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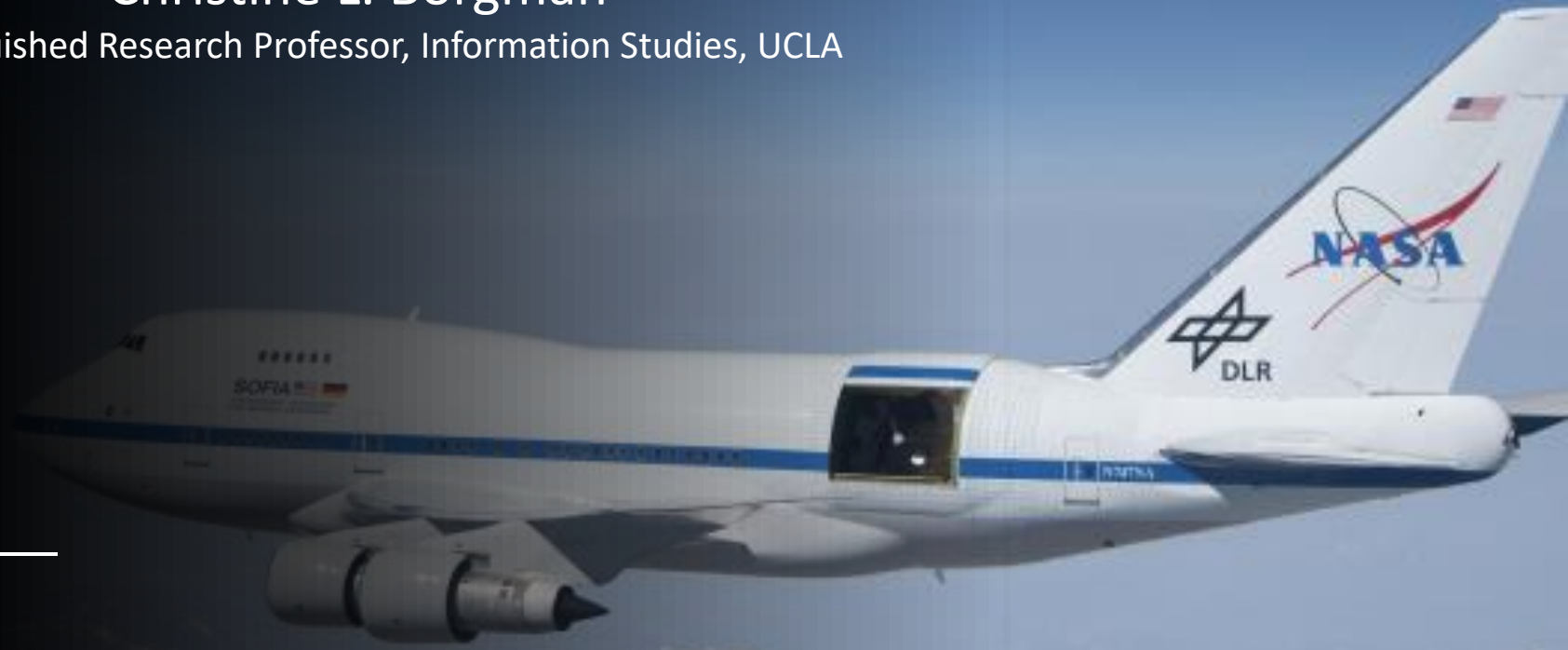
Meaningful Data Metrics for Whom?



BEGIN: Metadata for Meaningful Data Metrics

Webinar, Thursday, 19 May 2022

Metrics influence behavior

Goodhart's law: When a measure becomes a target, it ceases to be a good measure

Goodhart, C. A. E. (1975). Problems of Monetary Management: The UK Experience. In *Papers in monetary economics*. Reserve Bank of Australia.

When does “publish or perish” become “impact or perish”?

Biagioli, M. & Lippman, A. Eds. (2020). *Gaming the Metrics: Misconduct and Manipulation in Academic Research.* MIT Press.

Case: SOFIA cancelled Oct 2022

Fails on metrics

- NAS 2020 Decadal Survey
  - High cost and modest scientific productivity
- Nature 2020
  - SOFIA second-to-last in papers per telescope
  - Comparison: 29 ground-based telescopes and Hubble Space Telescope
- Nature 2022
  - Costs nearly as much to operate annually as Hubble Space Telescope
  - Unlike space telescopes, requires staff to fly and fuel it
- Metric: dollars per paper

Succeeds on metrics

- Astro pub rates scale by time on sky, not $
  - SOFIA: 15 hours on sky per paper
  - Herschel: 24 hours on sky per paper
- Steady growth in
  - Papers
  - Citations
  - H-index
  - Archive data downloads
  - Principal investigators
- Major scientific breakthroughs already
- Observatory built for 20-year lifetime, decommissioned after only 8 years
- Only observatory at these far-infrared wavelengths, now and next 15+ years

Uses and misuses of data metrics

All metrics will be "gamed" by those subject to them

Any metric will advantage some group and disadvantage others

Criteria for "meaningful data metrics" must include assessments of

- Who benefits by this data metric?
- Who is disadvantaged by this data metric?
- What are the opportunities to game this metric?
- Who will "watch the watchers"?

Sources

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- Witze, A. (2022). Costly SOFIA telescope faces termination after years of problems. *Nature*, *605*(7908), 16–17. https://doi.org/10.1038/d41586-022-01213-0