EXTENDED ABSTRACT ONLY

Guiding a path from problem to policy

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Abstract: From the time an executive decides an important problem needs attention and arranges for our help, to when we succeed advising how to effectively address it, we analysts must fill a number of supportive roles. Lots of education is helpful, but it takes experience to learn what not to do. Typically, we are involved with three parties: the senior official who agrees the problem is worthy and authorizes analysis, the designated client intermediary for whom we work directly, and the "system operator" (the organization or protocol that must deal with the problem and any solution we propose). We must closely attend to the concerns of all these contacts, so we need to approach this with an analysis engagement plan. After admiring many successful engagements and those who headed them (and dissecting some signal failures) we find there is a certain sameness among the successes. Importantly, we find few differences between government and private sector, or military and civilian analysis projects (one refreshing exception in the private sector is to work for someone whose own money is on the table). This presentation suggests how to conduct an engagement to maximize your probability of success. This may suggest sensing initial tell-tales that advise turning down an engagement, to the benefit of all. This is not merely about formulating and solving some model (OK, this is the fun part of our jobs), but about constructively guiding the analysis through to influencing policy (and that is the most satisfying part). This may necessitate a lot of work not part of formal analysis: as one experienced colleague advises, "managing the engagement is 80% of the work, while the actual analysis is the other 50%".

> This tempest will not give me leave to ponder on things would hurt me more.
> But, I'll go in. Shakespeare, King Lear III (4:1826).

A longer exposition of advice and numerous concrete examples can be found in **INFORMS Analytics Body of Knowledge (ABOK)**, Wiley 2018, https://www.wiley.com/en-us/INFORMS+Analytics+Body+of+Knowledge-p-9781119483212, Chapters 6 (Modeling) and 7 (Machine Intelligence). Also see "How to Write about Operations Research," PHALANX, 37(3), 2004 https://faculty.nps.edu/gbrown/docs/Brown-%20howtowriteaboutor3.pdf. Over a trillion US dollars of decision support is reported here: https://faculty.nps.edu/gbrown/.

Keywords: *Decision support*

Plenary