Special Article

The Five Generations of American Medical Revolutions

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Current medical authors frequently use the term "revolution," yet American medicine is resisting change rather than embracing it. The last completed American medical revolutionary movement was the specialist-technologist movement of the late 19th and early 20th centuries.

This paper describes a five-generational model of revolution. First-generation persons foment revolution; second-generation persons shape it into workable form and precipitate conflict; third-generation persons join the fight only when it appears to be all but won; fourth-generation persons enjoy the fruits of revolution; and fifth-generation persons, having risen to domination in the mature system, resist all attempts at reform by the next round of revolutionaries.

In political revolutions, severe reactionary activity by the ruling party is often an indicator of an imminent overthrow by revolution. In scientific revolutions, the opposition of an established (specialist-technologist) paradigm to an emerging alternative (generalist) paradigm increases in intensity as the old order declines in strength; the opposition becomes most fierce just before the collapse of the old order. American specialist-technologist medicine, declining into its senescent fifth generation, will resist all but incremental change whenever possible, and accept major change only by force.

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Many authors say that we are surrounded by revolutionary changes in health care.[1-4] On the contrary, I propose that we are mired in reactionary suppression of revolutionary ideas. I further propose that this frantic resistance to change is a sign that the present medical care system is growing weak and will soon collapse. The most recent successful medical revolution, the specialist-technologist revolution, swept over this country around the turn of the century. It ushered in a philosophy of medical care that has yielded spectacular benefits.

I will define a five-generation model to describe how this medical care philosophy gained ascendancy and what I expect to occur as the current aging medical system dies. During this process, those in positions of influence in its corrupted last generation will take predictable steps as they struggle to hold on to the reins of power.

According to the Merriam-Webster dictionary, revolution is defined as an attempt at "sudden, radical, or complete change; *esp*: the overthrow or renunciation of one government or ruler and the substitution of another by the governed."[5] The word itself suggests an image of revolving to a previous position.[6] Although a few of those who speak of revolutionary medical events are discussing the overthrow of the existing medical order,[7,8] most are referring to amazing feats of scientific discovery that, wonderful though they may be, are merely incremental advances in the prevailing order.[2,3] Rarely are both meanings used within a single commentary.[9] I have no interest in a semantic struggle, nor do I wish to persuade those persons to find some word other than *revolutionary* to celebrate medicine's amazing feats. Instead, I wish to engage those who believe that medicine is embracing fundamental change,[10,11] and to persuade them that most current proposals for health care reform[12-14] are variations of the same old system. I would then like to outline a plan for true revolution.

The field of family practice, as it emerged in the mid-1960s, was originally based on revolutionary principles. At the birth of family practice, an emphasis on primary

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care, universal access to care, and appreciation for principles of general systems[15–17] could have spearheaded the changes that are now being widely advocated.[8] Now, after 30 years, is family practice better positioned to lead than it was at birth? Is the country more ready for change than it was in the 1960s?

The Current System

The specialist-technologist revolution in medicine, which began at the time of Sir William Osler, was the medical domain's analogy to the industrial revolution, or Alvin Toffler's "second wave."[18] It produced a tremendous amount of good. The guiding principle of this revolution, which also could have been termed the *reductionist revolution*, was "divide and conquer." No other medical revolution before this one produced such an eruption of medical knowledge: hitherto impassable boundaries yielded to this powerful paradigm. Disease after disease succumbed to new treatments. Pharmacologic and surgical armamentaria exploded. Finer divisions into new subspecialties, closer scrutiny of the genome, and elucidation of cellular and subcellular mechanisms pushed back the frontiers of ignorance.

Sadly, though, the specialist-technologist revolution has now passed into an advanced state of senescence. Its powers of discovery are racing unchecked, but its moral self-regulation has failed. Our leaders have noted that we have 38,000,000 uninsured patients; explosive, uncontrollable health care costs; a disproportionate concentration of wealth in certain specialties; "turf wars"; refusal to treat patients who cannot pay; overspecialization; increasing public dissatisfaction; and poor relations between physicians and other professionals and between allopathic and nonallopathic physicians.[19] However, the connection between the specialist-technologist agenda and the production of these problems has not been acknowledged.

Every scientific paradigm promotes deeper understanding of the particular issues it addresses. This is good news for issues considered central to the paradigm, but bad news for those outside the loop. When a paradigm is immature, it can usually afford to ignore certain issues. Eventually, though, these issues become more pressing and harder to ignore. In the middle age of a paradigm, these issues draw some attention by virtue of the conflict between their champions and the powers that be. Still later, when the paradigm is mature, those in power ridicule their opposition, stimulating open conflict. As conditions deteriorate, the champions become energized, sometimes shifting their focus from the promotion of a single issue to a full-scale attack on the paradigm itself. These attacks are initially weak but may gain momentum. As the paradigm slips into senescence, it must counterattack the champions with progressively greater force. When the counterattacks are successful, the champions are silenced, but issues do not go away; instead, new champions arise and eventually prevail. When they do, they ensure the extinction of their former antagonists.

The cries of those whose needs have been ignored are growing loud indeed. The founders of the American Board of Family Practice, who would have answered those cries years ago, have been thwarted by reactionary powers. As the declining strength of these powers appears imminent, however, generalist physicians seem poised to step in and assume key responsibilities. We cannot look to specialists for assistance in this effort (although genuine assistance would be welcome) because they are interested in preserving their power for as long as possible. Because most specialists intend to repair and bolster the old system rather than replace it with a new one, alliances with them usually serve only to suppress the development of new ideas.

At this time, generalists are on the threshold of an exciting time, a time ripe for revolution. None of the health care plans currently on the table, even the *apparently* radical Clinton proposal, is capable of managing our present crisis.[20] These plans ignore major issues, such as serious malpractice reform. They also advocate repair of completely ruined, irreparable aspects of the system, such as our corrupt medical insurance system, which should be scrapped rather than refurbished. Worse yet, each proposal focuses on pieces of systems rather than the whole system. *Truly* radical plans are needed. A comprehensive problem list for the health of the nation should be formulated and obstacles to a thorough reform swept away. It is insufficient to apply bandages to a mortal wound; the system requires radical surgery. We should tear down the greater part of the present structure and rebuild.

Anatomy of a Revolution

Based on studies of historical revolutions, medical and otherwise, I propose the following five-generation cyclical model for our recent scientific revolutions.[21–26] The characteristic of each of the five generations in the scientific revolutions are analogous to those of the American Revolution of 1775.

In the context of Kuhn's insights,[21] I describe the current medical paradigm as the *specialist-technologist revolution*, which began in the late 1800s and is now in its fifth generation. The revolution that is expected to overthrow it is the *generalist revolution*, now in its second generation. The term "generation" is used in this essay to

Table. Characteristics of the Five Generations of Revolution

Generation	Hallmark	Dominant Characteristic
First	A Clarion Call to Arms	*Inspiration*
Second	Synthesis of Comprehensive Agenda	*Synthesis*
Third	The Opportunists Join the Cause	*Adaptation*
Fourth	The "Pax Romana"	*Experimentation*
Fifth	Reactionism and Decline	*Degeneration*

denote a collective group of persons of a certain type rather than a period of time (Table).

The First Generation

The first generation of a revolution is composed of very few persons and is characterized by great originality, not only in revolutionary concepts, but also in picturesque speech and unusual methodology.[27–29] Although first-generation individuals often become heroes (albeit posthumously), not every first-generation person is a hero. Adolf Hitler, for example, was a stereotypical first-generation leader. In a less notorious vein, the first generation of the American Revolution of 1775 included James Otis, Patrick Henry, John Hancock, Thomas Paine, and Samuel Adams. The first generation of the specialist-technologist revolution included Sir William Osler.

The first generation of each new revolution throw themselves into attacks on the fifth generation of the previous revolution, although tactically speaking, an assault on the third generation might be a more practical move. The third generation is less powerful and less able to defend its resources, which can be taken and used in the fight against the fifth generation. The latter tactic, however, usually awaits the entrance of the new revolution's second generation into the conflict.[30] The definitive exposition of the characteristics and activities of the first generation of a revolution can be found in Alinsky's "Reveille for Radicals."[31]

The Second Generation

The second generation takes up the challenge thrown down by the first. This generation is more populous than the first, but does not constitute a majority of the society. They turn the tide of revolutionary conflict not by weight of numbers but by tactics, courage, and devotion to cause.

The minutemen at Lexington, Concord, and other towns involved in the battles of April 19, 1775, who were probably nearly all second generation, numbered fewer than 3800 and represented only about 25% of the adult male population of that area.[32]

Like those of the first generation, members of the second generation have strong moral convictions and embrace the vision of the dreamers, even though they did not conceive the ideas. In contrast to the first generation, they are learners and listeners, and consider the consequences of their actions more carefully. Their first-generation leaders often see them as uncommitted, calculating, and unimpassioned; cowardly in the face of personal risk; and not worthy of a great cause. Patrick Henry had this opinion of his followers at the Virginia Convention in 1775.[27]

George Washington, affectionately known to every first-grade student as the Father of Our Country, typifies members of the second rather than the first generation. He considered himself a loyal British subject long after revolutionary winds began to blow. In the end, he was persuaded by conscience to support the fledgling independence movement. Similarly, Abraham Flexner, whose work overturned the entire basis of medical education in this country, represents the second generation of the specialist-technologist revolution, as do the congressional leaders and wealthy benefactors who assisted him early in his fight.

The Third Generation

By far the majority of any society at any time in its history, and therefore the majority of participants in any revolution, are those of the third generation. Often indistinguishable early in a revolution from those of the first generation, they may protest, complain, petition for redress, and unwittingly encourage those of the first two generations, but the distinction becomes clear when the discussion turns to specific action. Lip service to change and loss-of-privilege protest are common among members of this generation, but action or risk is out of the question. They are indifferent to the moral issues at stake and do not join the cause per se. However, since they have no desire to be on what they believe will be the losing side, they are always watching the progress of revolution. When the second generation begins to gain ground, those of the third generation at first hesitate, then, like surfers catching a wave, they mount the revolutionary tide, swelling it to overpowering force.[30]

"Political correctness" is an identifying characteristic of the third generation. They do not personally determine what is politically correct and what is not, but they are the slaves of those who do. During the American Revolution, the Kings of France, Holland, and Spain waited for a sign that the colonists might win before committing their armies to the fight. The vacillation of many colonials,

from Patriot to Tory and back, has been well documented, along with the general reluctance to wear the label *Tory* after 1779.[30] In the specialist-technologist revolution, the third generation emerged after Flexner's success in convincing Congress that a new order was needed. The initial wave of that third generation included the congressmen who voted for a new order, not out of any concern for medicine, but because it looked like the popular thing to do, and also the academicians who saw that a new educational system demanded the building of empires.

These opportunists convert the small advantage, gained at great cost by the first two generations, into a rout, as the former order buckles under the weight of the third generation's initial entry into the conflict. The third generation is the main beneficiary of the new order, but nevertheless demonstrates little loyalty to it: its members simply exploit whatever system is dominant rather than preferring a particular one. The third generation determines the outcome of the struggle by their entrance in huge numbers, but because their interest is in using rather than creating or developing, their voice in the organization of the new order is weak.

The Fourth Generation

As the dust of the conflict settles, a new order emerges. The seeds of the system's destruction are sown in the fourth generation. Although these heirs of the first two generations have not personally participated in the revolution, they have easy access to fresh eyewitness accounts, not only of the revolution but also of the conditions that precipitated it.[29] The lack of real experience in the revolution dampens any associated moral passions, but recent historical accounts encourage allegiance to the principles embraced by the first and second generations.

Fourth-generation persons love to tinker. They lack appreciation for the risk of destroying the whole by tinkering with the part. They are bureaucratic, and gradually centralize the foci of power, not so much for personal gain as for efficiency. They seem not to fear, as did the second generation, that "power tends to corrupt, and absolute power corrupts absolutely."[33]

The fourth generation of the specialist-technologist revolution lost dominance in the 1960s. By this time, the giddy intoxication of new understandings of pathophysiology and therapeutics, as well as the inevitable isolation of increasingly technical specialty fields, was beginning to shake the foundations of the system. In the exhilaration of changes made possible by these technical advances, few noticed the resulting problems: disturbances in the physician-patient relationship, loss of access to care by the poor, and the emergence of medical "superpowers," such as the Texas Medical Center and the Mayo Clinic in Minnesota. Until recently, no causal connection was made between the use of technology by those who could afford it, and the loss of medical care by those who could not. Many physicians still may not entirely understand how such superpowers came to be rechristened as "cost centers" rather than as "revenue centers."

This short-sightedness does not necessarily mean that the original principles of the specialist-technologist revolution are flawed but rather that the history of revolutions is repeating itself. If the present paradigm should be overthrown by a generalist revolution, as it appears it will, there is no rational basis for hoping that the generalist revolution could avoid a similar decline into its own fourth generation: "Those who cannot remember the past are condemned to repeat it."[34]

The Fifth Generation

The fifth generation is identified by progressive accumulation of wealth and power, characteristic tactics in gaining and holding that wealth and power, and progressive decline into moral depravity.

This is the distant poststruggle generation, which possesses only a distant and distorted perspective of the revolution. As the fourth generation yields gradually to the fifth, the passage is most easily discerned by the contrast between the fourth generation's praise for the previous revolution and the fifth generation's criticism of it.

Sadly, any first- and second-generation persons who are still living in the time of the fifth generation of their revolution become functional reactionaries by continuing to expound the same ideals. Their once new and fresh perspectives now are stale. They become puppets of the fifth generation, who often quote them to justify the suppression of the new revolutionary cycle.[35]

Fifth-generation oligarchs have a penchant for setting up petty dictators as siphons for wealth and power. These pseudoleaders must eventually be dethroned for trying to exercise power they never really had. Manuel Noriega, Saddam Hussein, and the Haitian junta are prime examples. Moral gadflies have a field day with this phenomenon, pointing out to the US public that the opponents in these carefully propagandized wars were actually empowered by our tax dollars. Similarly, physicians rejoiced when developments in insurance in the 1960s put more money in their pockets and paved the way for an explosion in technology. Now they rue the threats posed by these same insurers flexing their collective muscles and are frantically seeking to strike back with IPAs, HMOs, PPOs, and MSOs.

The fifth generation repudiates ethical considerations that might curb their ascent as oligarchic power

brokers. They consolidate their stranglehold on those less ruthless than themselves. They oppose the emergence of new ideas of all kinds, knowing that change would displace them from their positions of power. Early on, they find it effective to simply ignore new ideas. Later, as the moral decay of the fifth generation advances and the urgency and appeal of new ideas grows, they recognize the need for more severe tactics and are willing to use them.[21,26]

Approaching the final days of the fifth generation, increasingly drastic measures are taken to identify the emergent first and second generations so that their ideas and presence can be extinguished. The assault on the colonialists' powder magazine at Concord was only the secondary purpose of the British actions of April 19, 1775. More important to them was the possibility of capturing John Adams and John Hancock, who were known to be staying that night at Lexington. Even though the powder magazine was destroyed, the British considered the raid a failure, not because of their casualties but because their targets had been alerted and were evacuated before the attack.[32] This willingness to destroy lives for the sake of retaining power is a hallmark of deteriorating fifth generation systems. Ultimately, the fifth generation weakens from the consequences of its own behavior, and its control is stripped away by the combined mass of the first, second, and third generations of the next revolution.

In another potential scenario, the impending collapse may be a surprise to second-generation revolutionaries: no one is prepared to administer the coup de grâce and grasp the reins of power. In such a case, the fifth generation collapses and the system enters a chaotic dark age in which no new paradigm holds sway.

The fifth generation of the specialist-technologist revolution emerged in about 1965 and is currently in its final days. Its last hurrah may very well be the pseudo-reformation initiated by managed care. Even in its original form, the failed Clinton reform effort, which looked to managed care for answers, was not comprehensive enough to stem the tide of decay. Although it contained a large number of carefully determined incremental changes, including many that are precious to us as family physicians, it fell short of revolutionary change. The legislative process further compromised its chances for success by enabling the machinations of each powerful special interest group to mangle the plan beyond recognition. Those groups sealed their own doom by ruining this reform effort. The public is becoming aware of how badly it was cheated in its hour of need and great potential. Ordinarily passive and complacent, the public recently demonstrated how easily it could be incited to bring down the present order. The congressional elections of 1994 are a premonitory tremor of the earthquake that will ensue if the Republicans squander their opportunity to satisfy the public.

The Next American Medical Revolution

It is clear that the specialist-technologist revolution cannot survive beyond a few more short years. Therefore, the question is not "Will it fall?" but "What will take its place?"

I predict that the next American medical revolution will be a generalist revolution. The current leaders of this revolution are predominantly second generation persons, biding their time for the proper moment to move, but they should not wait much longer.

If the principles of this thesis are true, the second-generation revolutionaries in generalist medicine must begin to meet and set an agenda, based on their understanding that there will soon be a massive power shift. This shift could be the spontaneous demise of the present system, with a new as yet unknown dominator emerging from the chaos. Odds are that the new dominator will be an oligarchy of the insurance and legal professions. Alternatively, the shift could be a coordinated generalist revolt, speeding the demise and pre-empting the self-destruction of the present system.

Faced with these two choices, second-generation generalist revolutionaries should opt for the generalist revolt, pooling their ideas and visions for the future. They should be guided by a "zero-based budget," wherein every aspect of the system that is not completely healthy is replaced. Novel, even shocking ideas should be considered; the collective wisdom will be an adequate filter.

Even if carried out in great earnestness, this process certainly cannot be completed in less than 3 to 5 years, Since the stability of the present system cannot be guaranteed for that long, leaders of this revolution must be prepared, in a worst-case scenario, to engage the struggle "prematurely" and finish the organizing work once in power. Financial empires must not be allowed to swallow up the medical profession merely because no new plan is ready for implementation when the old system fails.

As soon as this plan has congealed, the second generation must lead us to establish a renewed commitment to serve as respected altruists in caring for the sick and advising and encouraging the well.

While those leaders are constructing plans, other forces will be at work. In the near future, we will see in stark reality the inability of federal government to deal with any problems related to health care. President Clinton's first 2 years dashed any hope that even a determined executive with a large legislative majority could produce anything meaningful in this arena. Meanwhile, state gov-

ernments are unwilling to accept responsibility for dealing with these problems. They are a metaphor for an America that hopes to refer all its problems to Washington for a quick and painless solution. Some local governments, particularly in more rural areas, may assume responsibility and integrate services, conceivably condensing the best parts of medical care as we know it into a more comprehensive administration of water and sewer treatment, immunization, and public health. Urban centers of health care, however, will become paralyzed as the cities become less capable of carrying the burden of their uninsured.

Payers will be busy these next few years attempting to leverage their recent market triumphs into a stranglehold on all medical decision-making. What is the most dangerous part of this game? Our few common goals may tempt us to form alliances that are actually enslavements. On the surface, we share with HMOs the goal of providing basic, cost-effective care. The huge difference is that they want these things to be available only to healthy people who do not need them. The lame, the blind, and the suffering are the object of our compassion, while to the insurance oligarchs, they are only lost profits. In truth, we have nothing in common with insurers, and we must not sell our birthright to them.

Insurers will devise all possible means of profiteering in these next few years. There will be a frenzy of deleted coverages for high-tech services, costly patients will be dropped from payers' rolls, and "portability" problems will be exacerbated. They will revel in the tumult created by the perpetual switching of payers by businesses, knowing that the fine print in new policies and the disruptions in physician-patient relationships mean fewer patients will figure out how to best use their benefits. Likewise, each new layoff will be an occasion for profiteering by insurers. Crowds of people will be paying exorbitant individual insurance rates and those in greatest need will be purged from the rolls of the insured.

There will be insurmountable obstructions to utilization. Primary among these will be paperwork that exceeds even the ambitions of the Medicare bureaucrats. The "just say no" attitude will be nothing less than the gradual usurpation of the practice of medicine by payers. Internal warfare in the insurance industry between "medical" and "medical malpractice" insurers will break out. Malpractice claims will enrich one group at the expense of the other. Eventually, the group utilizing the more brutal tactics will win, resulting either in malpractice reform without the help of government or out-of-control costs related to the continuing and potentially fatal financial hemorrhaging brought on by malpractice ransom payments.

Not all tactics will be aimed at all physicians. We will be pitted against one another—particularly generalist against specialist—in an effort to keep us distracted while oligarchs fashion their empires. They will offer generalists an appearance of power that is actually servanthood. They will tell us that we are replacing the specialists on the gravy train. They will call on us to do procedures that were formerly in the domain of specialists; ie, manipulating medical privileging by controlling reimbursement by insurers, with no regard for the overwhelming manpower demands that would result.

The worm will turn shortly thereafter, though, because as soon as the insurers decide that physician assistants and nurse practitioners can perform many functions, the privileges won by generalists at great cost will be lost to these providers, who are able to gear up far more quickly to meet the manpower demands. Since insurers view this massive transfer of power to generalists as nothing more than a means to an end, generalists should interpret the transfer as a springboard to revolution rather than an accomplishment.

Specialists who label themselves as generalists will find themselves unable to function efficiently in a generalist environment, leading payers to reject them as generalists. Large numbers of specialists who find themselves no longer needed will be expected to retrain or retire, but few will be retrainable. Old reductionist habits are hard to break.

Generalists who ought to know better will blame the old elitist specialist cadre for creating the present mess. Insurers will not complain about such scapegoating—it diverts attention from their profiteering. The last old elitist cadre to be thrown from power by revolution, and later invited to share power, was the communist leadership of the former USSR. What has Boris Yeltsin gained by trying to retain the best parts of the old system?

Summary

The time for attempting to repair the present medical system has passed.[36] We have extracted all we currently dare risk from blind devotion to technological development and specialization. It is time for that paradigm to gracefully bow out, but I predict it will not do so. Those in influential positions will seek to preserve their advantages until forced from power. They may defend their position by claiming lineage from Osler, but their agenda is little like his. Osler and his collaborators approached the specialist-technologist revolution by advancing a positive agenda: the application of the reductionist tool to the science of medicine. We cannot hold Osler responsible for the actions of those who, since his death, have carried his ideas to unbearable extremes that could not have been contemplated a century ago.

In contrast, those who carry on the work of that reductionist philosophy in our present day *should* be held accountable for the bitter fruits of an exclusive, unbalanced devotion to this cause. Their denial of responsibility for the unexpected results of their actions is indefensible. Physicians trained as specialist-technologists who focus on individual patients, and even more so, on particular parts of patients, have not always considered the consequences of their actions on whole systems. Their neglect of and eventual hostility toward public health issues has levied a heavy tax on society and the science of medicine.

Further, suppression of any idea (in this case, generalist ideas) is antiscientific by definition and should be opposed. The specialist-technologist revolution, with its slavish devotion to reductionist philosophy, must be called to account and reformed. Since it shows no tendency to break with the past and accept radical change, coercion may be necessary if true revolution is to occur. Perhaps the collapse of the Clinton reform experiment will catalyze this change, and a generalist revolution may come to power. Insurers will be the major third party in this struggle. Actions of the insurance industry should not be confused with revolution, but we should use the powers given to us by that industry to propel us into full revolution. It is possible to learn from the past. As generalists, we should soberly reflect on what we must do differently to avoid the decline and moral decay of our revolution that has been the fate of all other revolutions.

Stand your ground. Don't fire unless fired upon, but if they mean to have a war, let it begin here.

—Capt. John Parker
Order given to Lexington minutemen
April 19, 1775
Lexington Battlefield Monument

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