

Michael E. DeBakey and Denton A. Cooley (Part III)

Mike, the master assembler, and Denton, the courageous fighter: A personal overview

Unforgettable past remembrances in the 1960s

Indeed, Michael E. DeBakey and Denton A. Cooley, two giants of cardiovascular surgery, promoted the change in the 20th Century and, without a shadow of a doubt, both had their own dreamy legend.

It is well-known, even by the general public, that after April 4, 1969 a profound disagreement started among Mike DeBakey, Denton Cooley and other medical personalities concerning the design and the place where the blood pumps had been built; a fact that enabled the first implantation of a total artificial heart in the history of medicine.

It was a point well explained in a book published in 2007^(1, page 236), from which I will extract a few essential sentences.

In July 1968, a patient of Denton Cooley developed a stone heart in OR1 following a difficult replacement of severely calcified aortic valve. Robert Bloodwell removed the heart from a sheep in OR2 and Denton, in frantic effort to keep his patient alive, replaced the heart with the sheep's heart. With justice, indeed, the ennobling reaction of Denton was not looking for a permanent xenotransplant but was just fighting – in July 1968 – 'to buy time' until a proper human donor heart was available. Instantly, when the patient's blood started flowing into the coronary arteries of the sheep's heart, a hyperacute rejection followed.

Thoughtfully, Cooley, Bloodwell and I went down to the cafeteria of St. Luke Hospital at about 6 p.m. At that very moment, we realized that in order to keep the patient alive until a human donor heart could be found, the unique solution would be to implant a Total Artificial Heart. I fully agreed, and indeed, it is not needful to express my full conviction of this wisdom.

In July 1968, I started the design and making of Clinical Total Artificial Heart at the laboratories of Baylor College of Medicine. I immediately called both John Maness to help in the design of the clinical compact driver and my old friend Paul Kahn from Cutter Laboratories (Berkeley Ca.) for the Wada- Cutter valve prostheses.

When Denton and I met at the '*celebrated Christmas Concord*' in December 1968, the technical aspects of the full procedure were practically resolved. Early in January 1969 Denton and I

started the experiments of total artificial heart implantation in calves at the laboratories of Baylor College of Medicine. In our bovine experimental work we employed two current blood pumps made at Baylor laboratories, and two separate old drivers, used currently at Baylor for LVAD experiments, to energize both ventricles respectively.

Indeed, after over four decades, the only question worth discussion is whether Mike DeBakey was wholly aware of the project of the younger members of his own Department of Surgery. The utmost temptation that we often see in even the best writers of fiction books is that novels are doing more harm than good from a historical point of view.

Firstly, I am positively sure that Mike was acquainted with the extension and advancement of our work at Baylor. Really, at Baylor everybody was familiar with it, including Mike's Residents – some very close to him –; they were continuously asking us about the progress of our work; and, purposely, we gave the utmost information to them, maybe with an amplification or hyperbole.

Secondly, I gave frequent information of our activity to Mr. Jerry Maley, administrator of the Department of Surgery – a close confidant of Mike at that time. I necessarily would sign the initial papers to request animals and materials for our experimental work. Indeed, the only question worth discussion is that we needed sundry reasons to answer the fundamental question; there seemed that we were actually avoiding a face-to-face direct confrontation with Mike. The ingenious strategy was to patiently wait for a call from Mike rather than to confront him with our already advanced work. At any rate, for almost nine months we were looking for a restricted opportunity to exchange information with Dr. DeBakey on our artificial heart clinical project; nevertheless, the suddenness of our confrontation with a moribund patient was rather striking.

So, I venture to offer a reason of my own that touches the higher problem of mutual confidence. I am convinced that Denton and I were instinctively anxious about Mike's reaction, in the logic that he might show a disposition to definitively stop our work, and our moral and practical tenacity to the

artificial heart project were already unalterable; we could not stop it, and then the more plausible reason, after long reflection today, is that we were excessively plunged into a truly forewarning instinct. Now, it is perfectly true that never had Mike said a word on this subject before April 4.

Then, I deplore that we could not know Mike's real temper and his understanding on our clinical artificial heart project before April 4, 1969. The true question following Mike's reaction on April 4 1969 is evidently obvious. However, something is absolutely right, regarding our respectful attitude; in the afternoon of April 4, Denton -still working in the OR1- asked Bob Leachman to call Dr. DeBakey to inform him of what was going on at the Texas Heart Institute in the afternoon of April 4. Unfortunately, Mike was already flying to Washington; and the worst thing was the fact that the following morning Dr. DeBakey entered the room at the NIH meeting in Washington and received the warm congratulations on the artificial heart implantation by the NIH members.

Again, on the speculative side I may, in short, say that we made the **clinical blood pumps** in Baylor laboratory; the four Wada-Cutter valve prostheses and the **Clinical Driver** had been donated by the Cooley Foundation; and the Bjork-Shiley valve prostheses were not available at that time for us.

Bill Hall was strictly right when admitting during the tough controversies after the Total Artificial Heart implantation that Dr. Liotta had been working in blood pumps models for a long time-at least since 1964.

Bill was, undoubtedly, fairly right, if we observe the picture number 1 taken around 1965 in my office at Baylor. In the foreground, the prototype of the small pneumatic driven blood pump used in our experiments in the National University of Córdoba in 1960 can be seen. All the pumps made at Baylor- shown in this picture, on the table and in my hands- descended from this early Liotta-Taliani prototype (see Thesaurus 37), even those pumps implanted in a patient on April 4, 1969 (1, pages 186-90). In the ASAIO presentation in 1969 a photograph and a drawing were shown to perfectly correlate the Liotta-Taliani model with the design of the implanted patient's pump (2, page 256).



Picture 1: Domingo Liotta at his office in Baylor College of Medicine around 1965.

Doubtlessly, there was a variation in the transition of making clinical models adapted to the human chest rather than laboratory blood pumps for bovine experimentation, and the tremendous responsibility for making clinical pumps rather than experimental units. The adaptation to human chest was a careful task; the vulnerable compression of the left inferior pulmonary vein when the median sternotomy was closed was Denton's constant concern, and the absolute reliability of compact clinical drivers with the obligatory redundancy of all the electric circuit boards, a responsibility shared with J. Maness.

On some occasions, I was faced up to the fact of rather short time from July 1968—date of the decision to head for the clinical artificial heart—and April 4, 1969. Now, we can understand that during that short period of time Dr. Cooley and I did an arduous work to adapt the experimental bovine pumps to a clinical model. Certainly, sharing the clinical understanding with Denton was for me a rewarding experience in this crucial step (Pictures 2 and 3).



Picture 2: The symbol of Clinical Total Artificial Heart. Historical Operation. The first in medical history. Total heart replacement with an Artificial Heart (orthotopic position). On the left, Dr. Liotta; in the center of the picture, the empty pericardial sac of the patient, Mr. H. Karp. On the right, the hands of Dr. Cooley holding Mr. Haskell Karp's heart and the Liotta-Cooley Artificial Heart just before implantation. Texas Heart Institute, Houston (April 4, 1969). Lower right corner of the picture: Dr. Cooley is holding both the removed artificial heart and the donor heart. (April 7, 1969).



Picture 3: The symbol of human conscience and Total Artificial Heart: Dr. Liotta is talking with Mr. Karp and Dr. Cooley observing, April 5, 1969.

Mike DeBakey in Argentina, May 1996

I sent Mike an official invitation from the Argentine Government in my capacity as the State Secretary for Science and Technology.

My sons, Domingo Jr. and Carlos Augusto, did an internship at the computing and information technology facilities in the Methodist Hospital in Houston during the month of February, 1996 and I sent the invitation to Mike with them; immediately he gladly accepted it.

I was aware of the responsibility of informing Mike's encounter in Argentina in 1996, mainly considering 1969 controversies; his visit lasted about one week.

In 1996 Mike DeBakey was 88 years old. He had not changed his physical aspect from the time I had met him in Houston, and he was so dynamic as in his best time. However, Mike was another person from the spiritual point of view. I mean, different in the serenity he radiated, relaxed at all times, and in his singular capacity for meditative actions with a remarkable insight.

I remember well that in Houston Mike was extremely funny, even regarding small and insignificant things. He was also interested in the underwear his assistants wore. In Buenos Aires he once came out of his hotel –Plaza Hotel, a traditional one– to make the taxi drivers who were having inevitably loud discussions at the entrance of the hotel while waiting for passengers speak in lower voices; and then, Mike seriously asked me, 'what are they saying?', 'are they fighting, perhaps?'

The serenity that I observed in Mike in 1996 is the serenity of the authentic fighters when they retire from the arena that was their battleground.

In the eyes of his residents and fellows Mike was a harsh and choleric man (1, page 234). I rather believe that the precedent expressions were from youngsters intensively looking for an identity as cardiovascular surgeons. Mike's advocacy of a well done work is well known; he encouraged intellect superiority.

Truly, Mike was a Master that served his authority intensively, and in this regard he reminds me of my dear 'Maestro' in General Surgery in the National University of Córdoba, Professor Pablo L. Mirizzi.

I myself performed cardiac surgery until I was 82; Mike was active in the operating room until 80, as well as Denton Cooley, and when they retired the serenity of the authentic old workers described by Jacques Maritain, the celebrated French Christian writer and philosopher, arose. Maritain described marvelously the Saint Paul's serenity in his last days; in 67 AD he was executed in Rome, being Nero the Roman Emperor until the year 68 AD.

At the end of his days, the Apostle remained in a state of great serenity to look back the path in his life and express the fruits of the struggle, the experience and the pain. Maritain extends his understanding to the old retired workers: "*C'est*

une des plus belles choses humaines que la sérénité de vieux ouvriers" (The serenity of old workers is one of the most beautiful things in humans). The old Paul had known all dropouts, his confidence was serene. Paul knew he had worked hard and had worked for God (3, page 72).

The President's welcome and kindness, in the academic act held in the White Chamber of the Government House on May 15 1996, with the presence of distinguished personalities, was a true apotheosis for Mike (Picture 4).



Picture 4: On the left, Dr. DeBakey at the Government House just after having been decorated by the President of the Argentine Republic; on the right, Dr. Liotta. Buenos Aires, May 15, 1996.

Indeed, this was a singular moment during the official act, after DeBakey's words for thanking and evoking his memories. The President's gift was a historic photograph of his first clinical operation of circulatory assistance, the implantation of Liotta-DeBakey paracorporeal pump in the patient called De Rudder on 21 April 1966 (picture published in Thesaurus 37).

To see the photograph and before extending his arm to take the President's gift, Mike lowered his head and gave me a look full of sadness. Thus, Mike observed the seriousness of my expression in respectful testimony and serene thanks to his person; then I myself took the picture with both hands and stood next to Mike to observe it and remember our fighting old times; then Mike smiled. I have a picture of that singular instant.

Mike's grief lasted only a few seconds, but his look at the presidential podium with such a painful sadness has been etched in my mind ever since; I have never been able to forget the sad eyes of Mike plunged into a deep and austere melancholy.

Occasionally, I even have a strange thought that reminds me of the time of De Rudder's operation as a heartless act on my part, joining the chorus of his detractors; but this is not a certain assumption because Mike was fully aware of the nobility of my indebtedness to him and my true admiration for him.

Firstly, regarding De Rudder's surgery Mike received unfair criticism concerning the patient's management from cardiac surgeons. Indeed, great men like Mike DeBakey do not perform stage tricks with futile doctrines; Mike always advocated what he said and did; his advocacy was forged under the rigid and strict Bacon's doctrine about scientific rules: *Obey first to be able to command afterwards*. Rightly, we must be able to follow – to obey – the laws of science first, to be able to command later in the realm of nature.

Those days of Mike, fighting for the life of De Rudder, have been unforgettable to me; I close my eyes and I can see Mike anxiously moving around De Rudder's bed, changing maybe the respirator units to get a better tissue oxygenation; since those days Mike has been my hero for evermore.

One day after lunch, I took Mike to CONICET laboratories located at Vuelta de Obligado and Monroe in Buenos Aires. Mike was exultant in the presence of other researchers; he watched carefully the units of cardiac care in construction, and had pleasant moments with the engineers of my PROCOAR (Pro-Artificial Heart) official program of the CONICET. In remembrance of his memorable visit, at the entrance of the laboratory was later placed a golden plaque that reads:

"Michael E. DeBakey went through this door to visit Domingo S. Liotta's CONICET laboratory.

"Dr. DeBakey, a world great figure in cardiovascular surgery and outstanding personality of the 20th Century medical progress, May 1996."

In all this unforgettable week of May 1996 I never talked to Mike about the implantation of the first artificial heart in 1969. Besides, in a meeting with journalists coordinated by Luis de la Fuente, an Argentinean cardiologist, as an answer to the specific question, Michael DeBakey raised his head, directed his eyes to me and said: *"Indeed, the concept of Circulatory Assistance was created at Baylor College of Medicine"*. And this was a crucial instance: Mike's recognition to researchers and his homage towards the creative intellect.

There is sometimes a practice, not uncommon in the United States, that the person that has

attained the economic resources to conduct the research is the "owner" of the soul and the intellect of creators that are really working on the objective.

And this unique decision on the point of the economic aspect only, with no recognition of the creator's intellect is unsafe. Really, the increasing perfection of research cannot be accompanied by an increasing debasement of those who carried it on, e.g. not properly recognized in published papers. This approach is highly perilous; it ends up destroying researchers' inner feeling and ends up destroying the vital freedom of the research itself. And the freedom to "seek new ways" is the most desirable action in order to have excellent research schema. A good authority must recognize the wide freedom of young researchers, to follow the law of nature accepted from unrecorded times; the freedom of the intellect is the most amazing phenomenon of humanity; it is sacred. The economic aspects support research, but the institution where the discovery took place in the course of the research is undeniably important from the historical point of view.

The last moments of Mike DeBakey in Argentina, May 1966

Mike's farewell was carefully prepared at the State Secretariat for Science and Technology in the afternoon. Mike was very communicative. I mentioned to Mike that the following day I was travelling for an official visit to Syria and Lebanon to know their universities and deliver a couple of conferences on our cardiac surgery at the Italian Hospital of Buenos Aires. Mike suddenly said, "Domingo, I am very proud of coming from a Lebanese immigrant", and added "I will call a friend of mine in Beirut, just in case you may need a hand". Indeed, Mike's friend, an old surgeon in Beirut, called me when I was there.

By that time I was determined to organize the School of Medicine of the University of Morón after the end of my tenure as the Secretary of State for Science and Technology. On May 14, 1996 I was awarded the distinction of Doctor Honoris Causa by the University of Morón and received a concrete proposal from its Rector, at that time Dr. Omar Lima Quintana, an attorney, to start the School of Medicine. In an informal conversation I told Mike about the project and I was absolutely surprised when he pronounced the following words: "Domingo, I want my daughter Olga to come to Argentina to study medicine with you", and again insisted on this when my son Carlos took him to

the airport, "remind your father of my greatest desire concerning my daughter Olga's studies." Nevertheless, one thing is what a father may wish, and another one is the decision a modern teenager may independently make.

In a few minutes two of my sons, Domingo Jr. and Carlos Augusto, would take Mike to the airport and he would leave for the United States. I went out of the Secretariat of State Building to say goodbye to Michael DeBakey.

And at that very moment I had the greatest surprise of my life. With immense emotion "the former terrible black Mike" shook my hands, hugged me, held me in his arms and kissed me on my cheek; my two sons- really amused- witnessed the incredible moment. Finally, I could understand: 'This is the real eternal DeBakey' (1, page 237).

'Lao Ren, Lao Ren' is a Chinese expression that I have heard so many times in China. It literally means 'old man, old man', but its real sense is 'wise man, wise man'. Lao, Ren, Lao Ren Professor Michael E. DeBakey, memorable beloved master.

Dr. DeBakey died in 2008, two months before reaching 100 years old. And, what seemed impossible a few months before his death, happened: Mike made peace forever with Denton; a life example which has shaken the medical world.

The issues 37, 38, and 39 of the International Thesaurus of the UM are my memories dedicated to two exceptional personalities -Michael E. DeBakey and Denton A. Cooley- and reflect an unforgettable decade of my life when I had the privilege to work with them.

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