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Interview

Airway management giants: Giulio Frova An interview based portrait by Sabine Nabecker

Being a young resident in anaesthesia, I (S.N.) am curious about the Greats in the field of anaesthesia, and especially in airway management; their way into anaesthesiology and what moved them to develop new devices. I am wondering if I might get some advice for my future career in anaesthesia and its application in airway management. Professor Giulio Frova, the inventor of many devices in this field, i.e. the Frova catheter (a device to facilitate intubation – Cook Medical, USA), the Percutwist (a rotation procedure for percutaneous tracheostomies – Teleflex Medical, Ireland) and the Easycric (an emergency cricothyroidotomy set – Teleflex Medical, Ireland), was visiting the anaesthesia department in Bern where I studied and worked in June 2017. It was my pleasure to get the chance to interview Giulio Frova for the journal *Trends in Anaesthesia and Critical Care* after his presentation at our department (see Fig. 1).

Giulio Frova was born on the 30th of November 1938 in Venice, Italy. After he had been living there for the first 8 years of his life, the family moved to Milan, the Lombardia capital, where Prof. Frova attended primary and high school. He was able to advance over 1.5 years and started his medical studies at the University of Milan at a relatively young age.

The question of why Giulio Frova chose to study medicine was difficult to answer for him. He had an early contact with medicine because his grandfather and three of his uncles were physicians. His father, in contrast, was a chemist, but his mother was also interested in medicine from an early age on. However, during this time, when he had to decide what to study, Giulio Frova was attracted by architecture. On the day he decided to join university, the admission office was closed for holidays and Giulio Frova had to wait for many weeks till the end of summer. During these weeks, the young Giulio Frova went to see his uncle who asked him to help over the summer with his exciting doctor's activities in the field in a small town near Vicenza. Giulio Frova began to know and love emergency medicine. Even in retrospect, now as the well-known Prof. Frova, he was intrigued by the fact that his uncle, like most of the physicians of the past, was proud to treat nearly every ailment successfully at home, and not sending the patient to the hospital. At the end of that summer, when Giulio Frova returned to Milan to join university, his new interest was finally medicine and not architecture any more.

After graduating in medicine at Milan University, the young Dr. Frova started his residency to become a specialist in Anaesthesia and Intensive Care at the University Policlinic of Milan in 1962. But his interest in anaesthesiology started even before having his

degree whilst already working as a medical student in different surgical departments. The reason why he chose anaesthesiology was – he confesses – partly for economic reasons. He wanted to be independent from his family. At that time, there were not so many anaesthesiologists and therefore it was easy to find work in that speciality. Giulio Frova was also interested in the field of psychoanalysis, but it was difficult to earn money in this field of medicine back then, therefore he decided to favour anaesthesiology.

After his residency, he became assistant before and vice-consultant after at the San Carlo Hospital in Milan for the next 5 years; afterwards he became the head of the anaesthesia service in a seven-hundred-bed hospital near Milan until 1988. In this year Dr. Frova changed his employment and moved to Brescia to one of the biggest hospitals in Lombardia; at that time it provided about 2.400 beds. He became consultant and head of the anaesthesia and intensive care department until his retirement in 2005. Prof. Frova had about 90 anaesthesiologists under his indirect supervision as chief of the department at the Brescia Hospital, where more than 30,000 anaesthetic procedures were performed each year. Even though Giulio Frova worked in Brescia approximately 80 km away from Milan, he never left it completely since his childhood. He only had a room in Brescia and took the train for the 45 min ride from Brescia to Milan on his weekends off work, where his family was living.

Nowadays, Prof. Frova sometimes feels a bit nostalgic about not having chosen to be a psychoanalyst, another field of his interests, because in his opinion, in anaesthesia the relationship between doctor and patient is somehow lacking. Anaesthesia however – he said – has a virtue, that is similar to an art; and he likes to use his hands.

In the anaesthesiologist's hands, the patient literally puts its breathing and life; and this is particularly true in airway management. In this field Frova's interest was always to be skilled with every device and modify them sometimes or to create something new, always looking at simplicity and easiness of its use. For that reason being curious about feasibility is a very important feature.

Anaesthesia could be boring sometimes – he says – but in contrast this discipline can also be suddenly exciting and challenging but consequently also very stressing. This is one reason why Prof. Frova thinks that it is worth to completely leave the direct clinical work when an anaesthesiologist arrives at retirement and even before. After the end of his hospital career and his retirement in 2005, Prof. Frova continued only to teach and worked further on as a consultant for the court, mainly for airway management cases.

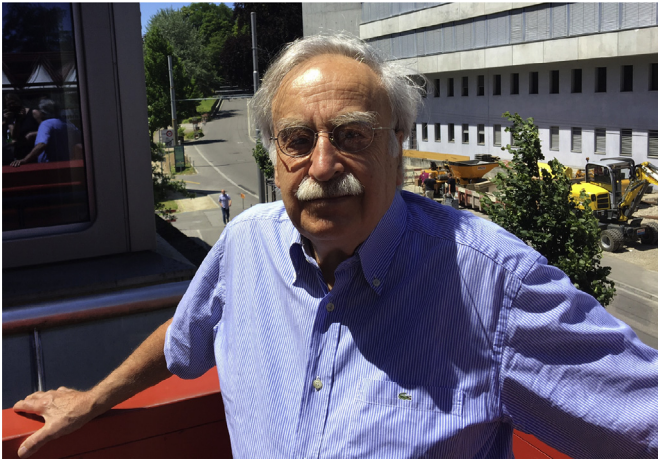


Fig. 1. Professor Giulio Frova in summer 2017 at the Bern University Hospital Campus in Bern, Switzerland.

Even today he is still lecturing, actively participating in scientific research and consulting for the court.

I asked Prof. Frova what problems he had encountered during his career as an anaesthesiologist. The biggest problems he had to endure during his career as the head of anaesthesia and intensive care service, concerned personnel. He just did not have enough nurses and in the beginning also not enough doctors. That meant hard times for him to fight for an increase in the number of qualified personnel to ensure the best ratio between nurses and patients' numbers.

For him, staying curious and interested mixed with a bit of scepticism is the most important factor for identifying problems during clinical work, which needs to be the first task in order to be a good anaesthesiologist; a wide practical experience is still fundamental. In my opinion, the most important thing Prof. Frova said during this interview was: "You can't teach without true experience, well you could, but the residents would surely realize your limitations immediately".

I was curious how Prof. Frova found the time to invent and improve devices. The simplicity of his answer struck me: "If you love to do something, you will find the time. If you like doing a job, you don't waste your time!". Like this, Giulio Frova found the time to invent new approaches to clinical problems during his duty hours and leisure time.

Prof. Frova told me he invented his nowadays well-known bougie called "Frova Catheter", (which he prefers to call *hollow introducer*) because of one particular patient. One day, a pregnant woman with a predicted difficult intubation came to the hospital for delivery. She was scheduled for an elective caesarean section in general anaesthesia, but the surgery became urgent overnight. During induction of anaesthesia the woman desaturated below 90%. Giulio Frova managed the airway with an Eschmann bougie at that time. While doing so a thought struck him, why not invent a hollow introducer through which it would be possible to administer oxygen during intubation to avoid desaturation? That was the starting point of his first invention.

For his other invention, a new percutaneous tracheostomy procedure, the aim was to completely abolish any pressure against the tracheal wall during dilation, thus entering the trachea with a screw and pulling instead of pushing the wall to reduce the potential traumatic effect.

The designing of a new cricothyroidotomy set was justified by his objective of creating a device to be more ergonomic and possibly safer; it was possible to work with it in an innovative

manner if compared with any device he had used in his previous experiences.

The Frova introducer has seen 20 years since its invention. In the beginning everyone in the world of airway management thought that the Frova catheter would have a short life, because of the emerging videolaryngoscopes. But this does not seem to be the case. Firstly, the combination of a Frova catheter and a traditional laryngoscope might still overcome many difficult situations. Secondly, its indication is not difficult intubation only, it is possible to reduce the laryngoscope's traction and moreover it is usable in combination with a videolaryngoscope, too, because it is easy to modify the shape of the catheter by bending it. The new shape will remain for 30 seconds because the catheter is made of polyethylene and has a good "memory"-effect. Recently, clinicians around the world started to use the Frova catheter for completely different purposes, e.g. during the scalpel-bougie procedure for cricothyroidotomy.

Prof. Frova doesn't turn his nose up at being ironical also during his lecture: he also shared some unorthodox uses of the Frova catheter. One might be to use it as a fountain for birds, or as a drinking straw to enjoy beer out of a can (Fig. 2) or even use it as a board stick.

After twenty years of the introducer's life, Prof. Frova would change very few things today; one among them is the colour of the paediatric Frova catheter. The adult one is brilliant light blue to make it distinguishable from all other devices and easy to find in the cart; the paediatric one however is yellow and Prof. Frova admitted that this may be considered as an error. He would prefer another colour to distinguish it from all other guides more easily, like the adult's one.

Even though Prof. Frova is an anaesthesiologist with heart and soul, he also has other interests. He still loves to teach and to share his experiences, and he also likes to travel (even if it is becoming a bit more tiring for him nowadays) and he dedicates himself to bird watching and nature observation. Until recent years, he always took his telescope, binoculars and a tripod to every conference abroad. He also loves to read books, from detective stories to books on psychoanalysis, being still fascinated by the complexity of the human psyche.

Many people had a great influence on Giulio Frova's professional development. He remembers with gratitude and esteem Professor Giorgio Damia, first director of the School of Anaesthesia in Milan (who taught him the essentials about this discipline and the



Fig. 2. Prof. Frova enjoying beer out of a can using his Frova catheter.

surgical tracheostomy procedure) and Professor Antonio Fantoni, an anaesthesiologist expert in airway endoscopy and consultant at San Carlo Hospital (from whom Prof. Frova learnt the nuts and bolts about this topic and conservative treatment of tracheal stenosis). While those two mentors stood out in particular, Giulio Frova made it very clear during the interview, that in his regard one can learn something from everyone, all it takes is to just look and listen!

When asked about achievements during his career he might be particularly proud of, Prof. Frova still remembers obtaining his title of Professor in Anaesthesia in 1970 and he is proud of having received the Macewen-Kirstein European Airway Award in Istanbul in 2013 during the second European Airway Management Society Congress.

But Frova's words reveal that his greatest achievement is to have raised 3 "children" (now 53, 50 and 48 years old) letting them free to choose and follow their heart. None of them chose medicine! On the contrary "they all hate modern medicine and pills" - he mentions. The reason for this is probably that Prof. Frova's messages were not supporting the off-chance for them to study medicine and to follow the footsteps of their father. Maybe he shared with his family too many political aspects and limits of today's medical work. In fact, his eldest son is a teacher of martial arts, and he is often in Japan; his daughter is a singer of classical music and his youngest son is an expert in canoeing and a professional photographer.

Being asked about his biggest mistake, Prof. Frova admits that this question might be too personal, however, he regrets that he did not study the English language being at a young age and that he did not go abroad immediately after finishing his medical degree. In school, he was taught French, not English. He suggests for young doctors to start working in a foreign country and to come back home afterwards after having mastered the language perfectly, learning new aspects of medicine as well on the way. His general advice for today's young anaesthesiologists is to be very interested in the job and to be always curious in new devices'

functioning, reading as much as possible of published literature on topics of their main interest. Being asked about his advice for today's young researchers, Prof. Frova started to laugh. He said: "No, first of all I am not a researcher, I may be not smart enough, but I am a good artisan in airway management with a lot of experience acquired in four decades of activity. For designing good research you need a different mind and for writing a scientific paper, the minimal request is writing and speaking English perfectly. Due to my lack of fluency in English, my remorse is still to have only published in Italian and therefore not in the right journals."

His wish for the future of anaesthesiology is that robots will never replace us humans as anaesthesiologists. There is an important human component in the field of anaesthesiology; and it is not possible to substitute the balance of patients' interests with a machine. Robots can't do the same job, however, as new technologies develop, a smart use of those new technologies is important.

After I had some time to think about this interview and Prof. Frova's inputs, the most important message to us young anaesthesiologist seems to be that we need to stay open minded and curious and we need to gain as much clinical experience as possible without additional risks for the patient in order to successfully pass on the art of anaesthesiology to the next generation of aspiring anaesthesiologists.

Thank you Prof. Frova for sharing your personal insights of life with us!

Sabine Nabecker*, Robert Greif, Lorenz Theiler
*Department of Anaesthesiology and Pain Therapy, Bern University
Hospital, University of Bern, Bern, Switzerland*

* Corresponding author.
E-mail address: sabine.nabecker@insel.ch (S. Nabecker).

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