

“Transplant Revolution”

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In the past 14 years of my career as a transplant surgeon, I have been privileged to participate in an exciting and ongoing revolution, a revolution whose mission is to improve and expand the field of transplantation. Perhaps it is appropriate that this very year we are celebrating the 50th birthday of our clinical profession, and for many of us, the young and the old, the revolution is still going on.

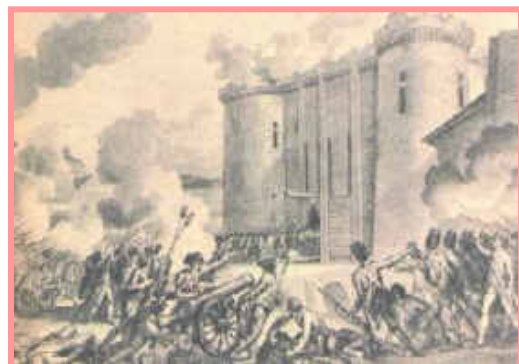


Some assume using the term revolution in reference to our profession is somehow inappropriate, maybe even grandiose. However, our past and our future, are marked with great change; shifts that resulted in a more exciting understanding the way we are able take an organ out of one individual and place it in the body of another, the function of the human immune system in the setting of allograft transplantation, how organs function, and how organs can be built to function. It is my belief that the pace changes have occurred over the last 50 years make the field of transplantation truly a revolution.



From my viewpoint as a surgeon, I am still fascinated to see an organ reperfusion— functioning in a new and different environment, even though that environment does not easily accept the new, albeit better, machinery. It is still fascinating how the host attempts to reject this life saving organ, recruiting all in its power to resist the new organ. Our ability to arrest this process of rejection without killing the host, by using a few pills given over the lifetime of the patient, is a continuing revolutionary achievement.

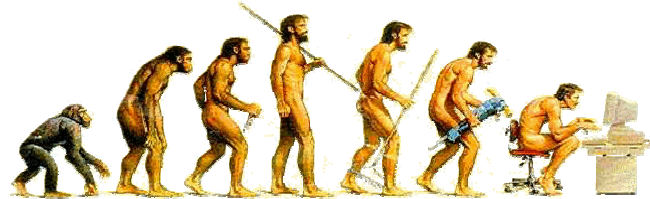
In a historical-political context, the word *revolution* is defined as a toppling of the status quo in a state and society. A revolution brings about drastic and far-reaching change in the ways people and societies think and behave. It is characterized by the need for "a sudden, radical, or complete change". When the demand for progress or the need



for change cannot be met by existing channels, revolutions are inevitable.

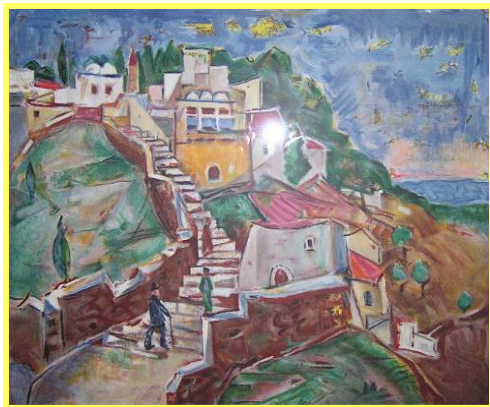
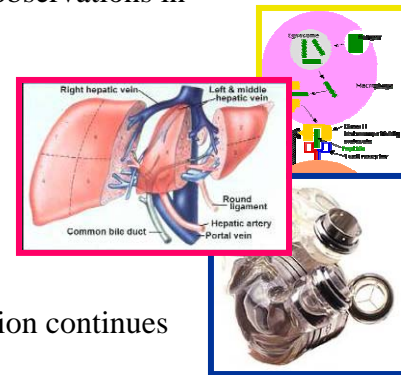
This differs from *evolution*, a gradual process in which something changes into a different and usually more complex or better form. Evolution is the process of gradual development that is part of a set of ordered movements. It is usually a slow process, and in a biological sense, is associated with heritable changes in a

population spread over many generations. Similarly, an evolution in the development of ideas also takes many years.



I have always believed that the field of transplantation should be considered revolutionary. I may be somewhat biased, but I say with confidence that the rapid changes in our field have revolutionized medicine. There are a plenty of examples to support this claim: It is important to remember that immunology as is understood today is based on observations in

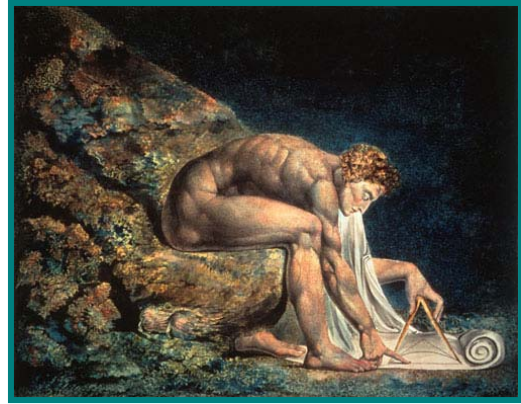
the setting of alloimmune response. It should be recognized that modern surgery of the liver is based on knowledge gained from liver transplantation. It is inconceivable that the fields of heart failure and artificial heart devices would have developed to their current state of science without the ability to perform heart transplantation. In this and other ways, organ transplantation continues to revolutionize medicine.



I like to view myself as a revolutionary to better understand transplantation as a revolutionary profession. My past set me up for that, growing in the Holy Land of Israel in the 60's was a perfect setting for revolutionary ideas. Today, it is just natural to compare events and progress in our profession to what we observe in times of social revolution. I find that viewing ourselves as revolutionaries is quite attractive.

The reverberations from revolutions in medicine and science have far reaching social and political implications. It may be claimed that social and scientific revolutions have often a common pattern:

- Social and scientific revolutions are usually not linear in their progression. As we look back on them, we can see that they traverse a series of distinct phases. However, these phases are rarely pre-planned; the fervor of a revolution causes the escalation of action to go through many manifestations, but in an unpredictable way.



- Social revolutions begin because there is passionate unrest across large segments of the population. They do not necessarily know what they want from the future, but they do agree that their present system needs to be overturned. Similarly, in a scientific revolution, the current paradigm of science is overturned in favor of a better future, even if the nature of that future is largely unclear. It may be claimed that social and scientific revolutions have often a common pattern.



- Social revolutionaries are associated with the traits of romantic zeal, enthusiasm, and single minded devotion to a cause. The revolutionary sees the issues at hand and can think of little else. This is an accurate description for the prototype personality disorder of a transplant surgeon, physician, or scientist.



- Inevitably, new political factions are forged in the fire of revolution. These factions often lead to permanent changes in the political structure of a nation in the form of new political parties. In a scientific revolution, new groups of scientists join forces to bring about the change that they desire, and once that is complete, these collaborators are able to delve into the new fields of research that exist.



Perhaps the most striking example in which social revolutionaries mirror their scientific partners is in the fact that they are both forced to make difficult decisions. These decisions would never have to be made under ideal circumstances, but circumstances are inherently not ideal if a revolution is taking place. The rapid change characteristic of revolution leaves little time to fully analyze all the possible repercussions of decisions that must be made. Social revolutionaries must choose what institutions are worthy of existence in their future state and which have no place in their brave new world. These decisions are sometimes nearly impossible to make, but the revolutionary must make them.



The work of a transplant surgeon is that of a revolutionary. An individual who is thrust into a role which he or she must wield the power of g-d, determining who will live and who will die.



Maybe it was inevitable because transplant surgeons save lives, that society would afford such extreme privileges to the transplant surgeon, or maybe it was just a natural extension of the surgeons' individual personalities. Regardless, it is the individual surgeon, separate from the organ allocation and distribution systems, who is forced to judge whether a patient will be an appropriate candidate for organ transplantation.

How often are we placed in a position to determine whether transplant

outcomes that result in higher survival in one older individual are more or less justifiable than placing the same organ in younger, but more problematic candidate?

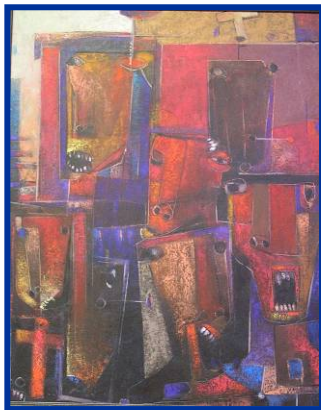
Not only are we forced to choose which one of the numerous and needy candidates should be the one chosen recipient of the life saving transplant, we may be condemning some of the rest to die.

It is not uncommon for a transplant surgeon to be called on to make such g-dly decisions. A young parent, dying of alcoholic hepatitis needs a transplant, the transplant surgeon must judge whether they are worthy of transplantation or deserves to die because they were consuming alcohol until arrival at the hospital. No other physician or surgeon would be forced to make such a



decision; if the same patient was brought into the hospital after being in an accident in which he was responsible for the deaths of innocent bystanders, no physician would question providing the patient with treatment necessary to save his/her life. However, unlike other physicians and surgeons, transplant surgeons are charged with the allocation of an incredibly limited resource, an ongoing debate in bioethics.

Consequently, like a revolutionary, a transplant surgeon is left in a position that requires him or her to make radical decisions.



In order to achieve our mission of saving our patient's life by performing an organ transplant, we must determine the value of life. Is a 40% five year survival in one individual less worthy than an 80% survival in another?

Is one day of my life more valuable than a day of yours?

Am I therefore more deserving of that organ? Why?

Transplant surgeons are forced to determine what makes someone morally worthy and which patient deserves another day to live.

Although initially forced to make such judgments because of the shortage of organs compared to the number of people awaiting a transplant, this obligation has been extended to transplant surgeons even when organ supply is not an issue, such as living donor transplantation, (by itself, another continuous revolution). It is us who determine whether the survival of the recipient

justifies risking the life of the living donor by removing his/her kidney or a lobe of his/her liver or lung. The transplant surgeon is similar to the social revolutionary in that both are placed in a position “above society”. We base our decisions on survival rates and other criteria conveniently invented by the transplant community to justify our own decisions. At times, these decisions contradict the wishes of the both the living donor and hopeful recipient. Historically, social revolutionaries have assumed such g-dly roles, some of who succeeded, but some have failed.



Social revolutions often lose momentum and can eventually fail as the new or revolutionary ideas become normalized. What was once radical thinking will eventually become the standard quo. Explosive but short-sited innovation is not worthy of our energy. For our revolution to succeed, we must have a clear vision of the new world we are building. To spend a lifetime without the vision and the capacity to build the new world is a waste.

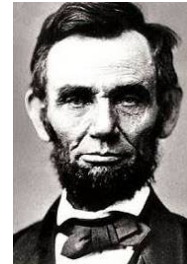
Do we in our profession risk the potential for failure, and the fate of an unsuccessful revolution? For example, are we at risk of becoming just another business entity for health care system, or entrepreneurs in a business corporation?

As individuals, we are always at risk of steering our course in the wrong direction. History gives us examples of successful and unsuccessful revolutions. For example, a revolution lead by Ché Guevara in Central and South America was ultimately a miserable failure. Guevara was a physician who joined the Cuban revolution with the aim to improve society. In the due course of history, the means he implemented to achieve his goals were proven to be



wrong. In that revolution, the failure may have been the inability to recognize that a better society should be established on ethical and social values that would withstand the test of time, without the presumed necessity of guns and violence.

In contrast, in this country Abraham Lincoln led a successful revolution, to save the Union and abolish slavery. His ethics changed the course of history as this country grew. This shows just how far reaching the effects of a revolution can be.



In the world of transplantation we have our own truly successful leaders. This success may be attributed to the prevalence of ethical questions regularly addressed by the transplant revolutionary, thus indicating that the true desire of transplant leaders is to distinguish right



from wrong. When ethical questions are not asked, the revolutions are at risk of doing wrong. It is the awareness of the responsibilities our patients, our donors, and our society that should always guide us towards higher ethical goals. A strong moral foundation will help ensure the success of our scientific revolution.

At times we risk slowing down the pace of advancement. We risk creating structures which drive the medical advancement in ways that might be considered “more safe” but actually arrest the fast forward progress. It may be that the counter-revolution is back. We are at risk of being completely taken over by committees, by IRBs, HIPPA rules, etc. At times it appears that the communications between us and “them” is a struggle for who has the right to dictate the rules, rather than a discussion concerning what the right direction is and what can be achieved. I must admit that it is always a problem for the social revolutionary to perform under the auspices of a committee. This is the arena in which social and transplant revolutionaries must meet. In our past history the transplant community has been able to demonstrate that it is responsible, that it can and will utilize new technology with care



and high ethics.

The enormous growth of science during this current period of transplantation engendered many to presume that all the major scientific discoveries had been made and that all that remained was the working out of minor details. This attitude must be shattered, and this will only be accomplished by continuous revolutionary discoveries.

Participation in revolutions in the field of transplantation is not restricted to individuals who are in our profession. From the beginning of this era we have been fortunate to be joined by many individuals who are significant participants in the journey of revolutionizing medicine. It was in late June of 1995, just upon my arrival at the University of Pennsylvania, when an OPO coordinator called me, asking whether I would consider proceeding with procurement of organs



from a 17-year-old non-heart beating donor. I was told that the mother insisted that her son's organs be retrieved and considered for transplantation, and that it was her son's wishes that this be done. It was the first liver case of its kind in the Philadelphia region, and it resulted in the successful transplantation of an individual who is still alive and doing well. The procedure revolutionized the approach to non-heart beating

donation in our region. Mrs. Susan Dillon, the mother of that very donor is with us today, and as a transplant revolutionary continues to contribute to our field via many of her national activities.

The Secretary of Health, Tommy Thompson, is another excellent example of an individual who is a true participant in our ongoing revolution. Years ago, the chairman of the University Of Wisconsin Department Of Transplantation, primed Thompson to believe that Transplantation is a true form of social revolution. He was recruited to change laws in favor of transplantation in the state of Wisconsin during his tenure as Governor. More recently Thompson has been a relentless supporter from providing grant programs to promoting transplantation to our field during his current tenure as Secretary of DHHS. Tommy Thompson, like Mrs. Susan Dillon, is a transplant revolutionary.



Our revolution will continue. The mission is far from complete. It is interesting that in the setting of social revolution, there is no example of “permanent” or “continuous” revolution. Chairman Mao tried and failed. However, in our field, we are far from achieving the goals we set for ourselves. Although thousands of lives have already been saved through the use of donor organs, we are still far from providing the best outcomes in every situation.



Immunosuppression must be further improved, and we should never give up the goal set by the pioneer revolutionaries: the ultimate aim is to achieve an immunological tolerance between donor and recipient, eliminating entirely the need for immunosuppressive drugs.

We must expand the possibility of a healthy future for those on transplant waiting lists. To accomplish this it must we must equip ourselves with technologies that enable us to use organs from sources other than humans alone. Opportunities exist today in bioartificial organs, embryonic and stem cell research, all of which serves to further open the field for more advancement in organ and cell transplantation. Exploration in genetic modulation, proteomics and metabonomics must be encouraged and supported. It is sometimes painful to see that other fields of surgery and medicine are taking the lead while we are at risk of staying behind. We should never let our rapid past success turn our profession—our revolution—into a slow and gradual evolutionary process.

On a personal level, I must state that I will be there. I do not intend to quit either today or tomorrow. I still like to view myself as a soldier of the revolution, and it is fun to participate. There is simply no way to stop this revolution from happening.

