) for science-based advice on matters of biomedical science, medicine and health. A nonprofit organization specifically created for this purpose as well as an honorific membership organization, the IOM was chartered in 1970 as a component of the National Academy of Sciences. The Institute provides a vital service by working outside the framework of government to ensure scientifically informed analysis and independent guidance. The IOM's mission is to serve as adviser to the nation to improve health. The Institute provides unbiased, evidence-based and authoritative information and advice concerning health and science policy to policymakers, professionals, leaders in every sector of society and the public at large. More information is available at the IOM Web site www.iom.edu. Drs. Fleisher and Brown join Drs. Epstein, Evers, Hornbein, Kampine, Kitz, Longnecker, Marks, Miller E., Miller R., Rogers, Schwinn, Wiener-Kronish and Zapol as anesthesiologists contributing to the work of the IOM.

Dr. Brown, in addition to the IOM membership, is also the first anesthesiologist to receive an NIH Director's Pioneer Award. As stated on its Web page (nihroadmap.nih.gov/pioneer), the NIH Director's Pioneer Award Program is a unique aspect of the NIH Roadmap for Medical Research, a high-risk research initiative of Research Teams of the Future. Pioneer Awards are designed to support individual scientists of exceptional creativity who propose pioneering and possibly transforming approaches to major challenges in biomedical and behavioral research. The term "pioneering" is used to describe highly innovative approaches that have the potential to produce an unusually high impact on a broad area of biomedical or behavioral research, and the term "award" is used to mean a grant for conducting research rather than a reward for past achievements. To be considered pioneering, the proposed research must reflect ideas substantially different from those already being pursued in the investigator's laboratory or elsewhere. Biomedical and behavioral research is defined broadly in this announcement as encompassing scientific investigations in the biological, behavioral, clinical, social, physical, chemical, computational, engineering and mathematical sciences. This year, approximately five to 10 new awards of \$500,000 in direct costs per year for five years each will be made.



Lee A. Fleisher, M.D.



Emery N. Brown, M.D., Ph.D.

ANESTHESIOLOGY AND MEDICAL SIMULATION: PAST, PRESENT AND FUTURE



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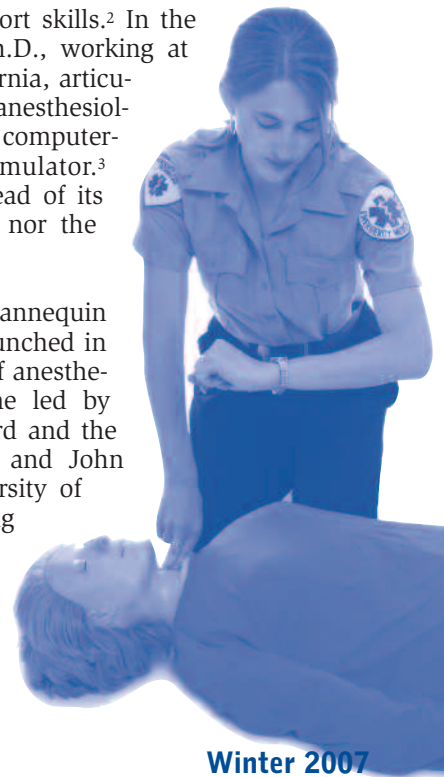
Gary E. Loyd, M.D.

The history of modern medical simulation is for all practical purposes the history of simulation in anesthesiology. The first mannequin used to teach integrated clinical skills was developed in the 1950s by two anesthesiologists, Peter Safar, M.D., from the United States, and Bjorn Lind, M.D., from Norway, who worked with a toy manufacturer to develop a model for practicing the new resuscitation technique of mouth-to-mouth breathing.¹ After more than four decades, “Resusci-Annie” is still used to train basic life-support skills.² In the 1960s, Stephen Abrahamson, Ph.D., working at the University of Southern California, articulated the advantages of training anesthesiology residents with his full-scale, computer-controlled human patient simulator.³ Unfortunately, his team was ahead of its time, as neither the technology nor the profession was ready.⁴

The current era of realistic mannequin simulation in health care was launched in the United States by two teams of anesthesiologists in the late 1980s, one led by David M. Gaba, M.D., at Stanford and the other by Michael Good, M.D., and John Gravenstein, M.D., at the University of Florida.⁵ Applying engineering expertise to their vision of simulation’s potential in education, team training and patient safety, these groups created interactive, realistic human patient



Lindsey Henson, M.D., Ph.D.



simulators that could accurately model the human body's response to physiologic and pharmacologic intrusions with no risk to real patients. Simultaneously, a team under the leadership of Hans-Gerhard Schaefer, M.D., in Basel, Switzerland, developed full-scale simulators and used them for crisis resource training of complete operating room teams.⁶ All of these simulators were developed "in house." Simulators have been available for purchase since the early 1990s and are now used to educate medical, nursing and veterinary students, medical technicians, paramedics and residents from many medical specialties throughout the world.

In 1985, Jeffrey Cooper, Ph.D., helped to found the Anesthesia Patient Safety Foundation, the world's first patient safety foundation,⁷ which funded some of Dr. Gaba's early work. In 1986, the American Society of Anesthesiologists (ASA) adopted standards of care for its members, becoming the first U.S. medical specialty to do so. In the late 1990s, simulation became a regular topic at meetings of the Society for Education in Anesthesia, the Society for Technology in Anesthesia and ASA. In 2004, ASA capitalized on anesthesiology's historic leadership in simulation and created an Ad Hoc Workgroup on Simulation Education, which developed a white paper outlining the rationale and plan for implementation of simulation-based continuing medical education (CME) for anesthesiologists.⁸ ASA endorsed the plan in 2006 and sanctioned the formation of a new ASA Committee on Simulation Education. Thus, ASA is encouraging the development, approval and review of simulation-based programs that can offer ASA-endorsed CME courses for anesthesiologists.

In 1999, the Institute of Medicine (IOM) published its influential monograph *To Err Is Human*, which included several recommendations to improve patient safety, including creating a learning environment that uses simulation whenever possible and establishing interdisciplinary team training programs.⁹ The IOM report was a major stimulus for health care providers to use simulation over the last decade. Our surgical colleagues have developed a wide range of part-task trainers, and published information about their effectiveness in improving acquisition of technical skills¹⁰ and simulation is incorporated into current and future surgical training.¹¹ Multiple specialties have reached consensus on using simulators for carotid stenting training and credentialing.¹² As a result, while our profession took the lead in developing and using simulators in teaching, assessment and research to promote patient safety, other specialties have made enormous strides. Does this pose a challenge to our future role as leaders in simulation?

To answer this question, it is important for members of our specialty to understand the factors that will influence the practice of medicine in the next three decades and determine our role in this new environment. Ronald Miller, M.D.,¹³ in 2005 and Mark Warner, M.D.,¹⁴ in 2006 predicted that changing demographics, elucidation of the human genome and minimally invasive surgery will change the

model of anesthesia care in American medicine. By 2040, 100 million people will undergo anesthesia as "baby boomers" and immigrants change the demographics of our country.¹⁴ With the unraveling of the human genome, we will be able to fine-tune drug therapy to the unique genetic makeup of our patients with extreme safety.^{15,16} Traditional surgical approaches will be replaced by imaging, invasive catheters and microrobotic techniques.^{17,18} Critical care beds will increase to half of the total in tertiary care hospitals. In oper-

“All the above changes will start in academic medical centers, which means AUA is positioned to shape the future of our specialty ... AUA has the opportunity to identify feasible solutions to roadblocks, making the perioperative anesthesiologist a reality.”

ating rooms, most invasive procedures and administration of anesthesia will be done by nonphysicians. Information technology in operative rooms already enables an anesthesiologist to see patients, anesthesia machines, monitors, surgical fields, medical records and medications prescribed in four rooms at once without being present in any of them.¹⁹⁻²² Future operating rooms will look like critical care units managed by one supervising physician. If the specialty of anesthesiology does not step up to the challenge with increased involvement in critical care medicine, pulmonary physicians and hospitalists will.²³⁻²⁶

All the above changes will start in academic medical centers, which means AUA is positioned to shape the future of our specialty. ASA, the Accreditation Council for Graduate Medical Education and the American Board of Anesthesiology are discussing how to strengthen the anesthesiologist's position in critical care medicine, suggesting substantial changes in training programs. Even if these changes are adopted, new graduates with critical care training will not manifest themselves for another six to 10 years.¹³ AUA has the opportunity to identify feasible solutions to roadblocks, making the perioperative anesthesiologist a reality. Human patient simulators can accelerate this process by training current residents and practicing anesthesiologists in critical care medicine. ASA has developed a Web-based registry of simulation centers and will eventually approve programs and courses for CME. AUA should help ASA establish these simulation centers as training

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Anesthesiology and Medical Simulation: Past, Present and Future

Continued from page 3

grounds not only for anesthesiologists but also for nurses, surgeons, other physicians, pharmacists and allied health professionals. AUA should take a lead in developing regional simulation systems and building a national agenda for simulation-based education.

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California Nursing Board Policy on Nurse Anesthetist Supervision: A Status Report

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The California Board of Registered Nursing historically has published policy statements describing various aspects of nursing practice, including scope of practice. Among these statements was one first adopted in 1990, titled "Practice of the Certified Registered Nurse Anesthetist." It was a generally innocuous description of nurse anesthetist practice. In December 2004, without public hearing or other public input, that statement was suddenly amended to include the statement: "The Board of Registered Nursing has no requirement ... for the physician, dentist or podiatrist to supervise the CRNA providing their anesthesia services. Therefore, the CRNA provides anesthesia services under the authority of his or her own license as a licensed independent practitioner ..."

It was apparent that the board, then chaired by a nurse anesthetist, had been urged by the California Association of Nurse Anesthetists (CANA) to promulgate the revised policy statement, and CANA wasted no time in publicizing it. Soon, the question of whether California law permitted nurse anesthetists to practice without physician supervision began to pop up in various settings.

The nursing board had evaded California requirements for the promulgation of new policy or statements that would have the impact of regulations. Nothing in the Nursing Practice Act or elsewhere in the law supported unsupervised practice by nurse anesthetists, and the law has always been to the contrary. The California attorney general's interpretation of California law has always been that registered nurses practice under physician supervision except in circumstances that do not apply to nurse anesthetists.

Because of the confusion resulting from the board's statement and CANA's campaign to win acceptance of the new policy, the California Society of Anesthesiologists sued the nursing board, asking the court to nullify the purported policy statement and to require its withdrawal. Before the case had been heard, the nursing board retreated. After a special meeting of the board, the following notice was placed on the board's Web site:

(a) The BRN has withdrawn, as of March 2005, NPR-B-10 ("Practice of the Certified Registered Nurse Anesthetist") as revised and dated December 2004.

(b) No reliance should be placed on the December 2004 revision of NPR- B-10.

This language had originally been suggested to the board by CSA's attorneys when efforts were being made to settle the case. Following withdrawal of the statement, CSA (as well as interested individuals within government) assumed that the board would attempt to legitimize the new policy by proceeding with public hearings and other steps required under California's Administrative Procedure Act, which would

provide opportunity to confront the board's effort to expand nurse anesthetist scope of practice without going to the legislature.

The expected administrative proceedings have not occurred. CSA's suit is still pending. When considering whether to ask the court to intervene, CSA's attorneys took the deposition of the board's executive officer. She testified about present board policy. In a nutshell, the board's abandonment of its prior position restores the status quo as it existed earlier. Now, the board's response to any inquiry regarding the requirement for physician supervision is to direct the inquirer to the Nursing Practice Act, without further comment.

The same 2004 promulgation also contained a statement new to any board description of permissible practice, saying "it is within the scope of practice of the CRNA to provide acute and chronic pain management services and emergency procedures both inside and outside the operating room suite." This expansion of nurse anesthetist scope into pain medicine was also challenged in the CSA suit, and this statement was withdrawn by the board's action.

CSA's suit has so far accomplished its immediate purpose, which was to force complete withdrawal of the new policy statement. A number of considerations have weighed upon a decision to activate the suit filed earlier, and that remains an option.



Linda Mason, M.D.

"CSA's suit has so far accomplished its immediate purpose, which was to force complete withdrawal of the new policy statement."

Book Review: Enduring Contributions of Henry K. Beecher, M.D., to Medicine, Science and Society

Edited by Edward Lowenstein, M.D., F.R.C.A., and Bucknam McPeck, M.D.

W. Andrew Kofke, M.D.
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The Henry K. Beecher professorship in anesthesia at Harvard Medical School has been endowed 31 years after his death. Drs. Lowenstein and McPeck and their contributing authors have put together a most interesting biography in honor of this event. A manuscript of the work, which will be published in two consecutive issues of *International Anesthesiology Clinics*, was made available for review. Readers will learn about a complex Midwesterner who trained as a surgeon, became chief of anesthesia at Massachusetts General Hospital, published many sentinel works primarily in nonanesthesia journals and was very influential in shaping academic anesthesiology.

The preface of the book quotes Arthur S. Keats, M.D., who opined that the most important research which could be performed by an anesthetist is that which affects the entire practice of medicine. He felt that three individuals had achieved this, John J. Bonica, M.D., in pain medicine, Peter Safar, M.D., in intensive care and cardiopulmonary resuscitation and Dr. Beecher in medical ethics. Ethics, however, was not his only important contribution.

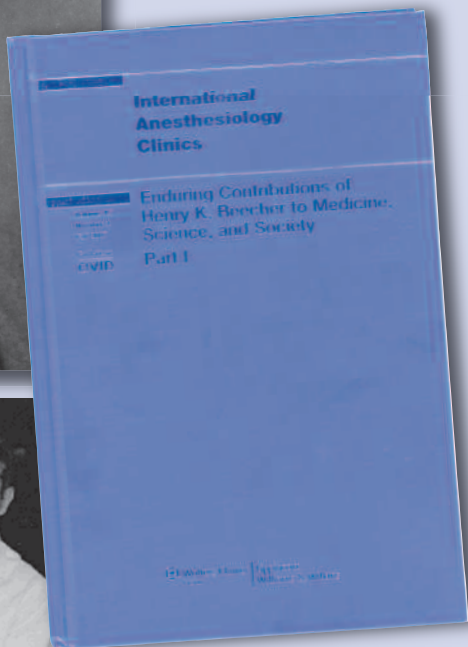
The book is organized into two main sections. The first consists of reprints of major papers published between 1954 and 1968 about five different topics, with contemporary commentaries putting them into perspective. The second section reviews his background in Kansas and his years as a medical student and includes a series of essays by people who knew him and worked with him.

The reviewed papers include his research on the study of death associated with anesthesia and surgery, studies on subjective responses, placebo responses to surgery, ethics of human research and definition of brain death. A series of essays by disparate acquaintances in the second section are individually interesting. The editors do not aspire to produce a definitive biography and, indeed, present a fascinating but incomplete picture.

The study by Drs. Beecher and Todd on deaths associated with anesthesia and surgery was based on a study of 600,000 anesthetics and 10 institutions. John Bunker, M.D., in discussing this article, indicates that this was the first serious attempt to learn the incidence of mortality attributed to anesthesia. He points out that this is a milestone in the development of clinical information data systems and was most notable because the data on 600,000 anesthetics was collected and analyzed by hand. Studies of the outcomes of anesthesia and surgery since Drs. Beecher and Todd have leaned heavily on their methods.

Dr. Beecher's 1966 *New England Journal of Medicine* work on ethics and clinical research became a hallmark in the ethics of clinical research, which still has an impact to this day. He cited 22 examples of ethical lapses in published research and indicated that both editors and investigators shared responsibility. He strongly felt that ethically unsound research should not be published. The core of his ethical thinking was that truly informed consent was essential to ethically correct clinical research.

In an essay by Lara Freidenfelds, M.D., one finds a riveting overview of the historical context of this very controversial 1966 paper. She outlines the tactics and strategy that Dr.



Beecher employed in orchestrating the events that led up to the publication of this paper. He carefully chose his allies and adversaries and distributed his manuscripts and orations very methodically with strategic delivery of his thoughts in advance of his publications. He leaked the paper to the press in advance but then refused to speak to the press directly, thus forcing them to deal with other medical professionals. The essay makes it clear that Dr. Beecher himself had earlier been involved in some experiments that he later came to believe were unethical and undoubtedly influenced these opinions.

“There were many extraordinary aspects about HKB that only a dedicated biographer can place in perspective with his times. The maverick aspects of his mind, the courage to come up with the unexpected, the vision to be controversial and, to the dismay of opponents, often right ...”

This paper was initially submitted to the *Journal of the American Medical Association*. However, the reviewers gave scathing opinions, and the editor was relieved to reject it. Dr. Beecher then worked with Joseph Garland, M.D., the editor of the *New England Journal of Medicine*, to meet the requirements for publication while achieving his own aims. Dr. Beecher insisted that the references he quoted be anonymous, although certified as accurate by the editor. Moreover, when others asked for identification of the references, he told them that it would not be hard to find many similar ethical lapses in the process of searching for the specific references he cited. A related essay by George Mashour, M.D., Ph.D., describes Dr. Beecher’s experiences with research funded by the surgeon general of the Army and probably also by the CIA. It speculates that these experiences may have reinforced his determination to insist that ethics be cleaned up in human research as he recognized that the standards of the day were inadequate to protect human subjects.

Dr. Beecher’s brain death paper was another milestone publication describing the medical concept of brain death. The essay that accompanies it examines the motivation for forming the Harvard committee that Dr. Beecher stimulated and chaired. It refutes the widespread contention that increasing organ procurement for transplantation was an important consideration in Dr. Beecher’s mind. It presents reasons why the concept of brain death as defined in the paper is liable to persist for the foreseeable future.

In the second section of the book, the first chapter by Michael Gionfriddo, M.D., presents much heretofore unknown information about Dr. Beecher’s early years in the small town of Peck, Kansas, his college years at the University of Kansas and his subsequent postgraduate years at Highland College. It describes his childhood and adolescence. His aca-

demical inclinations were encouraged by his mother but produced conflicts with his ne’er-do-well father. He did much blue collar work as a youth, but his academic inclinations led him to chemistry and eventually his matriculation to medical school at Harvard.

Notably, his birth name was Harry Unangst. One chapter describes the process of changing his last name to Beecher, thus adopting the name of his maternal great grandmother shortly before entering Harvard Medical School, and attributes this to the “desire to shed all traces of his father.” Dr. Gionfriddo goes on to discuss his years at Harvard Medical School, reviewing his progress there, and describing his inexhaustible work ethic and tireless interest and dedication to clinical research. He had several important mentors, including Edward Churchill, M.D., and J. Howard Means, M.D., the chairs of surgery and medicine at Massachusetts General Hospital, and, later, Nobel Laureate Dr. August Krogh.

After the description of his early years, there are nine essays that describe the authors’ interactions with Dr. Beecher; they vary from those who worked near him and knew him well, to those who worked near him and had trouble getting to know him, to those who didn’t know him well personally but described their interactions with him professionally and also his worldwide reputation. Many interesting observations are offered that nicely embellish and make human this icon in the history of anesthesiology.

The book ends with a reprint from the *Harvard Gazette* from January 13, 1978, where at a meeting of the faculty of medicine on June 1, 1977, a minute was placed in the records — this minute being a brief summary of his life and contributions. The essay indicates that:

“There were many extraordinary aspects about HKB that only a dedicated biographer can place in perspective with his times. The maverick aspects of his mind, the courage to come up with the unexpected, the vision to be controversial and, to the dismay of opponents, often right, the vanity to believe oneself unique, the ability to anticipate, synthesize, and express concepts in a style and at a time when they could not be ignored, all criteria we surely must consider prerequisites for greatness, were evident throughout his professional career.”

This book is a very nicely organized overview of Dr. Beecher’s works, the events of his life, and his personal strengths and idiosyncrasies. As such, it is both interesting and informative and should be considered to be highly recommended reading for any fan of the history of anesthesia or anyone wishing to revisit landmark research that remains widely quoted even today, more than 40 years after it was published.

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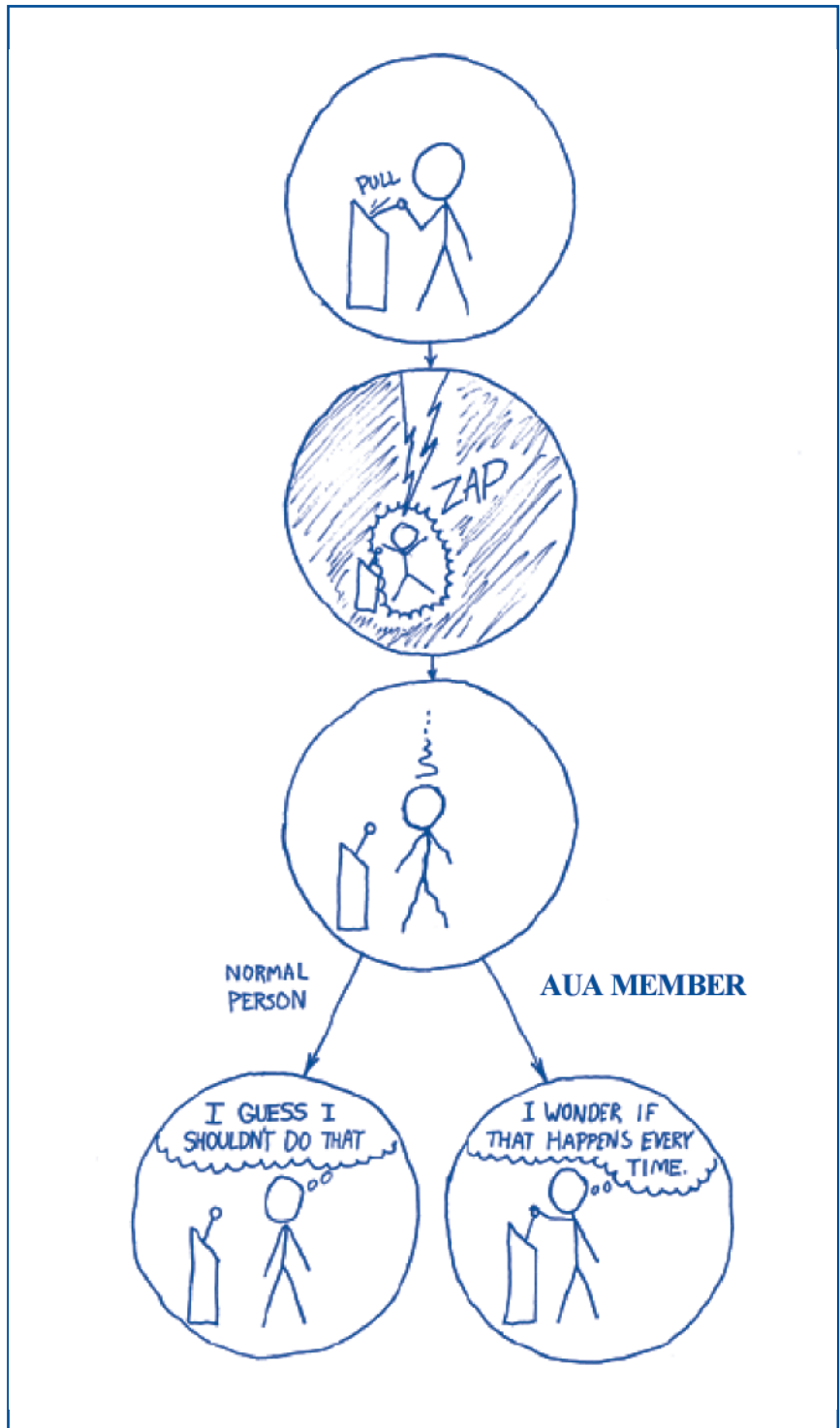
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