

DIETER CHRISTIAN WIRTZ

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SUMMARY

Professor Dieter Wirtz has navigated the structural evolution of German musculoskeletal medicine, transitioning from early trauma training to leading the first merged university department in Bonn. His career reflects a commitment to the "United Diversity" of orthopedics and traumatology, balancing broad foundational training with deep sub-specialization. An expert in complex revision arthroplasty and periprosthetic infection, Wirtz now advocates for three-stage care models and ecological sustainability. His leadership in professional societies underscores a dedication to refining clinical standards for future surgeons.

Professor Dieter Wirtz, President of the DGOU and DGOOC is Medical Director of the Medical University Clinic for Orthopaedics and Trauma Surgery in Bonn and is an international expert in hip and knee surgery. He has been active in professional politics for many years and tells us about his career and experiences.

Professor Wirtz, you are the president of the DKOU 2020 and 2021; due to Corona, the congress 2020 only took place online. What will be the main topic of the DKOU Congress 2021, which will hopefully take place face2face again?

So, we have entitled the congress with the hashtag 'United Diversity', and with this we want to express that our discipline of orthopaedics and trauma surgery is indeed united and that we see ourselves as orthopaedic surgeons and trauma surgeons. This is a development that has taken many years, starting with the professional society in 2008, but has now been completed. But we also want to express with the second term, namely diversity, that this subject needs such a great depth due to its breadth and the specializations that will be necessary in the future, that it is absolutely necessary to "focus" on one's special discipline in this diversity. In this respect, we want to represent the breadth and depth with this overarching theme of 'united diversity', and this now applies not only to inpatient care, but also across sectors, i.e. really united across outpatient and inpatient treatment days.

Professor Wirtz, I take it from this that you are actually a fan of sub-specialization.

That is correct. I believe that the good doctor in trauma surgery as well as orthopaedics, no matter how specialised he will be in his advanced working age, needs a very good and broad basic training for the skeletal and musculoskeletal system. Therefore, a specialist training in orthopedics and trauma surgery, which covers the breadth of the subject, makes a lot of sense. On top of that, however, patient care simply needs a higher level of specialization due to the increasingly complex clinical pictures in an increasingly aging society, so that one really has to specialize according to one's inclination, training, or continuing education in the course of one's primary residency training. I believe that it also makes a lot of sense to perform specialized interventions with a higher degree of complexity only in centers, where one then, for example, interdisciplinary with other disciplines illuminates this special topic. One example is: all surgical

or periprosthetic infection treatment - I don't think that has to be done at every hospital and by every specialist in orthopaedics and trauma surgery - certainly not by a pure specialist in surgery - but that requires a very specific form of looking after the patient in order to result in a high quality of care at the end of the day.

Isn't this actually a bit of an 'Americanisation' of our system - the Americans already showed us 15/20 years ago that this is possible - is this welcomed by all your colleagues in Germany, or is this a difficult task of persuasion?

A certain amount of persuasion is certainly still necessary. But as I have just said, the patient's needs will demand precisely this specialisation, and I therefore believe that this is the right way to go. However, it must also be said, and this is in contrast to the American system, that we have very good, broad-based care in our society - and this applies in particular to traumatology. That's why we have to make sure that in the future there will be a good primary care for musculoskeletal in the rural area - which is primarily related to traumatology - and then - I am convinced - such a hospital in the rural area can certainly specialize in one or the other subject. Whether that is spinal surgery, endoprosthetics or whatever, that is up to the local structure and the people involved. I believe that only in this way, in the sense of at least a three-stage care concept, does care in the future make sense for our patients.

What should such a three-stage supply concept for Germany look like?

There must be basic and standard care across the board - now referring to Germany - in hospitals with 400 to 600 beds. This is primarily in the traumatological field and in basic orthopaedic care. In an extended care structure, several special areas should then be offered. If we stick to endoprosthetics, it should be possible to perform alternating endoprosthetics in such an extended center if a structural and procedural structure and quality is available via EndoCert. Then comes the highest level of care, that is the absolute maximum care provider. At this hospital, it should then be possible to perform any type of complication, septic endoprosthetics and the most difficult defect reconstructions. However, it is a prerequisite that this hospital also has staff or surgeons who are able and willing to cover this range of services. It may also be that the maximum care provider in another focus area - spinal surgery - sets itself up exceptionally in depth, and then it is also good.

I believe that such a three-stage care model allows both the problem to be treated well locally, that is, the standard femoral neck fracture, the standard radius fracture, the standard ankle joint fracture can be treated well locally. Even primary arthroplasty, if a certain number of cases are done and the structure fits, can also be done well close to the patient's site. For an exchange operation, I believe that a patient who can be planned can be expected to travel 50 km to the nearest larger hospital. For the most difficult change, for the most difficult challenges, you can also expect a patient to travel 150 km.

That all sounds very nice, but how do you want to solve the problem of paying for the case mix? This means that the care centres will then mainly do the expensive and difficult cases. At the moment, however, payment is still linked to the DRGs (Diagnosis Related Groups) and would mean underfunding of the centres.

Yes, that is the catch of this model. This means that in the future we will have to use clear care data to make it clear to politicians that the quality of care and further training at a level of complexity cost money. This is currently not feasible in the DRG system, which is driven by

average values. What I mean to say is that the hospital at the end of the supply chain, which then performs about 200 septic prosthesis changes a year, must receive a centre supplement for this complexity, otherwise it cannot maintain an infectiologist, microbiologist, etc. in the hospital. I think that these - shall I say - complication centres really need 'in-house' interdisciplinary expertise, and that this cannot be reasonably done with a consultant system - telephone sort of consulting - far away, etc. Yes, it is true that the current remuneration system in Germany does not yet offer the possibility of implementing such a three-stage model. We must work on it however that the policy creates there the place forms. In one area, and this is a bit of a blueprint for it, this three-stage model already exists in Germany for the BG clinics. Of course, the centres, the large BG clinics, are better remunerated depending on the procedures than the BG clinics, which have a primary, let's say, basic, care.

Trauma care. In this BG model, these 3 levels are defined relatively precisely according to the disease, i.e. injury patterns, and I believe that this can be done in exactly the same way for other orthopaedic care areas that can be planned. In this respect, the model is there, you just have to implement it.

You also mentioned that the merger of orthopaedics and traumatology in Germany is now complete. You took over a department very early on that merged the two specialist primaries. What was that like for you personally?

So, perhaps I will start a little earlier in this timeline. As a representative of the senior physicians in the DGOOC, which at that time was called the young forum of the DGOOC, I was involved in the first discussions that took place in 2003/2004 between the then leading colleagues, secretaries general and presidents. And at that time there was an extremely positive atmosphere of departure from these masterminds. That was Mr. Rüter from Augsburg, trauma surgery, Mr. Wenzensen from Ludwigshafen, trauma surgery, Mr. Ewerbeck, Heidelberg, orthopaedics, Mr. Niethard, orthopaedics Aachen, Alexander Beck, senior physician, trauma surgery and I, senior physician orthopaedics. These were the six who sat together at that time and said: this should actually be a model for the future, and we want to implement it now, and we want to bring it to the state medical associations. In Germany, we have a federal system in which everything goes through the state medical associations. At the time, we thought that because the musculoskeletal issue fitted together so logically, we could complete the merger in 10 years.

I was then appointed here in Bonn in 2006, for what was then the first chair in Germany for trauma surgery/orthopaedics. However, as I am of orthopaedic provenance and an orthopaedic surgeon, it was already clear to me at the time of the appointment negotiations that I would not be able to implement the entire breadth and depth of this subject in terms of structure and also content, also in relation to the legislative requirements. At that time, I managed to secure a W2 professorship for special trauma surgery here in Bonn as part of my appointment negotiations, which was subsequently filled by Professor Christof Burger. I then transferred both former clinics into a new structural concept. Joint morning and afternoon meetings of all doctors. From the beginning, I divided the doctors into teams or sections and provided all assistants with a fixed rotation plan through these sections during their training period to become specialists. Because of this, our clinic quickly grew together very well and everyone learned very well from each other. Those who had previously been orthopaedic specialists were able to develop a feeling for how this fracture should be treated and why it was not treated optimally in one or the other case simply through the joint discussions of all sections in the afternoon. In this respect, I believe that this

consolidation has worked relatively well and quickly here in Bonn. Of course, this is always related to the people involved, because with Christof Burger at my side, I had a very collegial and influential colleague, we were able to build this up together. To be honest, we can be relatively proud today that we have succeeded so well in this form. In Bonn, we have the highest case mix index of all German university hospitals in orthopaedics and trauma surgery and this is proof that we have implemented exactly what I have just mentioned for this breadth and depth of care at the University Hospital Bonn. We can treat any patient at any time of the day or night, regardless of the type of illness, injury or complication. In the course of many years, however, we have also developed a staff that can do this. I can say of myself that I cannot cover everything, but that I am quite broadly positioned and of course represent my specialised areas in particular. I am the organisational umbrella in our clinic and I believe that the model has been implemented quite well here.

Professor Wirtz, this has now worked very well in Bonn under your leadership. But we know that it didn't work so well at other locations and that some people have even called for it to be reversed. Are there still discussions about this model?

The university locations are to be evaluated somewhat differentiated from larger hospitals or from primary care houses. In the areas where there was a former department for trauma surgery, orthopaedics and trauma surgery are practically exclusively done today. At the locations where there was practically exclusively a specialist clinic for orthopaedics, at least basic trauma surgery is also covered. This means that in the vast majority of care hospitals - especially through new appointments and complementary mergers - a unified good structure has been created. This is also necessary in order to recruit young doctors for further training. Because only there, where I offer also for orthopedics and accident surgery the training further contents and then also a training further authorization have, it is attractive for young physicians to apply. If one hospital continues to specialise strongly, but another hospital with a different focus is available at the same location, then they have come together in the sense of a joint further training programme. This has been relatively successful at this level and I believe it has also been largely completed.

As far as university structures are concerned, in my view, the process of growing together has taken considerably longer and is still not really complete at various locations. But that has to do with the people involved, who - let's say - still have a certain distance to go in their careers. But when this has grown 'biologically', then I believe that there is no way around this model of a musculoskeletal centre or a centre for orthopaedics/trauma surgery.

At the university level - in my estimation - a specialization in O and U alone is actually not enough. There is also a need for much more fine-grained specialisation; it makes perfect sense to say: okay, we need someone on a par with other large academic subjects such as internal medicine who does spinal surgery, joint surgery endoprosthetics and trauma surgery. However, we also need someone who is academically responsible for tumour orthopaedics, paediatric orthopaedics and rheumatism orthopaedics. But then we come up against limits in the faculties, because the faculty budget is of course limited. In particular, the directors of the institutes do not want two full professors to suddenly become five in one subject of orthopaedics/trauma surgery, as this would minimise the budget for research and teaching for themselves. In this respect, there is already a certain - let's say - justified discussion at the faculties in Germany that we actually need more professorial posts with a clear academic profile in O and U. In many locations, musculoskeletal surgery makes up a large proportion of the total number of professors. At many locations, musculoskeletal makes up more than 1% of the output of a university hospital. The other departments, however, see it a bit differently and currently justify it with the fact that O and U are by far not as strong in research and therefore do not need more academic positions. Therefore, it is also an important aspect for the future that we really position ourselves more strongly in musculoskeletal research, so that we gain more weight in the faculties, so that we can then also represent our interests there, and also fill certain areas with new academic positions.

Let's change the subject. One focus of this year's congress is sustainability and ecology. Can you explain what is meant by this topic?

I said at the beginning that united diversity is a bit of an overarching theme. However, we have also picked out two or three key issues that we feel are particularly close to our hearts. And one of them is this ecological footprint that is created in medicine or by medicine. The climate problem is on everyone's lips and in every sector of the economy people are thinking about how we can go into the future in a more ecological way. The medical sector has not really been in the focus of this so far. But if you take a look at your own operating theatre and see how much waste we produce per operation due to sterile packaging, disposable instruments or disposable instruments, and compare this to 10 years ago, then everyone will realise that we leave behind an ecological footprint in medicine that needs to be questioned. This is not only true for the operating theatre, but also for the work on the ward. Whereas in the past glass bottles were used and infusion sets were moved from bottle A to bottle B for the same patient, today everything is always equipped with new armamentarium, so to speak, and a huge mountain of waste is produced. That's why we said we would like to raise this issue at the congress. We want to raise awareness in our field as well. We do a lot of good with medicine, but we also have to look at whether we are doing something positive for the future prospects in this ecological sector. If you now take certain developments - let's take the European Medical Device Regulation MDR, then every screw is provided with individual packaging and sterilised twice, which used to be on a screw tray, so to speak, just because the lot number of this screw has to be able to be traced. In this respect, I believe that we also need to discuss with politicians whether these decisions, which were made from a certain point of view, were really correct. Does it make sense for us to have giant warehouses in our clinics in the sterile hallway? Does it make sense that companies, which I do not want to name now, develop disposable instruments for knee endoprostheses made of PEEK or other materials, which at the end of the day cause a relatively high CO₂ burden. Does it make sense that we have robotic instruments available here that are supposed to improve the cutting geometry a bit, but at the end of the day cause a high ecological footprint, and so on and so forth. These are a few of the questions that I am concerned with here.

The topic of the ecological footprint seems to be very topical. At the congress, did you also look for ways to get industry on board here, because they will probably be the decisive factor in whether this step succeeds?

The topic of the ecological footprint seems to be very topical. At the congress, did you also look for ways to get industry on board here, because they will probably be the decisive factor in whether this step succeeds.

You took over the clinic in Bonn very early in your career as a young full professor. Can you tell us a little bit about your career up to this leading position?

I started in 1992 in trauma surgery in Stuttgart with the then DGU president, Professor Holz. At that time, Professor Holz was very well networked in the AO and was responsible in particular for the Asian and Indian areas. At that time we had in Stuttgart - also from today's point of view - a very, in my opinion, efficient and quality-oriented trauma surgery, which had an enormous international connection, especially due to the network of the chief. These different aspects: the patient is in the foreground, we need international networking and also have to learn from other colleagues, and it makes sense to be scientifically active, shaped me and laid a bit of a foundation for me. So combined clinical-scientific work, thinking outside the box, and at the same time keeping an eye on the whole in terms of health policy and professional policy. That made sense to me, because at that time, as a very young beginner, I had the feeling: with the team and with the boss, you always have your finger on the pulse, so to speak. And that's why I felt very comfortable in trauma surgery and actually wanted to become a trauma surgeon primarily. At that time, however, it was the case that you definitely needed general surgical training as part of trauma surgery, and since I didn't feel that I was in the best possible hands in Stuttgart with the head of the surgical clinics there, I then applied for a job and went to Wiesbaden to the Horst Schmidt Clinic, a 1,000-bed hospital with a large surgical department. However, I found out that the department there was not run in the same way as I had known it in Stuttgart. Now there is a personal touch, which was important in my career. Back in my student days, I met my current wife, then girlfriend, in Aachen. But she stayed in Aachen during my away game in Stuttgart and then in Wiesbaden because she had a civil servant job there. Because I didn't like it so much in Wiesbaden and, to be honest, I found the commuting a bit annoying, I applied for a job in Aachen. At that time, the trauma surgery in Aachen, integrated in the surgical clinic, did not have such a high range of services, and from today's point of view, I may also say a little bit evaluatively that - at least at this location - trauma surgery was handled somewhat stepmotherly. That is why I said musculoskeletal is my future. Ul i Holz also did a relatively large amount of endoprosthetics and revision endoprosthetics and had developed the so-calledCopf- Holz prosthesis, with which I made my first publication out of Stuttgart. So I thought, why don't you apply for a position in orthopaedics in Aachen, which at that time was temporarily headed by Professor Forst, who was full professor in Erlangen until spring2021. The "crowd" at the Aachen Orthopaedic University was not as high at that time as it might have been at other clinics. It is possible that I got a position in orthopaedics there because ofthis "advantage". The new full professor was Prof. Niethard, who came to Aachen from Heidelberg about 2 years after I took up my post in 1996. Prof. Niethard had a conversation with each of his assistants right at the beginning, along the lines of: Where do you want to go? What do you want to become in this clinic? I made it clear to him that I wanted to do my habilitation and ultimately become a senior physician. Prof. Niethard then told me: "Of course, habilitation is only possible with research projects. Think about what you want to do and think about a red thread, and then come back in 2 months. I then picked up this ball and thought to myself that if I wanted to have a chance as an assistant, then I had to do something now. I then

established my scientific basis with implant research in cooperation with the dental materials science department in Aachen. With several DFG projects, an EU project and a really high-volume BMBF project, etc., over the years endoprosthetics and especially revision endoprosthetics became my clinical and scientific hobbyhorse. After becoming a specialist, I then became a senior physician relatively soon, and due to the professional-political commitment of Fritz Niethard, who was the president of the DGOT in 2000 and always stood in front as a guiding figure for me, I also wanted to help shape our field. In order to achieve this, one must also be involved in the professional society. Then you can help to develop certain considerations and rules in this field. That's why I got myself nominated for the young forum as a senior physician representative and was elected to the executive board of the DGOOC at the beginning of the 2000s. I have - today - almost 20 years of board activity in this specialist society behind me. In the beginning, I was certainly more in an observing position, but this has also given me a lot for my further path; this was definitely shaped by professional political thinking. by thinking in terms of professional policy: Where is our discipline going in the future? How do we prepare ourselves for the future? How do we have to position the clinic internally and externally? I also believe that my appointment in Bonn for a merged clinic for orthopaedics and trauma surgery is definitely related to this - i.e. the thinking and also the caring for these questions. In this respect, as is so often the case, one piece of the puzzle has fitted into the other.

You also helped to set up a research laboratory in Bonn, and you also collaborated with the German Center for Infection Research. Can you please tell us something about that?

Already at the RWTH Aachen my research was in cooperation with engineering and was very close to implant optimization and coating technologies. In Bonn, however, there is no engineering environment, but both the university and the university hospital campus tick more in the field of immunology and infectiology. I was able to maintain my contacts in Aachen, but I was not able to integrate and implement this hardware research here at the Bonn site. In this respect, research was not my direct focus at the beginning, especially as I had to concentrate on setting up the new merged clinic. I had negotiated a research laboratory in the appointment negotiations, but it took five years until these premises were converted in such a way that we were able to set up a research laboratory with cell-based and immunological research. The personnel equipment and the structure have only developed further over the years. For the last three years, we have had an immunologist on board in the form of our current head of the research department, PD Frank Schildberg, who previously spent five years at Harvard Medical School in Boston. With him, we have exactly the right staff to use all the other facilities on campus in a cross-linked way. Therefore, our current research topic is osteoimmunology with a focus on bone defect regeneration by triggering immunological processes. Another focus is peri-implant infection research, as we have developed clinically over the years as a focus center for periprosthetic infections with more than 300 prosthetic infection patients per year. In cooperation with the German Centre for Infection Research (DZIF) and with the other specialist disciplines, we have really built up a competent overall environment. Our Clinic for Orthopaedics and Trauma Surgery has its "own" microbiologist, who is also supported by a very good Department of Clinical Infectiology at the University Hospital in Bonn. We have certainly not reached the end of the line here and the whole thing can still be significantly expanded; our goal here in the coming years is to focus even more on the detection and visualization of periprosthetic infections in this research sector.

In addition to implant defect research I would like to come back to the aspect of defect reconstruction, especially acetabular - this has been my hobbyhorse for ages. There we would like to reconstruct more biologically, if it is possible somehow, certainly in combination with metal augments. We therefore see osteoimmunology and the perivascular induction of new bone formation as another important research focus. However, we are only at the beginning of the development and these questions can certainly only be solved on an interdisciplinary basis.

I also read that you are now also looking at developing an immunological marker, that through imaging techniques the infected tissue can be identified before surgery and then more specifically removed during surgery.

The idea or the basic model is that if I know the germ, then of course it would make a lot of sense to know where the bacterium is located. That's where we want to label antibodies with nuclear medicine tracers, which then attach specifically to this bacterium. With a high-resolution nuclear medicine detection method, we can then show which tissue is affected by the bacterium, which tissue is infected. This would allow the ability to plan and perform surgical radicalization and debridement more precisely than I do now. The second aspect would also be: how can you visualize biofilm on the implant and there are comparable approaches to make the biofilm visible via antibody tracing.

In addition to clinical, political and your scientific activities, you have always been very concerned with education and continuing education. You are the author and editor of several books. What can you tell us about this part of your career?

Every clinic needs a certain SOP plan with a very clear diction of how the procedure should be for different fractures or arthrosis situations, etc. Now a lot of things are also in various books, but it was a concern for me, if I already create a house primer as a guideline for my employees, why can't we create a practical textbook for orthopedics and trauma surgery from it. This led to the idea, together with Steffen Ruchholtz from Marburg, to write a concise textbook for orthopaedics and trauma surgery with "breadth and depth". This textbook is then at the same time a guide for the own clinic. In other books that have been written in this way over the years, these have always been my personal areas of interest, namely hip surgery and arthroplasty. Together with Prof. Ulrich Stöckle, I am Editor in Chief of the Journal of Orthopaedics and Trauma Surgery. I think it is important that we continue to have a German-language publication organ. We have in the meantime developed the ZFOU so that every article in PubMed can also be read in English and we have been able to increase the 'impact'. Being the editor of the central organ of our field of orthopaedics and trauma surgery is a very honourable position and really a privilege. That is why, when I was asked, I accepted straight away. From the very beginning I enjoyed seeing what is being scientifically b earbeite n in Germany or even in the surrounding foreign countries - and - what can and should we publish in a German-language journal that will keep a wide readership up-to-date in their native language? The work for a journal is of course an additional task, which is not entirely insignificant. Consciously developing the ZFOU is easier said than done, and we still have some design challenges ahead of us. But this is also a task that I enjoy in addition to the other tasks.

Besides these numerous and important tasks that you perform in your job, do you still have time for hobbies?

I used to be very active in athletics in my youth. Of course, I can no longer do that today. But even today I need for my physical and mental fitness sporting activity . I have been playing tennis since

I was 13-14 years old and it is still my hobby. I do it 2 or 3 times a week. I play in the men's 40 team, although I am over 50, but I still enjoy playing with my old team 'men's 40'. It's a real balance that you look forward to, because you also have contact with other professions that have nothing to do with medicine. Apart from that, I try to give the rest of my time to my family, because that's the support you need. There are very orderly and cohesive relationships in our house. Where I would also like to have more time is to read good books, especially biographies or good thrillers; unfortunately, at the moment I only get to read one or the other book from beginning to end when I'm on holiday. By the way, last summer I also read Mark Elsberg's crime novel Blackout, and anyone who has read it will now remember at this Corona time what can happen when more or less the entire social life is switched off.

What advice would you give to a young colleague who is interested in the field of orthopaedics and trauma surgery; how he or she should approach his or her personal career in today's world ?

I don't think you have to reinvent the wheel. It still pays to have a broad and well-rounded education. If one is interested in O & U, one should look for a clinic that offers exactly this breadth and depth. If this clinic cannot offer this, then it must at least offer this in a continuing education association. Then one should go completely 'open mind' through these different areas of our subject and see: What do I enjoy? Where do I feel like going into depth? I also believe that it is good to work at a clinic where you can - or should - at least work on a more in-depth scientific question. The "going into depth" definitely shapes you, also with regard to the actual clinical work. At the end of the day, everyone then has to decide if they want to follow a path with clinical and science, as I have now ultimately done, or if they have other preferences in their life that are completely acceptable and understandable. This decision always depends on the social environment, the partner and the possibilities that arise. I think it makes sense to "stick your head in" and have your own experiences in order to be able to decide much better where you want to go later on. I also advise this to my daughter, who is now studying medicine in her third year. To do what she wants to do, where she thinks she will enjoy it and where she can enjoy it for 30 years, that should be the right area. Only in this way can you also generate a certain form of satisfaction from it every day. In the end, everyone has to find their own lifestyle and their own way of life.

Dear Professor Wirtz. That was a very nice conclusion, thank you very much for this very interesting interview.