Politics is never far from life in Italy. This observation applies as much to medicine as it does to great national events. Dr Maria Grazia Modena, a professor at the University of Modena and Reggio Emilia, looks back on her 2-year term (from 2004 to 2006) as the first female president of the Italian Society of Cardiology (ISC), when she carried out what she frankly calls a revolution in its constitution. “As soon as I became president of the society, I decided to review the rules and how it was run. I soon realised there had to be changes, with the agreement of my committee, of course. There were members who had held the same position for 12 years or more.” She explains, “An effective society has to have a rapid turnover of officials—the old have to give way to the young. There were 50 people running the society, sitting every month around a table—it was too many, so we reduced it to just 11 and consequently decreased the expenses of the society.”

Among Dr Modena’s aims at the ISC was to involve the regions more, so the 11 main committee members were drawn from throughout Italy. She was also keen to motivate more young cardiologists, so in addition to the annual meeting, she instituted 2 new types of meeting, held twice a year. One of them is for fellows in training and the other for general practitioners attending university hospital cardiology departments. Still to be achieved, but close to her heart, is another revolution: to gradually join together the Italian Society of Cardiology and its sister society, the Associazione Nazionale Medici Cardiologi Ospedalieri, which translates as the National Association of Hospital Cardiologists. Dr Modena would like to see both organisations actively participating in the Italian Federation of Cardiology. She believes that it does not serve the cause of Italian cardiology well to have 2 societies doing very similar jobs that would be better performed if they combined forces.

Asked to define her main research interest, Dr Modena says, “It is heart disease and women. By this I mean not only the better care of women with heart disease, but also the better representation of women as practising cardiologists.” In 1999, she published a survey of women and cardiology in Italy, and later she became chair of the Women in Cardiology Committee of the European Society of Cardiology. In her final report, Dr Modena outlined the status of women within the European Society of Cardiology, pointing out that although 26% of members overall were women (17% in the Mediterranean region and 40% in the former Eastern bloc), they were underrepresented within the Society. Only 8 of 31 European Society of Cardiology committees had any female members, and only 10% of working groups included women.

Although she describes the subsequent demise in 2003 of...
the European Society of Cardiology Women in Cardiology Committee as “suppression,” she believes that female cardiologists are now in a stronger position than in the past. “The situation has completely changed in Italy in the 8 years since we carried out the survey that was published in the European Heart Journal. There are now many more women in cardiology, but I don’t really know why. Perhaps there are more facilities for working women, or maybe they are marrying later, or despite Italy being a Catholic country, it may be that there are many more single or divorced women,” says Dr Modena. “It’s certainly much better for women here than in the United States, where the competition is terrible, though in Italy you still have to be quite aggressive to succeed. I have the impression that, in terms of career prospects as cardiologists, women are weaker in the United States.”

Well aware that she risks a sexist tag, she nonetheless believes that, as society stands at present, women cardiologists are particularly well suited to noninvasive clinical activities involving patient contact, including echocardiography, and that men are happier in the “more surgical” activities, such as interventional cardiology and haemodynamics. Her championing of women is evident in her own department at the University of Modena, where 5 of her 15 senior staff are women, as are 70% of her fellows. As she puts it, “The future therefore is expected to be more pink!” Recalling her own career, she comments, “At medical school I was in love with cardiology, but I had an uncle who was a full professor of neurology and I was also interested in his speciality. But I was afraid of charges of nepotism—besides, I knew that with cardiology patients you can achieve a complete remission—neurology is fascinating, the way the brain works and so on, but it’s not easy to treat patients.” She says with a smile, “When I won a fellowship to study cardiology at New York University, NY, it was a real American dream come true!”

Dr Modena could have stayed in the United States but had an offer to return to the city of Modena whose name she shares. The city’s origins go back to Roman times, when it was called Mutina. The area is celebrated for making racing car engines and producing balsamic vinegar. The job offer was for a university post, and she has spent most of her subsequent career in Modena. Work elsewhere included a year as a research fellow at Padua University, Italy, and short periods working and training at the Mayo Clinic, Rochester, Minn. She brought back the idea of women’s clinics from the Mayo Clinic and has now evaluated >3000 patients in the facilities she set up in Modena on her return.

Dr Modena says that a woman opting to do cardiology in Italy nearly 30 years ago was rarity. “I had 1 female colleague during my cardiology training, but ironically I had much more help from my male colleagues. It wasn’t really very tough. I was determined and worked very hard.” She continues, “I realised that to choose cardiology meant doing without a family. Like many women in my position, I don’t have kids. I had a late wedding, when I was 46; I married a chief of radiology, and we are very happy. If you are a female cardiologist you have to decide to wait for your family, at least if you have a university post. It’s easier in private practice. Cardiology is changing so rapidly, and you have to keep up to date. With a university post, you have to work very hard until you are established, in your 40s. If you want a family earlier there are other specialties and other less demanding jobs in cardiology.”

Despite her strong support for more women in cardiology, Dr Modena can understand why some cardiologists hesitate to appoint women, particularly in Europe, where many countries have extremely generous maternity benefits. She comments, “I’m not sexist, but as a chief of cardiology, when I’m appointing a key coworker I know a man will stay around, even if he has children. It’s different with a woman.”

Among her research interests are the beneficial effects of oestrogen in reducing left ventricle hypertrophy in hypertensive postmenopausal women. She has also demonstrated by means of ultrasound that endothelial dysfunction is a frequent sequela of the menopause, leading to hypertension and diabetes mellitus, conditions that are more responsive to antihypertensive therapy with drugs having simultaneous endothelial active properties such as angiotensin-converting enzyme inhibitors and angiotensin receptor blockers.

More generally, she is interested in the clinical approach to heart disease in women, who have “different genetics, smaller vessels, and a smaller heart,” as well as other comorbidities such as depression and autoimmune, thyroid, and pulmonary disorders, while also displaying particular types of disease. She cites in particular Takotsubo cardiomyopathy, or the broken heart syndrome, which presents as an infarction, but with normal coronary vessels and a stunned...
myocardium. “We have to pay more attention to women with atypical symptoms. Often the broken heart syndrome follows a sad episode, such as the loss of a child. It presents with a short-lived, very strong pain, often in the back, sometimes with flu-like symptoms, and it is reversible. We have to gain the patient’s trust to get the full story, and perhaps female cardiologists can do this more easily.”

Asked about her ambitions for the future, Dr Modena says, “To be the minister of health.” This is of course, a joke, or is it? She admits to running her professional life like a clinical trial, with definite end points. Although unlikely to get the top job in Italy, she would be unhappy if she could not achieve something more, like the deanship of her faculty. But she emphasises that one thing she passionately hopes for is the union of the Italian Society of Cardiology and the National Association of Hospital Cardiologists. “My dream is to have one big society for all cardiologists in Italy; we’d be so much stronger.”

Outside of her medical career, Dr Modena and her husband (and their dog, a Bassett hound) have a very full life. “We have a very nice house. We don’t like parties, but we spend some time at our flat in Nice, France, and I collect abstract contemporary art. I’d like an Andy Warhol, but the price is not yet quite right!”

Dr Zelko Roncevic, chief of the paediatric cardiology department, Clinical Hospital, Mostar, says, “I always have a feeling that cardiac sounds and murmurs are a kind of music. The heart has a rhythm, and the normal heart sounds have the semblance of bass guitar and drum sounds. Some heart murmurs have a musical dimension. We even use musical terms to describe murmurs, such as crescendo and decrescendo.” Dr Roncevic believes that some murmurs are actually pleasant to listen to. “My favourite murmur is an innocent Still’s murmur,” he says, and he compares it to a musical accompaniment performed by a former Beatles musician (Figure 1). “Sir Paul McCartney’s bass guitar playing on the Sergeant Pepper album, in the song entitled ‘Getting Better,’ always reminds me of a Still’s murmur.”

Still’s murmur was first described by Sir George Frederick Still, MD (1868-1941), an Englishman who was the first professor of childhood medicine. Dr Roncevic believes that Dr Still was right when he described his eponymous murmur as “a twanging sound, very much like that made by twanging a piece of tense string.” Dr Roncevic comments, “I’m sure that the tense string in question is a left ventricular false tendon. I have seen many children’s hearts with a Still’s murmur on echocardiography, and they always have false tendons.”

Dr Roncevic speculated that if heart sounds and murmurs are a kind of music, it is logical that musically talented medical students and doctors might be better at cardiac auscultation than those without that particular gift, so he decided to investigate his theory. “I tested 126 medical students, from 3 universities, and 20 paediatricians. They listened to 6 pre-recorded cardiac murmurs through an electronic stethoscope.” He found that those participants who could play a musical instrument or sang in a chorus identified more murmurs correctly than those who had no practical musical skills.

“The heart sounds can also be a source of inspiration for
musicians, who sometimes use heart sounds and rhythms in their compositions, in making music, or performing,” says Dr Roncevic. “Milford Graves, a famous jazz drummer and professor of music at Bennington College, Vt, has used an electronic stethoscope to record his own and other musicians’ heart sounds. One of his projects is to see what kind of music a human heart can make, and he believes that these sounds are a form of free jazz.” Mr Graves (Figure 2) also detects rhythms from the heart that he has heard elsewhere in Cuban and Nigerian music.

Dr Roncevic cites Mark Ballora, from the Penn State School of Music, University Park, Pa, who worked with Ary L. Goldberger, MD, from Harvard Medical School, Boston, Ma. “They have proposed a novel diagnostic method based on music technology called heart rate sonification.” He explains that digital music software is employed to transform the sequence of intervals between consecutive heartbeats into an electro-acoustic soundtrack. The results show promise as a diagnostic tool and also provide the basis of an interesting musical soundscape.

Michael Barrett, MD, clinical associate professor of medicine and a cardiologist at Temple University School of Medicine in Philadelphia, Pa, is another physician who shares Dr Roncevic’s beliefs. “Dr Barrett has developed a special program for learning cardiac auscultation, using MP3 players, called Heart Songs, so sure is he that cardiac sounds and murmurs are a form of music,” he says.

Electronic stethoscopes (Figure 3) have improved the value of auscultation with their remarkable abilities to enhance heart sounds, but Dr Roncevic believes that it is best to use a classic acoustic stethoscope in addition to an electronic one. “If you are relatively old, the electronic stethoscope is an especially good choice,” he points out, “because it is possible to amplify cardiac sounds and murmurs, not to mention other options such as the wireless transfer of what is heard to a personal computer.” Recordings of auscultation can be made and sent to colleagues via e-mail, or graphical and spectral analyses can be made.

“But,” says Dr Roncevic, “an acoustic stethoscope has a more natural sound compared to the electronic one. You might compare it to an acoustic and an electric guitar, or a vinyl gramophone recording and a compact disc.”

There is one thing in particular that Dr Roncevic feels strongly about. “We have to preserve the stethoscope and auscultation for the next generation of doctors,” he says. “There are a number of reasons. It is a cheap but nevertheless very good instrument. With a stethoscope you can correctly diagnose many heart disorders. And the stethoscope is a good screening tool.”

Dr Roncevic emphasises this point by disagreeing with advice he has seen offered in some textbooks. “I remember reading that it is a waste of time to auscultate the symptomless patient. I do not agree; in fact, the converse is true. It can be most useful, and sometimes it is life saving.” He gives an example. “For instance, if you have a child with symptomless, mild aortic stenosis, it is important to start bacterial endocarditis prophylaxis immediately, no matter how symptomless the patient. And you can find such a patient only by auscultation.” Dr Roncevic continues, “Other more sophisticated tests will come later, and don’t forget, bacterial endocarditis is often fatal.”

Dr Roncevic mentions other, similar situations, such as patients with symptomless congenital heart disease and other valvular diseases. “It is clear that we can’t perform a cardiac ultrasound examination on every newborn baby, but with our stethoscopes, we will find patients who need further investigation.” The stethoscope also offers another important benefit that must not be overlooked, Dr Roncevic believes. “During palpation and percussion of the chest and auscultation of the heart and other physical examination techniques, we are near to our patients and the relationship is much closer as a result.” Dr Roncevic concludes, “And you will hear music. So, dear colleagues, let us save the stethoscope and auscultation, not just because it is a good tradition, but because those old friends of steel and tubing are so useful.”

Dr Barnard is the managing editor of Circulation: European Perspectives in Cardiology.
Dr Fausto Pinto, professor of cardiology at the University of Lisbon, became interested in cardiology and imaging during his internship at the medical school there. “I got involved a bit in cardiovascular disease and was fortunate to work with people who made me enjoy cardiology,” he explains. In 1989 he went to Stanford University, Palo Alto, Calif, to do a fellowship in echocardiography under Richard Popp, MD, professor and one of the pioneers of the use of ultrasound in cardiology. He stayed in California until 1993.

“I was there for 4 years and did quite a lot of work on echocardiography and ultrasound. That was at the beginning of intravascular imaging. The tools unravelled the pathophysiology, and I realised that in some way they could have a role in diagnosis and treatment,” he says. “I was interested in intravascular ultrasound and did the first studies on graft atherosclerosis in cardiac transplant patients.” The results of these studies in more than 400 patients became the subject of his PhD thesis.

At the same time, Dr Pinto also embarked on an interventional cardiology fellowship. “I was interested in doing interventional procedures so that I would be able to manage and perform intravascular ultrasound studies. So, I did the full training in percutaneous coronary intervention at that time,” he says. He describes the academic and scientific atmosphere at Stanford as crucial for the development of his career in later life.

Dr Pinto returned to Portugal to continue his research, and in 1999 he became the director of the Cardiovascular Institute in Lisbon. The post carried responsibilities for patient care, research, and academic work.

In 2003, Dr Pinto founded and became the first president of the European Association of Echocardiography (Figure 1), under the aegis of the European Society of Cardiology. He used this position to make the case within the European Society of Cardiology for European accreditation in echocardiography. This started in 2003. He also championed the development of cardiovascular imaging and promoted the integration of the different imaging modalities.

Meanwhile, Dr Pinto continued to work on the development of intravascular imaging and, in particular, the use of ultrasound in the study of coronary artery disease, both for developing new ways of looking at the morphology of coronary arteries and also for developing some functional studies. The technique was used to look at the morphology of coronary arteries in different conditions and for the study of endothelial function after coronary transplantation. His interest also began to extend to the potential role of other imaging techniques in cardiology.

“I was part of a consortium looking at the use of the 3-dimensional echocardiography for different areas,” he says (Figure 2). “I was also involved in some studies on the use of contrast echocardiography for myocardial perfusion and on the use of tissue Doppler for ventricular function.”

Dr Pinto points to several developments in echocardiography that he considers particularly important and that he predicts will receive continued attention in the future to improve assessment of myocardial function. “We now have new ways of looking at and also understanding left ventricular function, like looking at tissue velocities, myocardial deformation parameters, and the way that has been developed with 3-dimensional imaging in real time,” he says.

Dr Pinto feels confident that cardiovascular imaging
will serve as one of the key developments in the future. “Right now, we have different imaging technologies, we have ultrasound, we have computerised tomography, we have multislice tomography, and we have cardiac magnetic resonance imaging and nuclear imaging,” he says. “So, there are different imaging areas in the imaging technologies. What I see in the future is the complementary use of these different technologies to assess different clinical problems. I also think that the development of molecular imaging will be very important for the future.”

Some developments already have occurred in fusion imaging: the ability to use some of the advantages of different imaging technologies and put them together (such as ultrasound with cardiac magnetic resonance imaging or with computerised tomography). “The use of some contrast technologies together with 3-dimensional techniques and with velocity imaging may also be something for the future,” says Dr Pinto.

Dr Pinto has no doubt that continued refinement of the various technologies will result in new developments that will help overcome some of the difficulties researchers have come across in recent years. He describes some of the remaining limitations as technological and others as clinical. “As a cardiologist, I try to focus on the clinical problems and use the technology as a tool to help me solve these problems,” he explains. “We are using technology to understand the mechanisms of disease, as well as define better diagnostic and treatment strategies; at the same time, we are facing new challenges and new limitations. Therefore,” he continues, “we are looking for new ways to overcome these limitations. Right now, we have some technical limitations, and we have a lot of clinical problems. When you solve a clinical problem, you end up with 10 more—that is the way medicine is. We know a great deal today, but we still have much more to learn.”