

## Mental models in practice: The macro view and the cone of influence

It's a pretty special thing to fly over New York if you get a good view out the window. The familiar image from a map made real: bulges of towers in midtown and downtown, bridges tethering out, neighbourhoods the size of postage stamps, a creep of motion from brakelights. You could tell a lot about the place by studying this image, but of course there's no substitute for a walk from the lower east side to midtown, chancing upon a tavern ale or a heaving farmer's market, a cool tenement fire escape or a decadent design store.

So it is, I'm convinced, with so many other parts of life and our practices as urologists, researchers, educators, and leaders. The same issues can be viewed in the macro or micro. Though we live in the real world of 1:1 interactions, cause-and-effect, and individual decisions, we are wise to zoom out, to see patterns that can help us think, decide, and plan. This mental model — which I'll call the *cone of influence* — will sound familiar in similar terms. Leverage (ed: weird spelling?), the 30 000-ft view, or the ripple effect all infer broad downstream impact of an earlier vantage or intervention. This model relates to a prior exposition on the *area under the curve* as a model for expressing the value of upfront effort to decrease friction in the long-term.<sup>1</sup> As part of my conviction that our brains default to energy-conserving, cognitive shortcuts, mental models merit exploration.

First a few more examples to establish the model. Back to the vista from 30 000 ft, we see the geography: the path of the river, the shielded bay that affords the adjacent town, forests and routes and obstacles to transit. In engineering, we see rigorous planning and modelling before the build (“measure twice, cut once”). Smarter people than I invest incrementally and allow compound interest to unlock new opportunity and security. Vice and gas taxes to [raise money and] curb health downsides, bike lanes and zoning to

sculpt density and thriving commerce, or fluoridation to keep chompers chompin’.

It's all fun to riff on finance and engineering (ed: not really tho?), but the *cone of influence* model applies richly to thinking and acting in our urological lives. As clinicians, we see the advantages of preventive health and appropriate screening. We commend smoking cessation, recommend another few glasses of water a day or validate PSA testing in at-risk populations. We know we may not solve *this person's* problem every time, but we move the needle to effect change at large. As surgeons, we learn basic techniques to commit them to unconscious skills, and we plan our incisions and our OR slates proactively, to obviate reactivity later.

Researchers seek patterns of practice through administrative databases and population-level research. At these scales (enabled like a thousand other applications downstream of small innovations in computing ;), we can view the implications of demographics and policy on health decisions and outcomes hidden from the low-n messiness of clinic life. Rare diseases and uncommon adverse events get attention and data. Prospective trials allow us to witness and codify the effects of small interventions on multiple outcomes. We can see the virtuous cascade of improved pain, bowel function, mobility, and wellbeing in postop patients we convince to take a lap around the ward. Cultivation of motivational interviewing skills, behavioural nudges (put your toothbrush in a glass and you'll remember to drink water), and positive reinforcement pay dividends in our patients' health-congruent behaviours.

As professionals and leaders in our practices, hospitals, schools, and associations, we can identify quality bottlenecks through zooming out via the fishbones and five-whys of root cause analysis. We see the value of detailed planning and the cultivation of vision in change management and QI projects, as well as how to leverage small

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inputs into broad productivity through effective teams and delegation.

An excellent place to put this model into action is in our teaching roles. Study plans, with topics and resources pre-planned, thwart decision paralysis when plunking down for a session. We can drill the fundamentals of suturing, knot tying, retraction, anatomy, and physiology such that they become automatic, allowing us to intuit causes for symptoms, and reserve limited cognitive bandwidth for surgical problem solving. Similarly, we can encourage — and explicitly teach — first principles thinking to aid in learning. Reading and highlighting are poor but universal methods of encoding information into knowledge. Concept mapping, creating scaffolds, flowcharts, or schematics to classify information, is an excellent route to high-level understanding. Details can then be layered in a way much more effective for learning, reducing a scattershot list of facts into a logical skeleton. The Feynman technique, which you may know as “describe it like you would to a 10-year-old,” combines concept mapping with *elaboration*, another effective method of learning by verbal articulation. The ideal here — and a concrete application of the model — is *positive transfer*, the ability to apply learned methods and information in unrelated future settings.

I seem to be moralizing a bit on the macroscopic lens. Certainly, it seems very useful to think on, and is unimpeachable regarding planning and learning, but it's wise to remember what may be considered the apex mental model: *the map is not the territory*. Models are, by definition, lower-resolution concepts of the world, and though they offer filters, silos, and guardrails, they can't guarantee *the answer* to the individual problem at hand. Planting one's stake requires consideration of specifics that can't be seen from height or predicted at the tipping of a policy domino. Granularity, individuality, and values lie between the tines and beneath the brushstrokes of the models. These caveats to overfitting our model are important.

The first is the loss of resolution when viewing from above or proximal to the real world. Policy decisions or population-level research may sweep underrepresented groups into their findings, with false claims or attributes arising from the weight of the dominant players. Over-reliance on simulation or drilling of suturing and knot tying may steal from the virtues of real experience, where patient values or the idiosyncrasies of their presentation or anatomy provide the basis of what becomes expertise. Fussing endlessly about bulletproof project planning leads to analysis paralysis. A venture

that requires some iteration or course correction is better than one that stalls before deployment.

The next caveat is the attenuation of cause and effect as the impact of a decision, policy, or view gets farther from the outcome or output. We *know* that the partial nephrectomy removed the tumour! Can we know that water will prevent *this person's* stone or quitting the darts will prevent *this person's* tumour recurrence? We risk misapplication of retrospective database data to decisions on individual patients' care, ignoring selection bias and believing implausible things based on lo-fi data. This separation also invites unintended consequences. Competency by Design was introduced to elevate the base and ensure practice-ready clinicians but created an administrative morass and threat to wellness.<sup>2</sup> New surgical technologies promise expedience and improved outcomes but may invoke harmful learning curves or misapplication. Finally, the gulf between intervention and outcome relies on prediction, specifically that confounders or interpersonal variability won't supersede the expected causality. You can set your lineup and pore over stats, but you have to play nine innings, and as Earl Weaver said, “throw the ball over the damn plate and give the other man his chance.”

Last is the corollary of a positive impact of early intervention. Your model, your plans, your intervention may be wrong, and the expanding cone of influence may be corrosive, with predictable negative outcomes. Our thoughts on politics are based on expecting rivals' policies to do just that.

It seems clear to me that having — or developing — a set of models of how to see and predict in the world can be immensely helpful. The ability to broaden or narrow one's viewpoint can improve understanding of the entire issue and isn't always the obvious path when you're in the weeds. Your brain will do it for you anyway (these are cognitive biases) so you might as well adopt the mindset of seeking structure and pattern around you. This will often get you 80% of the way to being correct, then the fun part of navigating the real world. Oh, and make sure you wash your hands at work.

## REFERENCES

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