

A brief perspective on the practice of being data driven.

Brian J. Goode for the UMD – Shady Grove Data Workshop for Strategic Planning

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The term Data Driven is a strong metaphor.

In particular, towards the goal of gaining insights and decision making:

- Data -> evidence
- Big data -> lots of evidence
- Data Driven -> having gained momentum from evidence; using evidence to move / propel

- A very aspirational connotation:

Where do you want to move to? Where are you going now? How do you measure your progress?

- As with any ideal, the actual can be quite different than what we imagine. So how can we think about it in terms of practice and organization?

It has been practiced for generations!

Example from Anthropology:

- Thomas Gladwin, 1970 “East is a Big Bird” (1995).
- Generations of Poluwat (Puluwat) navigators leading boats to safety on the seas.
- A navigation practice focused on redundancy and robustness.
- The data collected for navigation is a matter of perspective – placed in a system context.



Image source: Harvard University Press.
<https://www.hup.harvard.edu/catalog.php?isbn=9780674224261>

We have a similar concern today, but our approach to data driven processes looks quite a bit different.

External infrastructure exists to enable data driven processes. This is our vehicle in the data driven metaphor:

- **Data collection / Repurposing** (c.f. Bit by Bit, Salgnick, Matt)
 - Access to numerous repositories
 - Converting data collected for one purpose to be used in another
- **Analysis Methods / Algorithms**
 - Open source / proprietary
 - Multiple disciplines dedicated to working with data
- **Data storage / processing**
 - Cloud computing
 - Increased scalability



This has ushered in a time of having evidence at our fingertips, and it has changed the way that we think, model, and explain our reasoning.

Advances in research and technology are one part of the equation.

Let's consider other parts to the data driven metaphor:

- What or who is steering?**
- What landscape/environment are we moving over?**
- What will our experience be when we reach our goal?**
- What are our limitations?**



Measures and metrics are our guides.

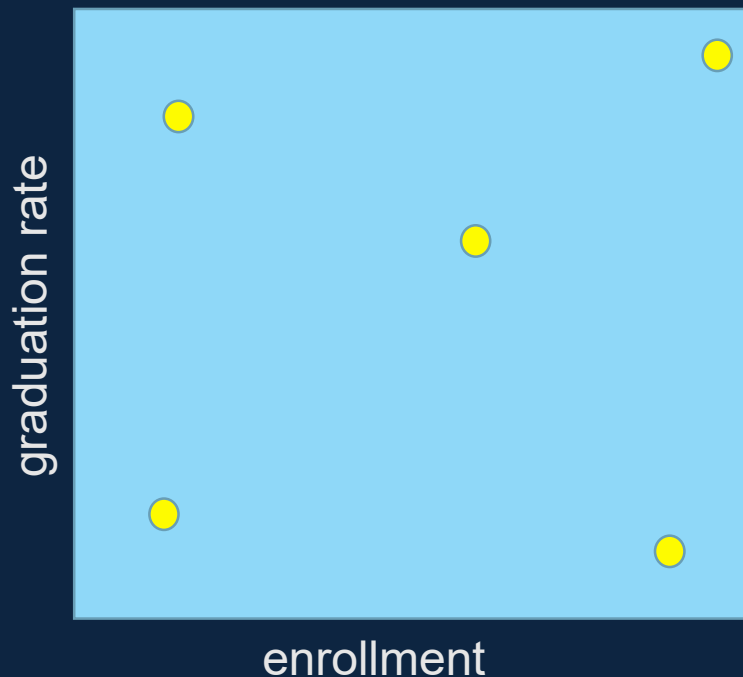
- They steer us in the intended direction.
 - We make corrections in response to error.
 - We reinforce in response to reward.
- Can be guided by the intent vs. the actual *phase space* of the measure.
- However, we cannot always predict where these choices will lead.



Let's consider metrics related to UMD – Shady Grove strategic planning.

Goal: Grow the organization and increase degree offerings.

Measure: As a first cut, consider measuring enrollment and graduation rates across different degree programs.



- Where is the best outcome?
- What does that look like for students, professors, admin, community leaders, employers, etc?
- How would you describe your organization at each of these points?
- How would your neighbor describe them?
- What else should we consider? Feedback from job market? Alum feedback? Additional considerations for balance across disciplines? Measure interactions among students and professors?
- How is this communicated across the organization?

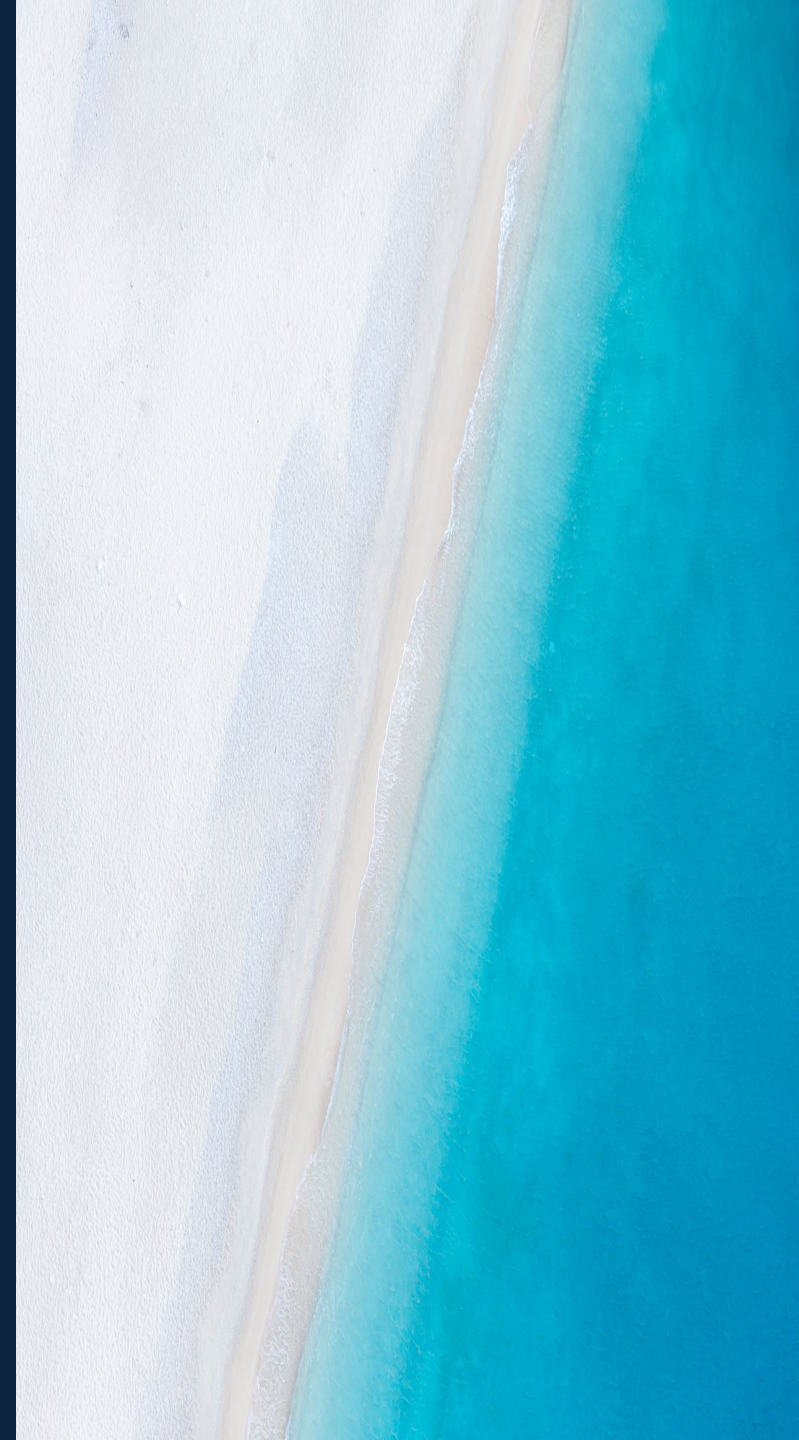
Building a qualitative perspective for developing measures: What does it mean to you... and you?

- A variety of complicating factors can be in play
- A few are:
 - Complexity / Emergence
 - Unintended consequences
 - Constraints on available actions
 - Assumptions
- By bringing in different perspectives, can you create the narrative or image of what the future of the organization looks like by considering the measures and metrics taken as is?
- Can you illuminate the potential for the above to occur?

Remaining Thought: Are you on the island or not?

Does your data driven approach as an organization and individual capture:

- the continual evaluation of perspectives that a measure or metric implies?
- a challenge to the present path, vigilance for unintended consequences, and the ability for robust response to disturbances?
- appreciation for the knowledge and experience generated by previous attempts?
- allowances for deviations and being human?



Useful References

These references, in total, focus on organizational communication and the intricacies of gathering and using data. The first two are not explicit in the subject of data as commonly referenced in the data sciences, the third is.

- Gladwin, Thomas. *East is a big bird: navigation and logic on Puluwat Atoll*. Harvard University Press, 1995.
- Hutchins, Edwin. *Cognition in the Wild*. MIT Press. 1996.
- Salganik, Matthew J. 2017. *Bit by Bit: Social Research in the Digital Age*. Princeton, NJ: Princeton University Press. Open review edition.

Breakout Session: Exercise

- **Where do you want UMD-Shady Grove to go? What do you want it to look like?**
- **What metrics would you use right now to guide yourself and your organization?**
- **Now, considering only the metrics identified, and not the intent, what other possible outcomes can you and your group envision?**
- **Would you change your approach? What kind of follow-up would you consider?**

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