We are starting a new series to provide advice to mid-career researchers. There are a number of programs that SIGMOD organizes for researchers at the beginning of their careers (PhD Symposium and the like) and senior people do not (or should not) need much help. There are considerable challenges for those who are about to transition from an early researcher to a more senior role. In academia, these are people who are about to get tenured that comes with starting to think of moving from shorter-term research objectives to longer-term ones. In industrial research, this corresponds to the transition from participating in projects to initiating and leading them. As a community we don't seem to talk about these challenges much. That is the gap this series attempts to fill. We will get the views of senior researchers from diverse backgrounds and diverse geographies. We will continue as long as we find original advice and the views are not repetitions.

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Once upon a Time, in a Computer Engineering Department ….

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When I read Tamer's introduction, talking about advice from senior researchers, I had to agree that I am now, indeed in that category. I am presently department chair and used to be vice-rector in the past, acting more like a manager than a researcher. However, I confess that I still have some small personal spaces in which I permit myself to feel like an enthusiastic young post-doc, stop reading documents and start thinking about new research issues. Actually, this is my first advice for those who are in their mid-career: do not just look ahead ("ad maiora" used to say in the ancient Roma), always keep within you the curiosity of the PhD student that you used to be.

When I started my career, everything was slower. We did not have Internet yet (I know, it is difficult to believe), so one had to conduct bibliographical search physically going to the libraries, meet colleagues in person, travel a lot to carry on joint research, at most phone people abroad (not too much because phone calls were expensive) or mail (not e-mail, physical mail) correspondences. Doing research was more complicated than today, the only advantage was that one had a lot of time to think and discuss, much less pressure, and the quality (rather than the quantity) of your publications was the key to academic success. I remember having a lot of fun and strong emotions when the paper envelope you were waiting for from a major conference or journal arrived. With a paper envelope you need to physically get it, open it, take the paper sheet, open it, read it…

Well, I do not want to talk too much about prehistoric times, it is just to establish the scenario where I started, now things are very different also in Italy and laws have been changed several times (everything about academic career here is regulated by national laws, similarly to other European nations but with less autonomy for the universities on the average).

I became assistant professor quite early (before the official completion of my PhD), but then I had to wait a lot for the issuing of a national competition for associate professor, since at that time the only possibility to advance your career was to win a position (in principle not associated with a specific university) among those available through a public call issued by the ministry of universities.

So, my mid-career time came too late to enjoy it, I was almost ready to become full professor, indeed it happened a couple of years later, after a change in the national law, that canceled the global competition and introduced university-level competitions (always regulated as public calls with a comparative evaluation among the applicants and a mostly external committee). It was a pity since mid-career is the time in which you feel your position is more "solid" and you are "in" - so less pressure - but you are supposed to be still in your early academic years, so not much academic commitments, not much "distance" with post-docs and

PhD students, the possibility of creating your own research group and do research having also a lot of fun.

2010: new university law in Italy. The organization of universities in Italy changed a lot with the so-called "Legge Gelmini", that was a sort of revolution, with pros and cons. It impacted the university in several respects, but the two that are more relevant here are the introduction of the national habilitation (similar but not identical to the one in other European countries), the creation of the agency for the evaluation of universities and research (ANVUR), and the change in the recruiting mechanisms.

Recruiting Mechanism The idea behind the recruiting mechanism was to make it closer to the Anglo-Saxon one, with the introduction of two initial positions: a non-tenured track (RTD-A, hybrid between a post-doc and an assistant professor) and a tenured one, RTD-B. RTD-Bs could apply for becoming tenured associate professors after three years with the constraint of having got the national habilitation. Of course, the RTD-B path represents an improvement with respect to the previous situation. Researchers have a clear deadline for getting to the point where they really become faculty members and their mid-career time arrives reasonably early. One problem is that the number of RTD-Bs is not freely established by the universities (or, even better, by the departments), instead it follows complex national rules (too complex and boring to explain here, but I am available for dedicated seminars in case some masochist is curious about them). RTD-As instead are not limited in number because they can be funded with research grants, so rich groups can have many (the reiteration of a traditional inequality of society). This creates the so-called "funnel" problem and many good RTD-As cannot proceed in their academic career.

However, the worst effect on the young people research in scientific sectors derives from the exaggerated importance given to numerical indices both in the university evaluation campaign and in the acquiring of the national habilitation. In order to achieve the habilitation, the RTD-Bs have to (1) overcome the threshold values of the bibliometric medians of their disciplinary fields and (2) conquer a set of "medals" (e.g., being the guest editor of a special issue whatsoever; being the leader of a project whatsoever; being invited to give a PhD course in any university; etc.). Note that the evaluation is carried by strictly referring to a specific scientific sector (SSD) and multidisciplinary research is viewed with suspicion, while it is nowadays considered the key to investigate the "big problems". Therefore, RTD-Bs cannot mainly concentrate on curiosity-driven research, extend their vision, explore synergies with other realms, but they have to (quickly) develop the art of qualification-proofing their CV.

Note that another habilitation must be passed in the mid-career if one wants to apply for a competition for full professorship.

Very recently, in 2022, the recruiting mechanism was changed again canceling the RTD-A figure and introducing a single initial role with tenure, called RTT, which has a maximum of six years to get the habilitation and become associate professor. The RTT positions are limited nationwide, and each university has to comply with a set of constraints that it is not easy to prove satisfiable. Probably the idea was to eliminate the funnel problem, but post-docs have been eliminated as well.

Do not give up! Even if there is now too much bureaucracy in the academia (at least in some countries), and the research pace is getting too fast, nevertheless being a researcher and a professor is one of the best jobs you can get. And this is not mainly because it is an intellectually challenging work, one may meet and collaborate with great minds, and it is possible to work and have fun simultaneously. More importantly, it is possible to give a (small or big) contribution to building a better world.

Professors may not only give disciplinary teachings to students. They might help develop their critical sense and cognitive mechanisms to be able to understand and navigate an increasingly complex world where it is more difficult to distinguish the true from the false.

Carrying on our job, it is possible to advance research with scientific method for a better world (all small contributions count). This is especially important today for the kind of computing research that makes the digital revolution possible.

Ethical Dimension The digital revolution represents an epochal turning point, at least comparable to that which occurred at the time of the industrial revolution in the 19th century, resulting in a disruption of production processes and ways of life. The digital revolution affects the scope of the techniques and tools we use, but it is, first and foremost, a new way of seeing and interpreting the world, implying social, economic, urban, political and many other kinds of changes.

The pervasiveness of the spread of digital tools, particularly those based on Artificial Intelligence, requires ethical reflection by researchers, and by those who develop the systems, those who make them available and those who use them. The ethical dimension has therefore become an essential feature of people doing computer science research, much more so than in the past. Take, for example, data management. We are used to thinking of data as an objective representation of the world, but this is not always the case; data is not the truth, or at least it is not the whole truth. Datasets, no matter how accurate, cannot take a perfect picture of reality and are dependent on humans to acquire, process and store them. Data are socially and politically oriented constructions; making a dataset means defining choice criteria that determine inclusions and exclusions. We need to make sure that the foundational choices are ethical, that the data reflect a worldview that is free of discrimination and attentive to people's well-being. Today this does not always happen: the large amount of data required for training by machine learning systems results in the use of unsupervised data, with all the ethical problems associated with this practice. In this way, artificial intelligence systems end up containing and conveying bias, producing discourses, or making decisions influenced by biases and stereotypes.

Gender Problem Many studies point out the presence of a significant and long-lasting gender gap in the field of computing disciplines. The gender gap exists at all levels: university students, researchers, professors, public administration, and industry. Among STEM disciplines, Computer Science is the one with the highest gender unbalance, with the percentage of women enrolled in ICT graduate programs usually ranging between 10 and 20 percent depending on the country. As a result, the new digital society is designed almost exclusively by men, losing the value of diversity and, consciously or unconsciously, risking reinforcing prejudice. Therefore, it is especially important to encourage girls to undertake studies in digital disciplines and to support those who are at the beginning of their careers or at critical transitions, such as tenure. All of us need to be mentors for those younger ones.

Summary. When you decide to pursue a career in the academy, you may encounter many difficulties, obstacles, and moments of discouragement, but also have great satisfaction, exaltation, and a lot of fun.

By the time you get to the mid-career period, many doubts and problems are behind you (if you are still in the academy and did not give up) and a less stressful time begins with even more freedom to study, create your own group, and choose your own ventures. This is also the time when you may decide to impact the society, not just work for yourself, but do it to contribute to the creation of a better world and be a positive example for the younger generation.