

From the Editor

Perfusion's Yellow Wood

Evolutionists and creationists make strange bedfellows. On one hand, evolutionary theory is based on principles that encompass practically every known discipline of scientific practice. From the 'big bang theory' through the archeological records of massive reptiles that failed to adjust to an unfortunate visit from a wandering meteorite. Creationists, on the other hand, argue against the development of the complex human mind from a primordial slurry of random amino acids and sugars. Regardless of an individual's beliefs, both theories are embraced by a diverse group of followers who fail to see the validity in the contra group's argument.

In the on-line version of Merriam Webster, evolution is described as the "process of continuous change from a lower, simpler, or worse to a higher, more complex, or better state." I cannot fathom that early perfusion was 'lower,' 'simpler' or 'worse' but, nevertheless, the meaning is not lost in translation. It is an alternate definition that catches one's attention—"a process of change in a certain direction." The etymologist surely meant to omit the word 'forward' preceding 'direction,' which makes this definition more apropos to perfusion.

The 50-year anniversary of Gibbon's heroic feat finds perfusionists facing a similar debate. Not so much for our origin, but more poignantly concerning our future. This year, many Journals, including this one, have honored Dr. Gibbon and the many pioneers of early heart surgery via the publication on the history of extracorporeal circulation. In this issue, both Wolfgang Boettcher and Sid Yarrow eloquently describe the origin of early heart lung machines and the development of cardiac surgery. Both are credited with assisting the development and spread of cardiac surgery in Germany and New Zealand, and are as honored as are their surgical counterparts. Yet, this golden anniversary finds us standing in Frost's 'yellow wood' contemplating which direction will 'make all the difference.'

At the time of this writing, the Pennsylvania Association of Thoracic Surgery has just concluded their yearly meeting. The syllabus for this meeting, no different from countless other cardiac surgical gatherings, contained a number of abstracts on the benefits of OPCAB vs. On-Pump surgery. Coincidental with this meeting I was approached by the chief administrator of our cardiac surgery department and informed that for the next three years we will budget for 10% fewer cardiac cases per year as a result of fewer patients requiring surgical coronary revascularization. I do not believe this is isolated to the mountains of Pennsylvania, but more a national, and perhaps international, trend. Furthermore, I cannot help but feel somewhat responsible for the state of perfusion and the uncertainty of its future. If perfusion practice is truly an evolutionary process, than what is to keep us from accepting blame for the current regression in the use of extracorporeal circulation? Numerous examples of medical methods are present in the historical record that chronicle the birth and death of treatments, all once deemed effective. Bubble oxygenators and glass filtering devices are either extinct or near death in our field. So that leaves creation as our remaining analogy to perfusion and demonstrates the challenges that we face.



Merriam Webster can again be searched, and here the definition for creation is "the act of bringing the world into ordered existence." Clearly this fits better with the current state of perfusion and for any hope for the future. Perfusionists will need to make a number of changes to the conduct of cardiopulmonary bypass if we expect to celebrate the centennial of Gibbon's success. A number of mandates are evident and need to be embraced if we are to succeed. One, we have to become more responsive to the peer-reviewed reports comparing OPCABs to On-pump procedures. I have found that most reports do not describe how cardiopulmonary bypass was conducted other than to state that it was. Replicating these studies is therefore impossible. Two, we need to embrace technologies that empirically offer benefit, but have not been unequivocally established through the rigors of scientific methodology. A profound statement for a journal editor, yes, but one that needs serious consideration. The new generation of coatings will never receive the scrutiny that heparin-coated circuits received. The likelihood of multiple randomized clinical trials being conducted is low. These are very expensive to complete, and funding for this type of research is almost non-existent. Finally, we need to answer the multifactorial problem of improving perfusion with a multifactorial answer. The chance that making one alteration to a cardiopulmonary bypass circuit would result in a significant improvement to patient outcome would be dependent upon both a large number of observations, and hence patients, and a homogeneous population. Both of which are growing increasingly rare.

All in all, perfusionists are standing in the yellow wood of Frost's 1916 poem entitled "The Road Not Taken." What direction we take must be influenced by an intrinsic drive to improve what we do. In doing so, those so dependent upon our actions might fare better than alternatives based upon omission.

Sincerely,
Alfred H. Stammers, MSA, CCP
Editor