If you find yourself doing work that is both important and challenging, congratulations! Keep at that as long as you possibly can.

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Forum

What I wish I had known then

Professional lessons learned along the way: We stand on the shoulders of giants, but you cannot get there without a ladder.

By Harrison Schramm and Brian Morgan

Background: *This article came about from a series of discussions culminating in a one-off lecture with the same title. After receiving several requests for slides, we decided that it would make more sense to simply write an article.*

We are collectively at about the 30-year point in our careers as operations research professionals. We'd like to talk about a few professional lessons learned along the way. These are what we know now that we wish we had known then. Many of us are fortunate to have mentors who provide sage guidance at decision points. Whatever the decision, at least it is an informed one.

In the field of operations research, many of us stand on the shoulders of giants, but you cannot get there without a ladder. Each subsection below is, in our minds, a rung on that ladder.

Doing Work That Matters

We recently had dinner with friends from grad school. As we went around the table catching up about our various clients and projects, it became clear that the level of satisfaction with our careers was measured by the impact that our work

was having on society. Discussion about the "eaches" of our jobs – salary, time off, environment – were conspicuously absent. It was readily apparent that we were measuring our happiness by how much the problems we work on matter. It was both the dinner party and authors' firm opinion that there is no shortage of worthy problems, and there is plenty of talent, but the "matchmaking" can be quite difficult.

If you find yourself doing work that is both important and challenging, congratulations! Keep at that as long as you possibly can and be sure to enter professional competitions such as the Edelman or Barchi Prize competitions – as appropriate – when the work is complete. Also, savor that moment, because it is our experience that if you can spend 15 percent of your time in that quadrant you should count yourself blessed.

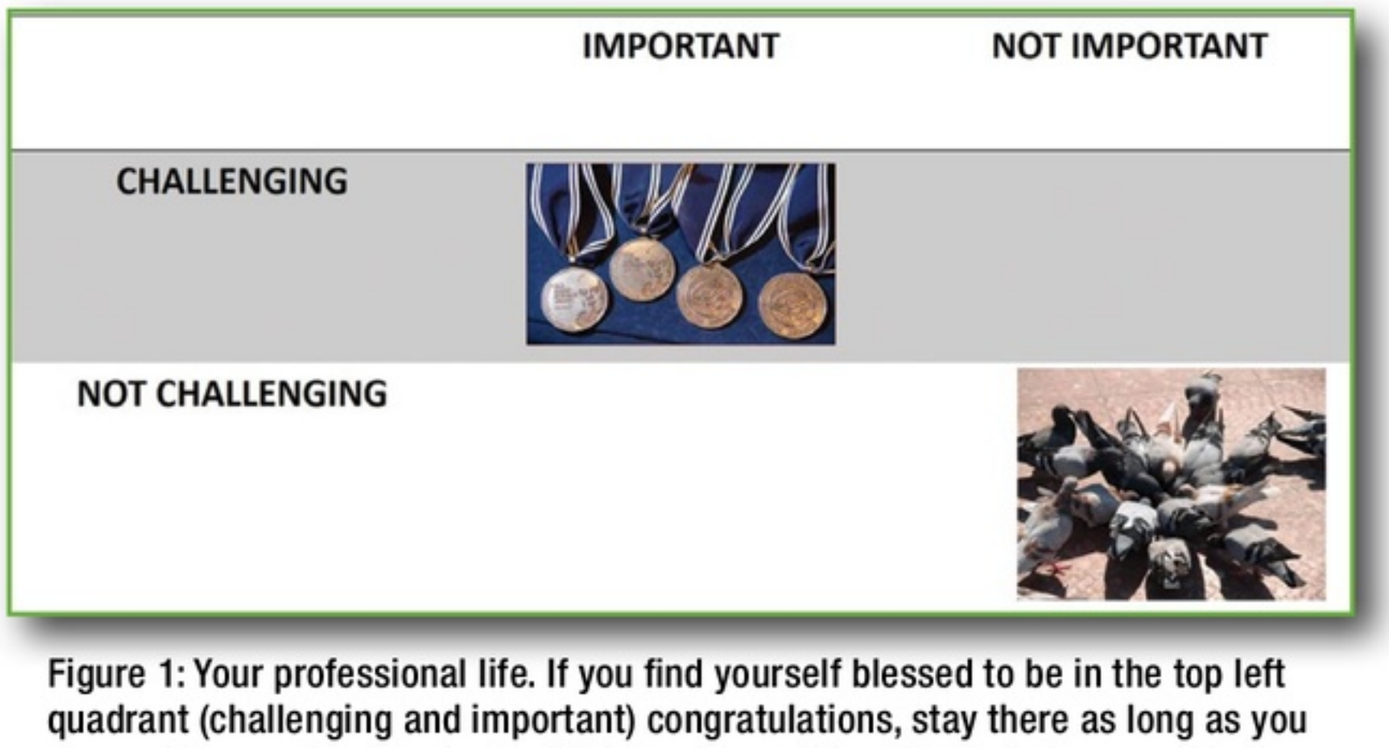

Figure 1: Your professional life. If you find yourself blessed to be in the top left quadrant (challenging and important) congratulations, stay there as long as you can and be sure to enter in the Edelman Competition. If you find yourself in the lower right corner, which we will all visit from time to time, get out of there fast!

Work that Doesn't Matter: Feeding Pigeons

No matter how good you are, or how hard you try, you will find yourself occasionally in the "not challenging, not important" quadrant. This is a bad place because it has the possibility of becoming an absorbing state, and one you should leave as quickly as you possibly can. However, because few of us have the flexibility to completely choose our own research, sometimes we are stuck.

We offer two possibilities to get out of that "rut." First, work that is not interesting can be made interesting by being a test bed for a new programming language or a technique that we want to try out. This is like Mr. Miyagi in "The Karate Kid" using "wax on, wax off," turning the mundane task of polishing the car to training for competitive karate. The second possibility is more nuanced: look for a problem that is important using a similar technique to your unimportant problem, and apply what you've learned.

You will note we have purposefully not defined "important" or "challenging." These are of course unique to each individual. There are, to us, at least three "keys" to doing work that matters: 1. an important question, 2. quality data, and 3. a proponent. We examine each in turn as follows:

1. An important question. It turns out that no matter how elegant a statistical model of washing our socks we build, it will never be top-tier work [1]. This is because it is a question that nobody cares about. Much like a "difficulty score" in competitive diving, the first, key ingredient to having important work is to work on an important question. It is not always obvious what questions are important; much insight can be gained by asking the following: "What are the units on the answer?" This one question tends to snap the problem into focus.

2. Quality data. Everybody's data is a mess; your organization is likely no better or worse than any other. No data set is perfect; everyone has a "thread" that someone could pull. However, having quality data – that the people subject to the decision will respect – is necessary and time should be devoted to it.

3. A proponent. This is perhaps the most important factor, and also the most elusive. A proponent is a human being, usually not an analyst, who has the authority to take the work you have done, turn to the people who run the system under test and say, "Go do what these folks just recommended."

There is **no shortage** of worthy **problems,** and there is **plenty of talent,** but the "matchmaking" can be **quite difficult.**

Collaborations and Teamwork

We cannot think of any worthwhile pursuit that is done totally alone. Even individual endurance sports – like the triathlon – leverage a team of coaches, doctors and support crew. The practice of advanced analytics is the same. There is so much to know about any particular sub-discipline that very few people possess domain-wide knowledge. Furthermore, even if one were a walking O.R. encyclopedia unto themselves, they would still need internal peer review to catch mistakes and avoid the intellectual "echo chamber."

This is why good teamwork, clear and concise communications, and meeting goals are so valued in colleagues. A good teammate is, well, a good teammate.

"All happy families are the same; each unhappy family is unhappy in its own way."

– Tolstoy, "Anna Karenina"

Similarly, all productive collaborations share a characteristic; that is, they are productive. All unsuccessful ones have unique reasons for failure. How should one measure the success of a collaboration?

Successful collaborations are measured by what they accomplish. It simply doesn't matter how painful the work is, how contentious the arguments among colleagues or how long the hours were [2]. If the partnership yields quality, impactful work, then it was successful, period. Great teammates bring out the best in

Figure 2: Because we all want to be spacemen dressed up like princes on our very own rocket ships. This is how we all felt at one point; where did that feeling go?

you; what is a good teammate for one person might be an awful one for another. As a final point on teamwork, we recommend that you work with the best people who will have you, which is not the same as the best people.

Why is that?

A good collaboration is one where each member of the team contributes something unique. This is a central theme of the book "High Exposure" [3]. Specifically, the best teams are not necessarily made up of the best individual performers in each area.

Good collaboration is possible between people of vastly different standing, because the more distinguished one becomes, the more "good ideas" they already have, the more they need a supply of fresh ideas to keep them going. Think of musicians who move from recording to producing – the Bee Gees and Dr. Dre both come to mind. At some point in our creative lives, our value moves from having new ideas to being able to get other people's good ideas "done."

Focusing on What's Important

Focusing on what's important is slightly different than doing work that matters, as previously described. Focusing on what's important to us means taking some time each day and dedicating it to the state of the practice. The payoff for dedicated study of 30 minutes per day – in any discipline of operations research – is well worth the effort. Our skills are constantly eroding, and keeping them sharp is a part of the very definition of "professional."

It is easy to "lose one's way" in the sense that we get focused on the day-to-day of making money and meeting client demands. Focused reflection and self-study help prevent intellectual atrophy. We'll close this section by directing the readers' attention to Figure 2.

Do you remember when O.R. felt like piloting your own rocket ship while dressed as Prince Charming? If you never felt this way or cannot imaging feeling this way, you should probably choose a different field. The point is, we all felt like this at one time about our lives, our professions and hopefully the practice of applied mathematics. If that feeling has gone – and it wanes for all of us from time to time – do whatever you can to get it back.

Synthesis: How to Become Influential

We're now ready to finish our work, so how does one become influential? Start by doing the three things mentioned above: Find important work, be a good teammate and keep focused on what's important. These are all necessary, but not sufficient. To become influential, one must bring these qualities out in others, both in person and at a distance.

Bringing qualities out in a person means to project these traits, through example and encouragement, in your practice or office among your colleagues and co-workers every day. Bringing out these qualities at a distance means writing. We consider the ability to effectively communicate both for internal use and publication as one of the most important ways to do so.

Conclusion

We are left wondering how will these thoughts change in 20 years? What will our future selves write that we don't know today? We think that it will focus on professional challenges that we did not have to worry about during the majority of our careers to date, such as when to quit a job, how best to get new clients and how to choose which technologies to keep up with. These are important, they are not enough.

Perhaps success will best be measured by all of us "seasoned" professionals – having climbed the ladder that our generation built and looking young analysts in the eye – by seeing how well the next generation surpassed us. ORMS

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NOTES & REFERENCES

1. Discounting, of course, the possibility that the sock-washing model is a 1-to-1 correspondence with some other problem that we care deeply about.
2. Provided, of course, that no laws were broken!
3. Breashears, David, 1999, "High Exposure," Simon and Schuster, New York.