Lodewyk H.S. van Mierop (March 31, 1927–October 17, 2021): a true giant

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Abstract

We honour a great man and a true giant. Lodewyk H.S. van Mierop (March 31, 1927 – October 17, 2021), known as Bob, was not only a Paediatric Cardiologist but also a dedicated Scientist. He made many significant and ground-breaking contributions to the fields of cardiac anatomy and embryology. He was devoted as a teacher, spending many hours with medical students, Residents, and Fellows, all of whom appreciated his regularly scheduled educational sessions. Those of us who were fortunate to know and spend time with him will always remember his great mind, his willingness to share his knowledge, and his ability to encourage spirited and fruitful discussions. His life was most productive, and he will long be remembered by many through his awesome and exemplary scientific contributions.

His legacy continues to influence the current and future generations of surgeons and all providers of paediatric and congenital cardiac care through the invaluable archive he established at University of Florida in Gainesville: The University of Florida van Mierop Heart Archive. Undoubtedly, with these extraordinary contributions to the fields of cardiac anatomy and embryology, which were way ahead of his time, Professor van Mierop was a true giant in Paediatric Cardiology. The invaluable archive he established at University of Florida in Gainesville, The University of Florida van Mierop Heart Archive, has been instrumental in teaching medical students, Residents, Medical Fellows, and Surgical Fellows. Only a handful of similar archives exist across the globe, and these archives are the true legacy of giants such as Dr. van Mierop. We have an important obligation to leave no stone unturned to continue to preserve these archives for the future generations of surgeons, physicians, all providers of paediatric and congenital cardiac care, and, most importantly, our patients.

On 17 October, 2021, we lost a true giant in the fields of cardiac anatomy and development. The name of Lodewyk H.S. van Mierop, known universally as “Bob” (Fig 1), is likely less well known to those working in the current era. In the formative years of paediatric cardiology and paediatric cardiac surgery, however, he was one of the innovators. Many, if not most, of his works retain their value. Until recently, those who might have chosen to consult the Netter Atlas would have seen the results of his investigations, but even that masterpiece is now somewhat dated. Frank Netter was a great friend of Bob, and the illustrations of Netter of the temporal changes taking place during normal cardiac development were based on the original drawings made by van Mierop. These original drawings made by van Mierop, in turn, were based on van Mierop’s own assessment of serially sectioned human embryos, with his descriptions being well ahead of their time. van Mierop used these studies to provide an account of the results of abnormal development of the atrioventricular junctions, which he continued to describe as persistent atroventricular canal. As an extension of this work, he provided a remarkable early account of the surgical approach to the so-called “cleft mitral valve”, which we now recognise as the zone of apposition between the left ventricular components of the bridging leaflets of the common atrioventricular valve. van Mierop also provided an accurate account of the development of the outflow tract, relating this analysis to the lesions reflecting “abnormal transfer” of the pulmonary trunk, and so-called “true” transposition. In his subsequent studies, working with Donald F. Patterson from University of Pennsylvania, van Mierop described the changes to be observed in the abnormal outflow tracts of Keeshond dogs, providing an accurate description of the morphogenesis of common arterial trunk. These studies, in themselves, would be enough to place Bob in the pantheon of our Paediatric Cardiology Hall of Fame. They represent, however, but a small part of his overall achievements.

Bob was born on 31 March, 1927, in Surabaya, Java. At that time, Java was part of the Netherlands East Indies. He spent the first 18 years of his life in Java. He provided a graphic
account of these years in his autobiography.\textsuperscript{1} It was not entirely plain sailing, since the period from 1942, up to his move to Holland in 1946, was spent as a guest of the occupying Japanese empire. He was required to catch up rapidly with his education, having moved with his mother and his stepfather to Europe, but as he comments in his autobiography, his brain was “not too shabby”. He was able to gain entrance to Leiden University, where he managed to shorten the time required for graduation as a physician. He had seen, during these studies, advertisements in the Lancet, offering the chance to study in the Medical College of

\textbf{Figure 1.} Bob van Mierop, on the right, is shown with two of the authors of this article (Bob Anderson on the left and Jay Fricker in the centre) in the Conference Room at University of Florida in Gainesville. His drawings showing the features of the “asplenia syndrome and polysplenia syndrome” can be seen on the wall behind. These figures were drawn in 1972, and show the obvious features of right isomerism and left isomerism, respectively.

\textbf{Figure 2.} These drawings of Professor van Mierop, made by him in 1972, and shown in greater detail in Figures 3 and 4, are located in the Conference Room at University of Florida in Gainesville. As is explained in the legends to Figures 3 and 4, these drawings demonstrate the features of “asplenia syndrome” and “polysplenia syndrome” and show the obvious features of right isomerism and left isomerism, respectively, including the isomorphic features of the lungs, bronchuses, and atrial appendages.
Albany, in New York State. Having completed his medical degree in Leiden, he applied, and was accepted, for training in Thoracic Surgery.

It was on the initial boat trip from Rotterdam to New York that he acquired his pseudonym "Bob", named after the bartender, since two young ladies he and his friend were accompanying at the time could not cope with "Lodewyk". In this regard, the family name itself was originally "vanMierop". Once in North America, the spelling was transformed to van Mierop. This is how his name appears on all of his publications and how he stated it on his Curriculum Vitae.

In Albany, he encountered the first of his mentors, Ralph Alley. Working first as an Assistant Resident, then as a Research Fellow, subsequently as a Research Associate and Instructor, and culminating as a rotating Internist, he spent six happy and fruitful years in Albany.

He then spent a period of 3 years working at Montreal Children’s Hospital, also becoming a Lecturer in Anatomy at McGill University. During this period, he made a major breakthrough, being perhaps the first to recognise the features of right isomerism in the setting of so-called “asplenia syndrome” (Fig 2). In 1962, he returned to Albany as Assistant Professor in Pediatric Cardiology. During this second stint in Albany, he established an important collaboration with Murray Barron, a radiologist working at Mount Sinai in New York. He was promoted whilst in Albany to Associate Professor, but his achievements by then had brought him into contact with Gerold Schiebler, who rapidly established himself as his second major mentor. Although Bob’s basic training had been in Cardiac Surgery, Dr. Schiebler was able to tempt him to join University of Florida in Gainesville as a Paediatric Cardiologist. More importantly, he was given responsibility for the autopsy service investigating the deaths of those with congenitally malformed hearts. Schiebler also ensured that Bob would have the facilities to continue his developmental studies.

Thus started his association with University of Florida, which continued for the remainder of his life (Figs 3, 4, 5, 6, 7, 8, 9, 10 and 11). Although now ostensibly working as a Paediatric Cardiologist, he still retained his surgical skills. Should the situation demand, he was ready to step into the operating room to lend his hand to his surgical colleagues. It was shortly after his arrival in Gainesville that he became embroiled in the infamous polemic with Richard Van Praagh regarding the appropriate definition
for “transposed” arterial trunks. At the time, Bob was of the opinion that an anterior location of the aortic root was a prerequisite for the definition of “transposition”. He set out his stall in uncompromising fashion.14 His commentary was prompted by Richard’s suggestion that the essence of transposition was the origin of the arterial trunks from inappropriate ventricles. This suggestion meant that, on rare occasions, it was entirely appropriate to define transposition in the presence of a posteriorly located aortic root, provided that the aortic root took its origin from the morphologically right ventricle.15 Richard then defended his own viewpoint in equally uncompromising fashion.16 In many ways, Bob’s stance had been swayed by his friendship and collaboration with Maria Victoria de la Cruz, another giant in the field of cardiac development. In this regard, it is noteworthy that Maria Victoria subsequently came to appreciate the need to differentiate between the connections of the arterial trunks and their relationships.17 We were never sure whether Bob also saw the need to move from his initial stance.

During his tenure at University of Florida in Gainesville, Bob continued to build on his reputation as a cardiac anatomist and embryologist, establishing important collaborations with Patterson, to which we have already referred. He was also on hand to offer important advice to Peggy Kirby as she began her own important investigations on the role of the neural crest in normal and abnormal formation of the outflow tracts.18 His own specific investigations of these topics continued, with important...
contributions made with Lynne Kutsche. He also provided important mentoring for Rebecca Snider, who made very important contributions in paediatric echocardiography. The fact that, throughout his career, he was thinking way ahead of the next person is demonstrated by the achievements of his sabbatical period. He took the opportunity to visit centres throughout Europe and the rest of the World, producing a coding system for the overall group of congenitally malformed hearts. His system is very much the forerunner of the latest system that is named The International Paediatric and Congenital Cardiac Code (IPCCC) [https://ipccc.net/], which has become the paediatric and congenital cardiac component of the Eleventh Revision of the International Classification of Diseases (ICD-11). Over and above his huge contributions in the fields of cardiac anatomy, embryology, and congenital cardiac care, Bob also established himself as a world-class herpetologist. Those who were fortunate to dine with him were somewhat taken aback to be seated in a Dining Room in the van Mierop home framed by cages containing rattlesnakes and pythons, which on occasion would make their presence known by tapping on the glass of their cages. Not surprisingly, his expertise was often called for in the setting of...
Figure 9. The University of Florida van Mierop Heart Archive contains multiple cardiac morphological specimens, as well as multiple original line diagrams and wax models produced by Professor van Mierop, including this original line drawing.

Figure 10. The University of Florida van Mierop Heart Archive contains multiple cardiac morphological specimens, as well as multiple original line diagrams and wax models produced by Professor van Mierop, including this original wax model.
Figure 11. The University of Florida van Mierop Heart Archive contains multiple cardiac morphological specimens, as well as multiple original line diagrams and wax models produced by Professor van Mierop, including this cardiac morphological specimen. This image shows a specimen of atrioventricular septal defect with common atrioventricular junction sectioned by Bob van Mierop to replicate the four-chamber echocardiographic cut. This heart is representative of the amazing specimens within The University of Florida van Mierop Heart Archive housed at the Congenital Heart Center at University of Florida in Gainesville, Florida, United States of America.

Figure 12. This photograph was taken during the time when Bob van Mierop served as Chair of Pediatrics at University of Florida in Gainesville, Florida, United States of America. He is front and centre, in the black jacket. Lynne Kutsche stands to his left hand.
rattlesnake bites, when his knowledge of the distance between the fang marks was sufficient to predict the size of the animal in question.

Bob rose in the administrative ranks at University of Florida, serving as Chief of the Division of Pediatric Cardiology in Gainesville. For a short period, he was also Chair of the Department of Pediatrics (Fig 12). On allegedly “retiring” from active duty in 1995, University of Florida honoured him with the distinction of Emeritus Professor. Far from retiring, however, he continued to play his part in the Division, providing the benefit of his huge knowledge and expertise. Dr. Bob remained the voice of reason, providing evidence and logic as the data were interpreted and clinical decisions made. He provided regular weekly teaching sessions for the students, Residents, and Fellows in paediatric cardiology well into his 80s. Those who attended these sessions continue to recognise and frequently mention his dedication, along with the tremendous impact that he had on their future. Professor van Mierop imparted embryologic and anatomic knowledge
interspersed with many stories of his life experiences, all of which they fondly remember.

The students, Residents, Fellows, and faculty at University of Florida are all indebted to Professor van Mierop for decades of teaching and training. It is a fact that the diagnostic tools that he trained with did not initially include the basic and more advanced forms of imaging that we all take for granted today. However, the faculty at University of Florida distinctly remember his enthusiasm and encouragement to us as we strived to introduce these new technologies and further push the boundaries of these modalities at University of Florida. Professor van Mierop would regale us with tales of his interactions with various individuals, the names of whom adorn various procedures that we use commonly now. He made special mention of his interactions with Giancarlo Rastelli (1933–1970), a Cardiac Surgeon and creator of the Rastelli classification of atrioventricular septal defects, as well as the Rastelli procedure, who unfortunately died of cancer at 36 years of age. The faculty at University of Florida also fondly remember the dialogue and lively debates between Professor Lodewyk H.S. van Mierop and Professor Robert H. Anderson during the annual visits of the latter to Gainesville, debates which could in themselves be a source for academic reading. Most of all, however, the faculty at University of Florida fondly recall the over-arching care for the University of Florida Congenital Heart Center and its members provided by Professor van Mierop, and this leadership and support will never be forgotten.

**Reflections from the family of Lodewyk H.S. van Mierop**

Family was of tremendous value to Bob van Mierop (Figs 13 and 14). His family provided us with the following text, entitled: *Story about Dad’s favorite hobby* (Provided by Juliana Koca, daughter of Bob van Mierop):

Many people knew our father as a renowned Paediatric Cardiologist. A man with a passion for science and nature and a unique point of view on medicine.

But he also had many hobbies and interests outside of medicine, including raising exotic orchids, fishing, woodworking, and collecting antique firearms.

But, by far, his most interesting, and sometimes scary, hobby was his interest in snakes (Fig 15). When we moved to Florida, Dad decided to show us all which snakes were harmless and which ones were poisonous. After that, the collection began. It started with a harmless yellow rat snake he found in our back yard. He placed it in a small terrarium and from then on, snakes were his passion and the collection grew larger over the years. Dad used his carpentry skills to build elaborate cages for the snakes with running water and plants, and our home became somewhat of a reptile zoo with over 60 snakes occupying our home and back porch! Later, he became quite an expert on the treatment of venomous snake bites.

Many times, at dusk, we accompanied him to Wacahoota Road – a remote area near Paynes Prairie Preserve State Park, just to go snake hunting. (Paynes Prairie Preserve State Park is a Florida State Park, encompassing a 21,000-acre savanna in Alachua County, Florida, United States of America, lying between Micanopy and Gainesville. It is also a United States of America National Natural Landmark.) Snakes were very common on that road, and Dad knew how to capture them safely and bring them home. Sometimes, we would keep them for a long time, other times we would set them free a short time later. Over time, the snake collection became more exotic, including boa constrictors, pythons, green tree pythons, and, for a very short time, a cobra – which our mom insisted he get rid of immediately!

My siblings and I will never forget those years of Dad’s snake hobby. Many years later, people would still ask, “Do you still have all those snakes?” And we would fondly remember the man who made our lives so much more interesting.

- From: Lizabeth Craig, Diana Latta, Bobby van Mierop, Juliana Koca, Pete van Mierop

**Final thoughts**

In the final analysis, Bob’s detailed examination of the heart, and his skill as an anatomist, were unsurpassed in the contribution to our knowledge and understanding of paediatric cardiac care (Fig 11). Even to the very end, he was assertive in defending his...
own position, no matter how entrenched that position might be. He was always ready, nonetheless, to accept the new evidence and to change his mind once convinced of the validity of the opposing viewpoint. In this regard, he was the epitome of the true physician scientist. It is these features, and the evidence that remain from his writings and illustrations, along with the contents of *The University of Florida van Mierop Heart Archive* he established and maintained, which will serve as his enduring legacy. Undoubtedly, with these extraordinary contributions to the fields of cardiac anatomy and embryology, which were way ahead of his time, Dr. van Mierop was a true giant in Paediatric Cardiology (Figs 16 and 17). The invaluable archive he established at University of Florida in Gainesville, *The University of Florida van Mierop Heart Archive*, has been instrumental in teaching medical students, Residents, Medical Fellows, and Surgical Fellows. Only a handful of similar archives exist across the globe, and these archives are the true legacy of giants such as Dr. van Mierop. We have an important obligation to leave no stone unturned to continue to preserve these archives for the future generations of surgeons, physicians, all providers of paediatric and congenital cardiac care, and, most importantly, our patients.

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Dr. van Mierop would always remind his faculty about the importance of providing due recognition to all members of the TEAM, and he particularly highlighted the singular contribution of Ms. Deborah Floyd. Debbie was the administrative anchor for the Division of Pediatric Cardiology at University of Florida for over 30 years. In addition to her extensive administrative duties and tasks related to management of the Pediatric Cardiology Fellowship at University of Florida, Debbie even assisted Dr. van Mierop in the 1980’s in collecting the snakes he would incubate in his lab as part of his embryological research. At the recent retirement dinner in honour of Debbie Floyd, held at the home of Dr. and Mrs. Jay Fricker on Saturday, February 19, 2022, multiple graduates of the Pediatric Cardiology Fellowship at University of Florida who now practice all across the United States of America, as well as current Pediatric Cardiology Fellows at University of Florida, all honoured Debbie and paid tribute to her tremendous and awesome contributions to University of Florida and the community of paediatric and congenital cardiac care.

Gerold L. Schiebler, MD, recruited Professor Lodewyk H.S. van Mierop to join University of Florida. The University of Florida Congenital Heart Center acknowledges the tremendous contributions of Gerold L. Schiebler, MD, and his late wife, Mrs. Audrey Lincourt Schiebler [https://www.uff.ufl.edu/giving-opportunities/008049-gerold-l-schiebler-m-d-and-audrey-lincourt-schiebler-childrens-advocacy-fellowship-in-pediatrics/].

Dr. Schiebler is a graduate of Harvard Medical School and a Professor Emeritus and a Distinguished Service Professor of the Department of Pediatrics at University of Florida. Born in 1928 to German immigrant parents, Dr. Schiebler was raised in Hamburg, Pennsylvania, United States of America. He graduated from Harvard Medical School in 1954 and joined the University of Florida Department of Pediatrics faculty in 1960, becoming the first Paediatric Cardiologist in North Florida. In 1968, Dr. Schiebler was named Chair of the University of Florida Department of Pediatrics. He became University of Florida Associate Vice President for Health Affairs for External
Relations in 1985. Dr. Schiebler founded the Division of Children’s Medical Services within the State’s Department of Health and Rehabilitative Services, and established specialised medical services at the University of Florida Health Center for women undergoing high-risk pregnancies.

Mrs. Schiebler was born in Newport, Rhode Island, United States of America, and graduated from the Newport Hospital School of Nursing. After moving to Gainesville in 1960, Mrs. Schiebler became a distinguished volunteer of Florida. She served as President of the University of Florida Medical Guild, Medical Auxiliary, and Junior League of Gainesville. For 20 years, she acted as the Vice Chair of The Ounce of Prevention Fund of Florida. From 1987 to 2000, Mrs. Schiebler worked for University of Florida’s Institute for Child Health Policy. Mrs. Schiebler was awarded the Medal of Honor by the Florida Bar Foundation in 1990. She was a Florida Blue Key Honorary Member, and an honorary Fellow of the American Academy of Pediatrics. She and Dr. Schiebler were married for 61 years and had six children and 17 grandchildren. Mrs. Schiebler passed away in 2015.

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Ethical standards. The authors assert that all procedures contributing to this work comply with the ethical standards of the relevant national guidelines on human experimentation and with the Helsinki Declaration of 1975, as revised in 2008.

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