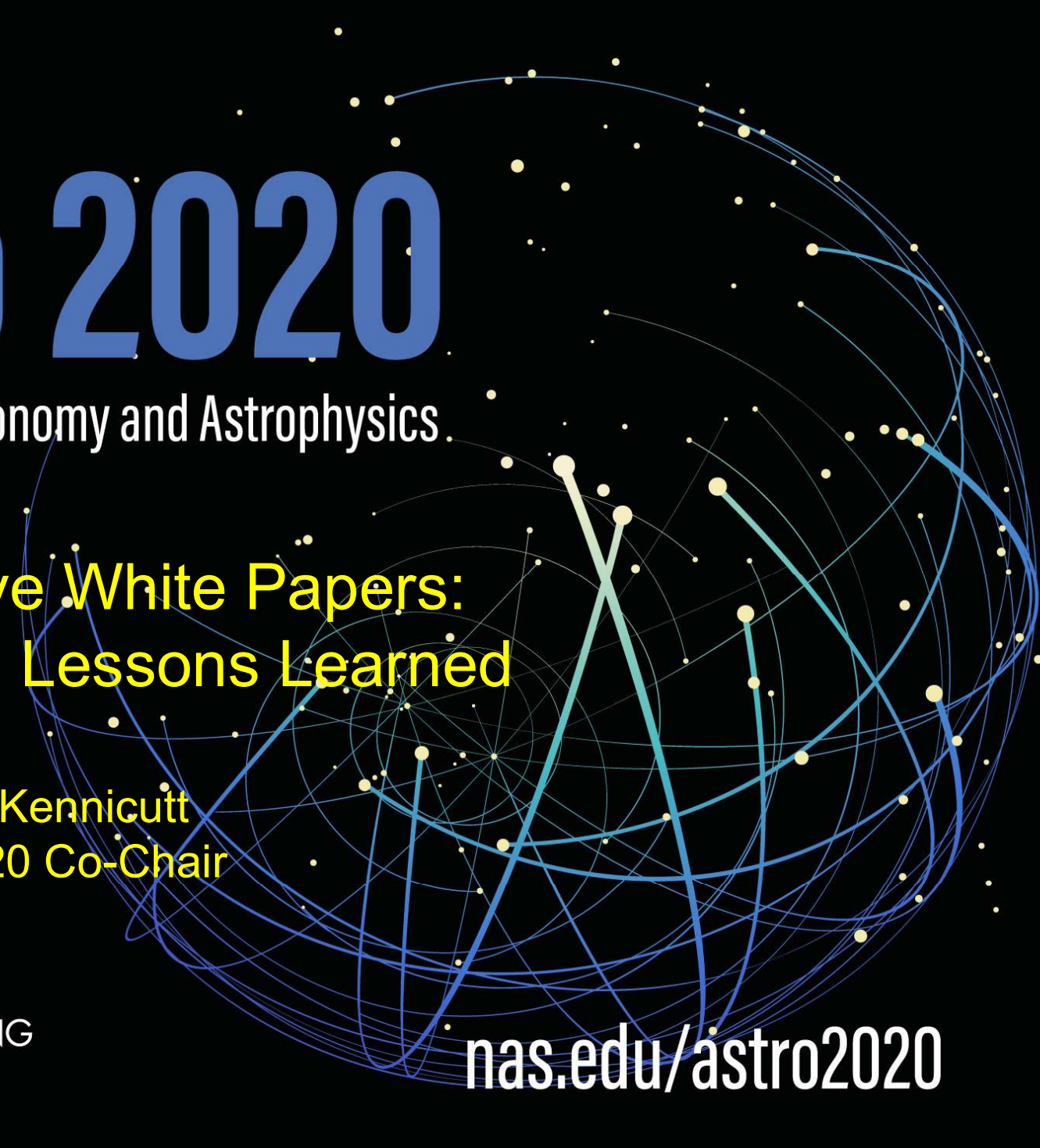


Astro 2020



Decadal Survey on Astronomy and Astrophysics

Writing Effective White Papers: Experiences and Lessons Learned

Robert Kennicutt
Astro 2020 Co-Chair

*The National
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SCIENCES
ENGINEERING
MEDICINE

nas.edu/astro2020

Astro2020 Overview

- Decadal survey of astronomy and astrophysics (NSF, NASA, DOE)
 - just finishing (2019-2021, slowed by COVID)
 - co-chairs: Fiona Harrison and Robert Kennicutt
 - main survey committee and 13 expert panels (science, programs, state of the profession and societal impacts)
- Although the survey is charged by Congress and agencies, and its primary purpose is agency guidance, it has evolved into a community-wide discussion and planning exercise

White Papers in Astro2020

- Community white papers formed the foundation for the survey
 - they formed the starting point for all panel/committee deliberations
 - they assure broad community involvement and influence on the process
- Science white papers: 5 pages + references, due before science panel meetings
 - most highlighted scientific opportunities and questions, including emerging/growing fields
- Activity, program, and state of the profession (APC) white papers: 10 pages + references, due before program and SoP panels met
 - included summaries of proposed projects and missions
 - other papers on programmatic and “foundational” needs in field
 - state of profession papers addressed a wide range of issues (DEI, career and workforce development and pathways, education/outreach, even decadal survey planning)
- Paper writing guidance and FAQs provided on survey website

White Papers in Astro2020

- Response was enormous
 - 573 science white papers, 4516 unique authors or endorsers
 - 294 APC white papers, 2863 unique authors or endorsers
 - 867 total white papers, 6256 unique authors or endorsers
 - for comparison, the membership of the American Astronomical Society is ~7700
- Authorship ranged from single-author to >200 authors/endorsers
- All career stages, demographics, and constituencies were represented, among lead authors and co-authors
- All papers were posted to the survey website and published (Bulletin of the AAS); most authors posted to arXiv as well
- *[Personal observation]: Overall quality of papers was superb. Many departments organized 1-2 semester seminars to discuss; many materials have since propagated via talks, etc.*

General Writing Tips for White Papers

Disclaimer: based on experience with a different survey

- Less is more
 - adhere to the page limits
 - get to the point
 - all else being equal, a well-focused paper will have more impact
 - your time is limited
- Set the context and the big picture: Why is your idea/project/mission important, for your specialty and beyond?
- Good content trumps an impressive author list; apportion your effort accordingly.
- Seek critical feedback on your draft, from experts and non-specialists.
- Figures and graphics are nice, but not essential.

More Tips for Advocacy Papers

Disclaimer: based on experience with a different survey

- It's fine to be an advocate (so long as you aren't on the committee!)
 - if you have a strong conflict of interest probably best to disclose it
 - advocacy only goes so far: advocating in blatant self-interest may backfire
- Make the scientific motivation, value, and ultimate impact of your project/mission/concept the foundation of your argument.
- *(??) Don't forget about the foundational elements of your decadal strategy (small/medium projects, theory, data analysis, lab/ground support, investigator science...)*
- Original, out-of-the-box fresh ideas welcome; early-career perspectives are valuable and essential

Some Myths...

Nobody will read my white paper.

- For Astro2020, every paper was read and discussed (individually or in related groups) at the first panel meetings.
- White papers were widely read outside of the survey, discussed in seminars, and/or recommended as readings for grad students.

Only papers with huge author lists will be read seriously.

- All papers were read and discussed, and *[personal observation] those with one or a few authors often offered original viewpoints or insights missing from the written-by-committee papers.*

Only papers by well-known authors will be taken seriously.

- The whole point of the white paper exercise is to break down the walls of the “old-boys/old-girls” networks and open the gathering of information and ideas to the full community. Those who remain silent shouldn’t complain about the outcome.

More Myths...

Students and postdocs need not bother, our papers will be ignored.

- Again, every paper was read and discussed. If anything, papers by junior authors attracted more interest

There is no point in my addressing a subject, because somebody else will surely cover everything I have to say.

- Believe it or not some important topics were overlooked entirely, and panels had to consult with experts for information and advice
- Displaying strong support for an idea via multiple papers can't hurt the cause (but don't stuff the ballot box- it isn't a polling exercise)
- If you are not enthusiastic enough to promote an idea why should anyone else endorse it for you?

If a project I address is recommended by the survey and adopted by NASA, I will have an inside track to the project team

- Don't count on it, but it can't hurt

Takeaway

- If you care about the future of your subject and your profession, become involved in the process. White papers are the best way of ensuring that your survey is truly community-based, and that it reflects the vision and aspirations of all of its members, not just those of a few or those with the loudest voices. A report that clearly has the support of its community and speaks for its community will have far more impact on its sponsors, the agencies, and policymakers.