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**SHAPING THE REVOLUTION: THORACIC SURGEONS AND SOMETHING MORE**

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Historians in the audience will recognize that this title is adapted from Julian Johnson's 1963 presidential address.<sup>1</sup> Dr. Johnson recognized the revolution that had been taking place in the 1950s and 1960s, which brought science and research into the mainstream of clinical medicine. This in turn permitted the maturation of thoracic surgery into a scientific discipline and a true specialty. In this revolution, which placed research at the apex after the Second World War, Dr. Johnson pled that operating clinical surgeons should take a leadership role in research and teaching, as well as in clinical surgery. By so doing, thoracic surgeons became surgeons and something more.

In times of rapid change or revolution, it takes leadership to shape the revolution into an orderly transition without overthrowing the best of the

previous era—hence Dr. Johnson's plea that operating clinical surgeons take the leadership role rather than turning it over to nonoperating research professors, as happened in some of the medical disciplines.

During turbulent times it is especially helpful to have mentors who, leading by example, make it all right to follow different and unconventional pathways. Fortunately we in thoracic surgery have had several such mentors during the 1940s to 1960s who guided the introduction of serious research and science into clinical surgery. These mentors encouraged a number of recent presidents of this Association and other current leaders in thoracic surgery to be "surgeons and something more." Today thoracic surgeons must provide leadership in shaping the outcome of the present health care revolution, which we are surely in. For me and many others, a special mentor was Edward D. Churchill, chief of surgery at the Massachusetts General Hospital (MGH) from 1931 to 1961 and the John Homans Professor of Surgery at Harvard Medical School.

I was first introduced to Dr. Churchill and the MGH during my senior year at Yale Medical School, where the influence of Gustaf Lindskog and Bill Glenn stimulated and developed my life-long interest in thoracic surgery. Dr. Lindskog was a master clinician, anatomist, and an advocate of cross-disciplinary scientific efforts combining pathology, radiology, and pulmonary medicine with tho-

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racic surgery to advance the field and provide superb opportunities in education. Dr. Glenn was a clear advocate and exponent of basic surgical research and applied it directly to clinical problems, hence leading to the development of the Glenn operation and an early membrane oxygenator while I was at Yale. Both of these two giants in Yale surgery were trainees of Edward Churchill, and they not only encouraged me but made it possible for me to go to the MGH. I was told at the time that I was the first Yale student ever to go to the MGH surgical residency and was known in Boston as "The Metastasis" for several years.

The MGH in 1959 was an exciting place, as it is to this day, reflecting Dr. Churchill's philosophy of education. He assembled an all-star group of surgical giants, each an international leader in his respective field. Somehow Dr. Churchill's leadership allowed for the emergence of these prima donnas and had them working together with a superb house staff. The diversity of the MGH surgical leaders and the rectangular nature of the residency program allowed for people of many varying interests to work side by side and provided the opportunity to complete the residency program to individuals with widely divergent viewpoints. Dr. Churchill allowed not only his peers but the residents themselves to teach and lead each other, a significant and unconventional break from the traditional Halsted pyramidal program.<sup>2</sup> Thus two of my most important teachers in the first 2 years of my residency were George Zuidema and Gerry Austen, who served as chief residents on the East Surgical Service during those years.

Professor Churchill was unconventional in ways that broadened the outlook of his associates and made it all right for his students to pursue careers evolving into different pathways and preparing them intellectually to be able to deal with radical change, which has been a constant in recent years. First of all, Dr. Churchill was a pioneering thoracic surgeon. He is credited with the first pericardiectomy in this country, early esophageal and parathyroid surgery, and he was a major developer of the anatomic pulmonary resection. He attracted outstanding thoracic surgery fellows, including Lindskog, Max Chamberlain, and Ronald Belsey. In 1939, Churchill and Belsey<sup>3</sup> published the first descriptions of segmental resection of the lung and established the pulmonary segment as the key anatomic unit of the lung. During the Second World War, Colonel Churchill was the surgical consultant to the Fifth

Army in the Mediterranean theater. After the war, the surgeon general referred to Dr. Churchill as "The man who has done the most outstanding work in the development of military surgery in the war."<sup>4</sup> Truly a thoracic surgeon and something more. Churchill's early pioneering work in several fields was followed up by colleagues such as past presidents of this Association Gordon Scannell in pulmonary surgery, Gerry Austen and Mort Buckley in cardiac surgery, and Richard Sweet in esophageal surgery. It was while I was serving as a resident for Dr. Sweet that my first interest in esophageal surgery was stimulated. My interest led Dr. Churchill to arrange for me to spend a definitive year in my life at Frenchay Hospital under the guidance of Ronald Belsey.

Ronald Belsey has been not only my clinical and scientific mentor in thoracic surgery but one of my closest friends and a personal mentor to me and our family. After his fellowship with Professor Churchill at the MGH, Mr. Belsey served as a surgeon at St. Mary's Hospital in London during the Second World War. He then became the first consultant thoracic surgeon in southwest England at the specialized thoracic unit at Frenchay Hospital, where he remained until 1975, when he joined me for 12 years as visiting professor at the University of Chicago. During the Frenchay years a number of North American surgical residents from the MGH, the University of Toronto, and The Johns Hopkins Hospital had the opportunity to serve as senior registrar or registrar on Mr. Belsey's service. His impact on the evolution of American thoracic surgery and especially esophageal surgery has been enormous.

Although best known for his contributions to esophageal surgery, such as the Belsey Mark IV antireflux procedure,<sup>5</sup> isoperistaltic left colon interposition,<sup>6</sup> the exclusive right thoracotomy approach for esophagogastrectomy,<sup>7</sup> esophagomyotomy, and diverticulopexy for Zenker's diverticulum,<sup>8</sup> and many others, Mr. Belsey was also a major contributor to pulmonary surgery, describing segmental resection of the lung 58 years ago with Churchill<sup>3</sup> and describing a successful technique for total tracheal replacement.<sup>9</sup> It is not as widely known that he was also a pioneering cardiac surgeon with an early experience in profound hypothermia and circulatory arrest for the correction of congenital heart anomalies.<sup>10</sup> Mr. Belsey became an honorary fellow of The American Association for Thoracic Surgery in 1966 and is here with us today as my special guest 58

years after his landmark article in pulmonary surgery.

Many of Dr. Churchill's residents became thoracic surgeons and something more, following in his footsteps. Those of us who became department chairs were clearly influenced by and adopted diversity in our faculty and residency programs. This in turn has encouraged growth in others. I am pleased that seven colleagues from my chairmanship at the University of Chicago are now university department chairs in this country and twelve former residents are providing leadership in cardiac or thoracic surgery programs. Overseas, a number of fellows have become department chairs or heads of thoracic surgery divisions. The Churchill legacy continues and provides us with the courage and resources to address the current health care revolution.

To understand the revolution that we are currently experiencing, it is helpful to put it into the perspective of the previous health care revolution this century. Before World War II medicine was based almost entirely on clinical observations and experiences. Almost no research was being done, and responsibility for health care delivery had no nationally organized basis. With varying levels of support, communities and sometimes states accepted some health care responsibilities, mainly for public health. During these times access was widely available through a variety of health care practitioners. Nearly every small town had a local doctor of some sort. Quality in the absence of science was poor, and costs were not great.

The first major revolution of this century came in the 1950s and 1960s, when scientific discoveries began to dominate the practice of medicine and the federal government began investing heavily in biomedical research. As a scientific basis for treatments became available, clinical experience counted for less.

Societal interest became involved in the mid-1960s with the establishment of Medicaid and Medicare as national programs, but these initially exerted very little control over the usual patterns of physician and hospital practice. As the impact of research became apparent, quality revolved to the top of the pyramid. Costs still remained relatively low, and access was expanded by the federal programs. During the 1980s the surge of scientific discoveries continued but cost began to rise sharply, thereby denying access to the uninsured and underinsured. This has led to the revolution we are experiencing in the 1990s.

If this revolution succeeds, societal interest will revolve to the top of the pyramid. Decisions will be made on what is good for the population at large rather than for the individual. Restraints on costs will make research less supported. Concerns about cost become paramount and quality may decline along with the research investment. Our challenge today is to maintain the triangle with quality at the apex. If this is to be done, cost must be addressed and access extended to the entire population. If cost and access can be addressed, then quality and the progress of medical science will continue, and this undesirable revolution of the triangle will be avoided.

Without question, rising health costs are driving this revolution. It is corporate America, finding more and more of its pre-tax profits going for health benefits, which has become the engine driving the revolution. Similar forces are at work elsewhere in the world.<sup>11</sup>

With the failure of the Clinton plan, societal concerns about access have been set aside in the rush to hold down cost. Only physicians and hospitals are concerned about quality and must also deal with providing care to anyone who needs it. To bring cost under control and maintain quality and access, networks are forming between patients and health care providers with regionalization of tertiary care. This requires a close alliance between doctors and hospitals.

The New York Hospital-Cornell Medical Center was an early entrant into the battle to preserve quality while reducing cost and maintaining access. In late 1987 and 1988 when I first arrived as the president and chief executive officer of The New York Hospital, losses were exceeding 1 million dollars a week. The only option was to bring cost under control while everyone correctly insisted that quality be maintained. The solution was obtained after detailed analyses of true cost demonstrated that only physicians have control of the cost of hospitalization through their decisions about ordering tests, procedures, and treatments and through their ability to control the length of stay, thus determining the amount of routine hotel and nursing expenses per patient or diagnosis.

Having determined the true cost of care, we were then able to provide data to every service and every physician comparing the revenue per case to the cost per case. For example, during 1988, while major losses were occurring, the cardiothoracic service, having a high revenue per case, was encouraged to

increase its volume, which Dr. Isom and his colleagues did. When the cost data were determined, it was learned that each new case of coronary artery bypass was losing an additional \$5500 for the hospital. Rather than close the cardiothoracic service, Dr. Isom and colleagues quickly found ways in which the use of ancillaries and length of stay could be reduced. Quality was closely monitored and actually improved such that the risk-adjusted mortality for cardiac surgery at New York-Cornell became the lowest in the state and, in 1 year in the early 1990s, was the lowest in the United States. Initially the motivation for physicians to lead the way in reducing cost was the terror factor of potentially losing their hospital. Later, as economic balance and gains from operation were achieved, a system of incentives for the departments to meet targets was introduced and maintained physician interest.

Efforts to improve efficiencies and quality have been sustained and supplemented by hospital-wide reengineering, again to improve efficiency and quality. The result has been a steady annual improvement in the operating performance of the institution.

A recent example carried out on Dr. Isom's cardiothoracic service by Dr. Ferdi Velasco and others<sup>12</sup> during a fellowship was a detailed analysis of delays and inefficiencies in coronary artery bypass with and without catheterization. Once the analysis was complete, efforts involving the entire staff including nursing and nonprofessional personnel were undertaken. Over a 4-month time the length of stay for a patient undergoing bypass without catheterization dropped from 8½ to 7 days. When catheterization was done during the hospitalization, lack of coordination had driven the length of stay up to 12 days compared with 8 when the catheterization had been done previously. Streamlining the process and following newly devised pathways lowered the length of stay for coronary bypass with catheterization to 8 days, only 1 day greater than expected for coronary bypass without catheterization. Once again, only the physicians can make this happen.

Today clinical pathways, a form of medical reengineering, are being developed and widely adopted in many institutions including mine. The results are dramatic, with an overall 14% reduction achieved for coronary bypass procedures in the use of ancillaries and a significant reduction in the length of stay with no sacrifice of quality.

From many examples and measured in many ways, we have concluded that quality care is less

expensive care.<sup>13</sup> This is achieved by getting the correct diagnosis and the right treatment with the fewest tests and fewer interventions, and it can be achieved by cooperation among the physicians and hospitals to avoid duplication and delays that are so expensive. This being understood, it is now clear that the cost-based revolution can be controlled by the physicians, who are capable of reducing cost without sacrifice of quality. To achieve this, all of us must be surgeons and something more. The results of these efficiencies and improved care must be built into our education system as much as we have built the science revolution into physician education.

Besides our responsibilities to control cost while maintaining quality, many other aspects of the current revolution create choices that we as thoracic surgeons must make or be involved in. In the previous generations, cardiothoracic surgery separated from general surgery. The forces encouraging specialization are strong and were almost unopposed over recent decades. They were driven especially by the expanded knowledge and technologic base. Now we are once again facing choices as to whether our discipline should fragment further into general thoracic surgery, surgery for congenital heart disease, and surgery for acquired adult cardiac disease or whether it should remain unified. We are facing the pressures that managed care entities do not seek the benefits from multiple specialists. This exposes our discipline to losing some of its content, especially general thoracic surgery returning to the broader field of general surgery.

These tensions between fragmentation and unification will ultimately be decided first at the individual institutional level. Hence all cardiothoracic surgeons must be involved in these choices about the future nature of our field. The current effort to separate vascular surgery from cardiovascular surgery on the one hand and general surgery on the other hand is only the most recent crisis demanding our attention in this regard. Esophageal, pulmonary, and chest trauma surgery are very much in jeopardy. If you do not fight and win the battle to your satisfaction at home, eventually it will be lost nationally as well.

Every discipline stands at risk to the inevitable changing patterns of disease and to technologic developments that provide alternatives to conventional treatment. Our discipline seems particularly vulnerable to prevention of both cardiovascular and neoplastic diseases. On the other hand, an increased demand for thoracic surgery may result from in-

creasing trauma, pollution-induced pulmonary disease, resurgence of other infections, and increasing demand for cardiac transplantation or the introduction of artificial hearts. For the esophageal surgeon, reoperative surgery continues to require thoracic surgical expertise as more and more esophageal surgery is done by surgeons without much expertise in the field.

Technologic developments also are changing the nature of cardiothoracic surgery. Further refinements in percutaneous and endoscopic techniques, balloon catheters, stents, laser treatments, and the well-established trend toward less invasive operations are already reshaping the armamentarium of thoracic surgery. Many diseases now treated by standard open surgery will be managed by alternate means in the near future.

These changes in disease patterns and technologic treatments raise the question of redefining the role of the surgeon. Are we defined as physicians who use the operating room, or are we defined as physicians who have expertise in diseases typically treated by surgery, or will we adapt to being physicians having a range of treatment modalities defined by the diseases we treat rather than by the technology? For maximal flexibility, thoracic surgeons should emphasize the study of the diseases of the chest and their pathophysiology and acquire skills for treatments both inside and outside the operating room. Thoracic surgeons must provide leadership for multiple specialty teams that can work as a team for the benefit of the patient. Today, with so many competing treatments, the patient is often forced to choose between competing therapies without sufficient knowledge and without true informed consent. For the sake of the patient, we must become thoracic surgeons and something more.

For the benefit of patients and to improve the quality of care, we at The New York Hospital-Cornell Medical Center and Columbia-Presbyterian Medical Center are exploring the restructuring of the medical organization with emphasis placed on diseases rather than traditional hospital departments. Restructuring by disease cluster brings together all of the physicians from multiple disciplines who have an expertise in a particular field such as lung cancer or coronary heart disease. These physicians would function together as a team, being in close geographic proximity both for inpatients and outpatients and providing continuity of care and shortened hospital stays. This focuses the expertise so that decisions can be made in the best interest of

the patient rather than on the basis of competing specialties and technologies. The cluster of physicians treating a particular disease would be in a position to assess overall demand and determine the optimal number of doctors working together in teams. This allows physicians to address the question of excess capacity. Such a disease cluster structure is ideal for capitation in the managed care market, with incentives being in place for efficiencies. Such clusters make the marketing of centers of excellence a reality. A basic discipline of surgery or medicine needs to be maintained for student and first- and second-year residency education, but advanced residency education and fellowships would be enhanced by the advanced trainee having access to the spectrum of expertise concerning major diseases.

A reorganization by disease cluster could include a broad spectrum of functional groups. Surgeons and other specialists might participate in several groups on a percentage of time basis. In such a restructuring the revenues would be billed and collected on the basis of the disease cluster. This approach lends itself to structuring prospective fixed payment amounts for particular diseases, which makes contracting with third parties much easier. Funds collected by the disease cluster group would be used first to reimburse traditional departments for the percentage of efforts that various specialists spend working with the cluster patients; then the institutional support and practice expenses would be paid. The surplus would remain with the physicians in the cluster, offering opportunities for supplemental compensation and further development of the cluster.

One example of this in cardiac surgery has been introduced and worked out at New York Hospital-Cornell Medical Center by agreement among the several specialists treating coronary artery disease. A fixed price is established and negotiated with insurance companies to cover all costs of treating patients admitted with cardiac chest pain. The physicians involved are in close contact and develop a treatment pathway based on the unique circumstances of the individual patient rather than on specialty interest. All involved physicians receive compensation for the treatment of each patient entering the pathway, regardless of the final therapy given. A fixed percentage of the physician component of the fee is paid to the cardiothoracic surgeon, the cardiac anesthesiologist, the coronary care unit physician, the interventional cardiologist, and other

members of the team, regardless of what treatment the patient actually receives. This eliminates an economic aspect to competition among the specialists and provides the most streamlined and efficient care tailored to the patient's need.

At The New York Hospital–Cornell Medical Center, such disease cluster restructuring is now being implemented for heart, vascular, neurologic, neoplastic, gastroenterologic, and adolescent medical diseases. Others are evolving naturally. Similarly, at Columbia-Presbyterian other clusters such as pulmonary are in the process of formation. The newly opened Greenberg Pavilion of The New York Hospital is not structured along traditional departmental lines. Rather, all patients with heart disease, whether medical or surgical, are placed in the same intensive care and inpatient units, and the nurses and staff are cross-trained to care for patients with heart disease. Similar geographic clusters are being implemented for patients with cancer, gastrointestinal diseases, neurologic diseases, and others. It is early in this experience, and as expected the funds flow issues are the most difficult. However, there is general physician enthusiasm to restructure along these lines.

All of these changes force new thinking and the acquisition of different types of expertise among cardiothoracic surgeons. The choices that face us are multiple. If physicians are to retain the responsibility and control for quality of care and avoid a revolution based solely on economics and social decisions, each of us must become heavily involved in the resolution of patient, public, and professional choices.

Fortunately, surgeons have many qualities to make them ideal as change agents. We are typically decision makers, risk takers, activists, responsive to our communities, and many have leadership skills. Hence most of us must become thoracic surgeons and something more or else we shall abandon our legacy and abandon the structure and control of medical care to people whose main concern is not the well-being of our patients.

Cardiothoracic surgeons can participate in the health care revolution at different levels, including as individual practitioners, as members and leaders of our professional organizations, and as leaders of public or private institutions. As practitioners there are many places where we can be thoracic surgeons and something more. The quality of patient care at the local institution and surgical standards still rest with the practitioners. We must invest more into

becoming educators of our patients, as well as of students, residents, and colleagues. We must all be active in our local communities as health care restructuring issues are addressed. Individual practitioners remain the source for advancing knowledge in our field, much as Julian Johnson insisted that we do in the first version of this theme.

As leaders and members of our specialty organizations, we can strongly influence the setting of standards through the medical boards and peer review. We can set the content of professional education through a variety of structures in which we play a leadership role. We can help focus research that will determine the future of our specialty through our specialty society scientific programs, guidance of granting agencies, and through our medical school involvements. However, because our professional societies are too fragmented and do not control major resources, the ability to influence major public policy is rather limited.

Some of us are given the opportunity to serve as leaders of public or private institutions. Fortunately a number of currently active and practicing thoracic surgeons have accepted such responsibilities, including our president-elect, Dr. Floyd Loop at the Cleveland Clinic, and a number of leaders in this association, both former and future presidents. As I commented at the time of my election to this position, I had never expected this to happen, because I thought that accepting a major administrative post would be viewed unfavorably by my thoracic surgical colleagues. I now realize that if we in our specialty do not accept and recognize such challenges, we will be left out of the decision-making process. I have had a splendid time continuing thoracic surgery while leading one of the country's great medical centers. I strongly urge any of you who have such an opportunity to do so. One can retain the practitioner role, retain the professional society role, and have a much more important opportunity to control resources and influence overall patient care and public policy. A few thoracic surgeons and other surgical specialists are called to participate through the political process, where a different kind of impact can be realized in helping to shape the revolution. Senator Bill Frist and former Surgeon General C. Everett Koop are outstanding examples of such opportunities.

As a leader of a major academic health center, one does have to accept the responsibility for the future of medical practice within a broader community. The current revolution is certainly in mid-

campaign, and the struggle between physicians and hospitals striving to maintain quality while controlling cost pits us strongly against financial forces represented by health maintenance organizations and insurance companies. In the early years of this revolution, it seemed as though the advantages were all with the insurers, who acquired the power to control individual physicians and institutions and determine patterns of patient care. It seemed that the best counteraction to this would be to create power in the hands of the providers so that the negotiation between payor and provider would take place on a level playing field and the interest of the physicians and public in quality care could be protected. For this reason, over the past 7 years The New York Hospital has developed a corporately integrated network of providers, physician groups, nine general hospitals and six specialty hospitals, nursing homes, rehabilitation facilities, and more than thirty ambulatory sites scattered throughout New York City and Westchester County.<sup>14</sup> These all function under a single corporate parent, which I have been privileged to lead.

Consideration of the future of this network and its ability to improve patient care quality were the major factors in our recent decision to merge The New York Hospital and The Presbyterian Hospital in the City of New York. Both New York–Cornell and Columbia–Presbyterian are justifiably world famous institutions, but their centers of excellence are complementary to each other and not competitive. It seems obvious that quality for all the patients within our system would be improved if we brought together the excellence of these two major institutions at the core of the health care system. A second factor was accessibility. The New York Hospital Healthcare System largely included Brooklyn, Queens, and the eastern portion of Westchester county, whereas the Presbyterian affiliates were largely in the Hudson River Valley on both sides of the river including institutions in New Jersey, upper Manhattan, the Bronx, and Westchester County. Bringing these two centers and their corporately sponsored affiliates together now means that approximately 15% of all inpatient health care in New York City and Westchester County is provided by a single entity. The power of this market penetration has become evident in our recent successes in contracting with health maintenance organizations in the newly deregulated New York State medical economy. Some cost savings will be achieved, but the main reasons for this merger have been the

extension of quality to a broader segment of the public and an increased market share.

When the power of institutions such as New York–Cornell and Columbia–Presbyterian is focused, much can be achieved. On this very day, the first patients are moving into the new Greenberg Pavilion of The New York Hospital. The need for this facility was acknowledged 25 years ago. In the past 9 years, it has become a reality through the work of many people. Among the road blocks encountered was the need to obtain 43 separate federal, state, and city licenses and endorsements. It was possible to break through the bureaucracy that seems stifling and contrary to the good of our patients and our profession. However, considerable public support can be mobilized for quality care and forward planning about the future of American health care. I have been privileged to participate in all of this and, I hope, added something more to an otherwise totally satisfying career as a thoracic surgeon. Fortunately, many of our colleagues have made similar choices and are making a difference.

I strongly believe that this current revolution can be shaped to preserve quality as our first objective. Admittedly cost must be controlled, but we know how to do that better than anyone else does, and our commitments include accessibility to all of our citizens regardless of ability to pay.

This strong belief is buttressed and shared with a family that is fully committed to the improvement in quality health care. My wife of more than 40 years, Ellie, is the daughter of two distinguished Cleveland academic physicians, and Ellie has always guided my decisions based on excellence and what is right for patients. Her mother still lives with us at age 92 years and still is focused on quality of patient care. Our four daughters have each played an important role in sustaining these family objectives. Linda, our oldest, is an assistant professor of surgery at the University of Pennsylvania and married to David Callans, an interventional cardiologist in Philadelphia. They have two delightful children. Our second daughter, Kristen, is an assistant professor of surgery at the University of Southern California. Both surgeon daughters include research as well as clinical practice and teaching in their daily lives. Our third daughter fortunately brings an artistic interest into the family as a theatrical lighting and stage designer in Rochester, New York. She is married to Roger Rowley, a photographer and gallery manager and the son of two of the University of Chicago's most distinguished physicians. Carise and Roger

have a splendid baby girl. Our fourth daughter, Margaret, is an environmental engineer for Peoples Energy in Chicago and is also the current president of the Junior Chamber of Commerce of Chicago. She is finishing a premedical educational course and applying for medical school next year. Throughout my life my brother, Don, has been my closest friend and advisor. He has a remarkably distinguished career as professor of urology at the University of Southern California and is recognized as one of the world's great pelvic surgeons. He too is blessed with an outstanding wife, Shirley, and a wonderful family. My entire family is here today and I would ask them to stand and join with me in thanking you for the great opportunity and honor you have given me this year. They are all as committed as I am that quality of care must carry the day as this revolution plays itself out.

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