Social processes of science consumption: Peer review versus public interest

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Prologue

- When I was young, I spent three years of my academic life studying what information seeking could tell us about information processing.
  - No one would publish any of this work, so I switched to other areas, including the pathologies of contests and competitions
- Shortly before I retired, I returned to my old topic, writing papers on the “economics of attention and marketplace of ideas” and co-teaching a course called “Psychology and Journalism” with Susan Harada of the CBC.
- When Flaminio kindly asked me to give this talk at a conference on peer review, I thought it might be fun to discuss a few perspectives from these areas that might extend peer review research beyond academia.

Classical philosophy

- If a tree fell in the forest and no one heard it, would the tree make a sound?

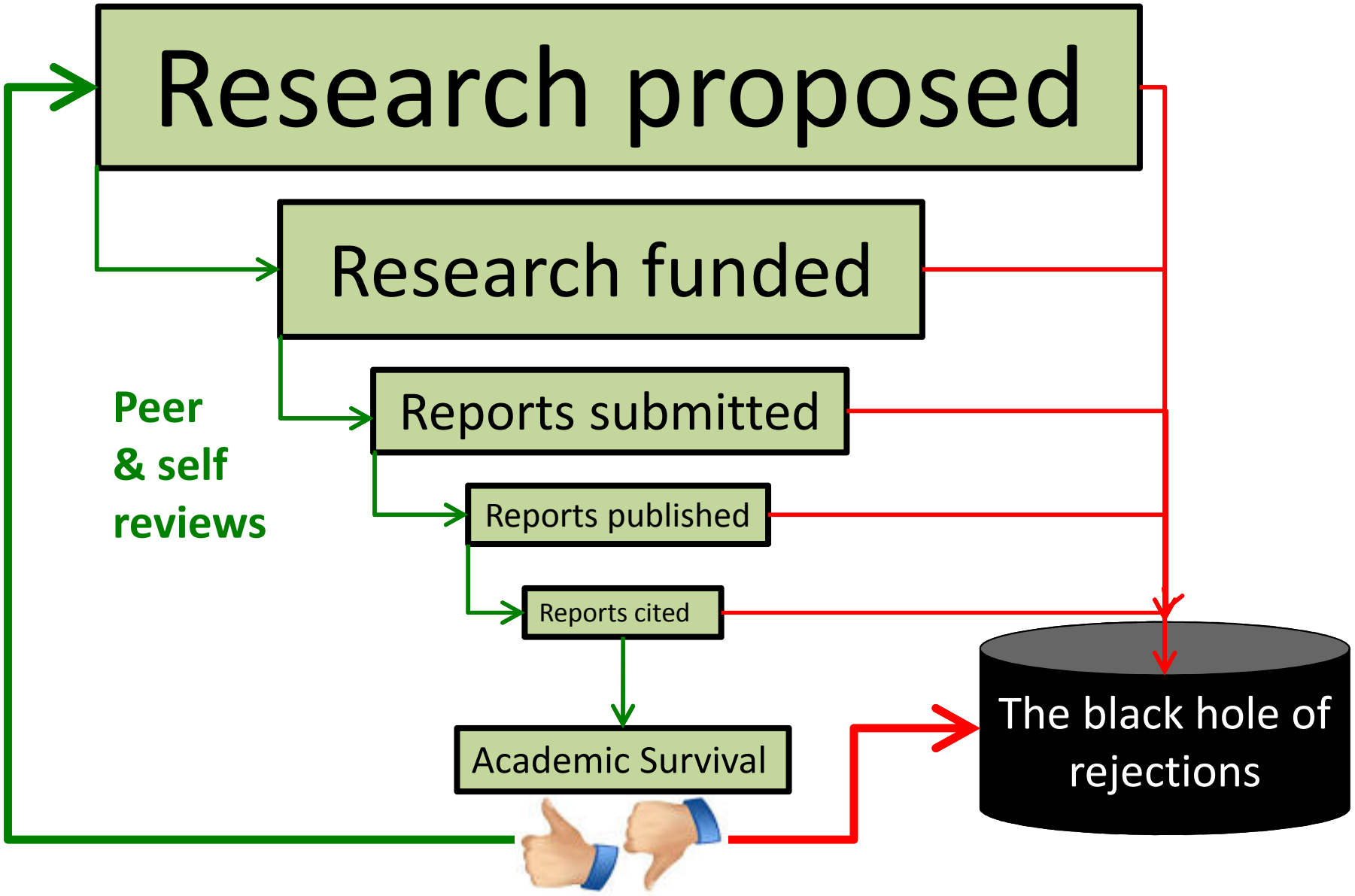
Contemporary philosophy

- If an article were published in a peer-reviewed journal and no one read it, would the article make a difference?

Today's presentation

- What happens to academic research articles after they are peer-reviewed and published?
  - Citations: Additional peer review
  - Public discourse: non-peer (public) review beyond academia
- What distinguishes articles read and discussed beyond academia from articles that gather dust on library shelves?
  - What criteria do non-peers (journalists, the public, et al) use in assessing the merit of science articles?
- Why should we care?
  - Can public interest influence the progress of science and peer review?
  - If yes, should this worry us?

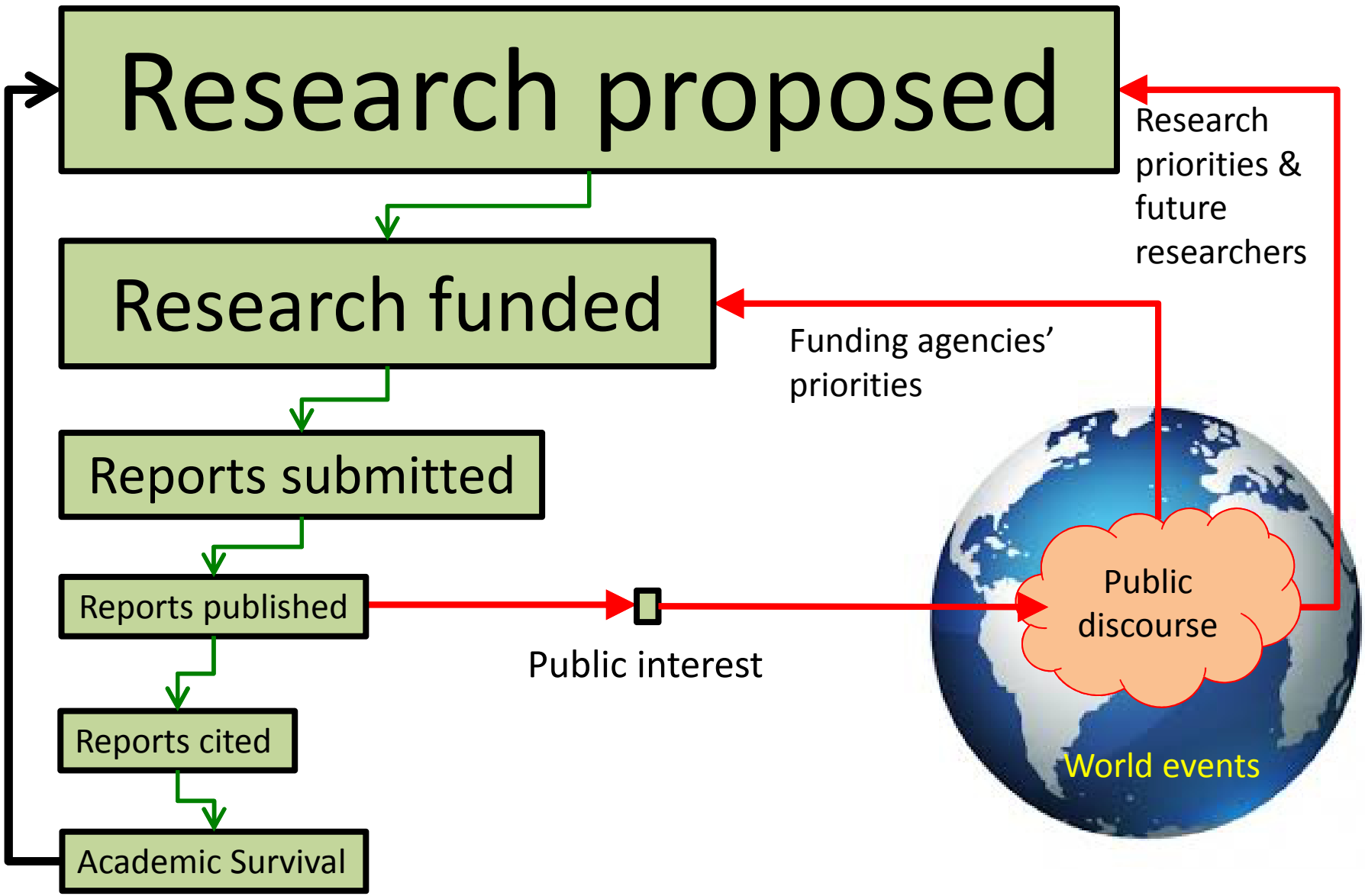
Peer review: The closed loop



Academic cat and mouse
Editors: How to reduce errors of commission?
Authors: How to reduce errors of omission?

	Merits publication	**Does not merit it**	
Fund, publish, cite	Correct acceptances	Commission errors	Total accepted
Reject	Omission errors	Correct rejections	Total rejected
	Total merited	Total unmerited	
	The good old days		
Fund, publish, cite	30	10	40
Reject	10	50	60
	40	60	100
	The bad new days		
Fund, publish, cite	50	10	60
Reject	50	390	440
	100	400	500

Beyond the academic peer review loop



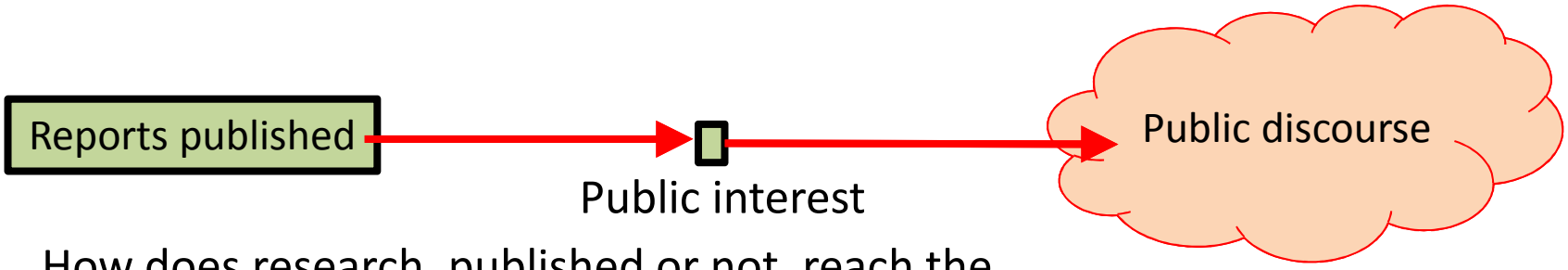
The public:
The economics of attention and importance versus interest

	Merits attention	Does not merit it	
Pay attention	Correct acceptance	Commission errors	Total attended
Ignore	Omission errors	Correct rejection	Total ignored
	Total merited	Total unmerited	
	The good old days		
Pay attention	2	20	22
Ignore	38	60	98
	40	80	120
	The bad new days		
Pay attention	2	20	22
Ignore	98	380	478
	100	400	500

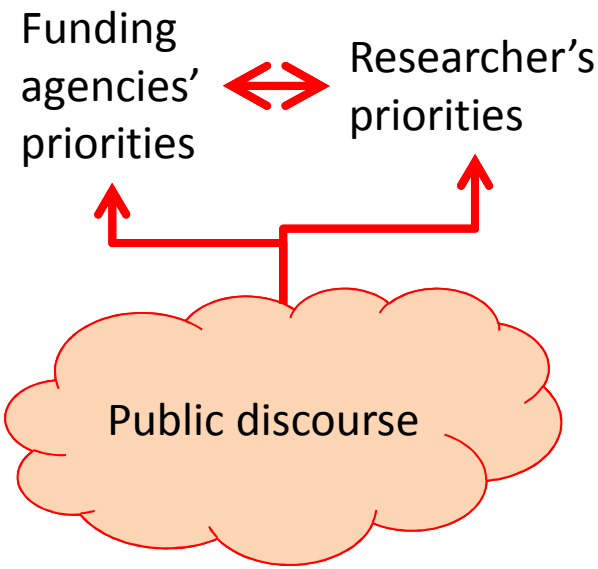
Should we care?

- No!
  - A researcher's job ends when results are published/cited
    - What happens outside the academic loop is none of our business.
- Yes!
  - Consider George Miller's (1969) prescription that we should learn how to "give psychology away"
  - Alas, even when free, it is hard to give away
    - most people ignore almost all of what we publish, while attracted to our attentional competitors
  - Their ignorance of our works can affect funding priorities and the attractiveness of our profession for new generations.
    - So it pays to learn how we might better spread our seeds of truth
- If yes, then
  - Can you adapt your peer review research tools to understand why there is low correlation between funding/publication/citation and public interest?
  - Can we learn how to increase the relationship?

Some interesting questions



- How does research, published or not, reach the general public?
- What criteria do members of the public (includig journalists) use to decide what they will attend to, discuss, remember?



- What are the consequences of using popular criteria?
- What implications do the consequences have for publishing scientific findings?

How do published articles reach the public?

- Rare
  - personal subscriptions to academic journals!
  - going viral on the Internet
  - Embedded in commissioned government policy documents
- More often
  - Assigned readings in university courses
  - Summarized by science journalists in science magazines, video documentaries
  - Packaged as “infotainment” to fill news time or space (think Psychology Today)
- More often via synopses and stories by science journalists, writers, et al
  - Newspaper and magazine stories, trade books, TV new, film productions, etc.
- Most often by sound clips of social scientists inserted in news story of the day
  - Example, “As an economist, do you think the price of oil will recover soon?”
  - Example, “As a political scientist, why do people support Donald Trump?”
  - Example, “As a psychologist, why do some people wear coloured socks?”

Do members of the public have the same preferences for research editor's do?

Demonstration: Which of these journals would you browse in a doctor's waiting room?

1. Analyses of Social Issues and Public Policy
2. Behavioral and Brain Sciences
3. International Journal of Aging and Human Development
4. International Journal of Humor Research
5. International Journal of Sport Psychology
6. Journal of Behavioral Decision Making
7. Journal of Cognition and Development
8. Journal of Cross-Cultural Psychology
9. Journal of Organizational Behavior Management
10. Learning & Behavior
11. Perspectives on Psychological Science
12. Psychological Bulletin
13. Social, Cognitive and Affective Neuroscience
14. Social Psychology
15. Trends in Cognitive Sciences

Did you pick the most-cited journals?
Citation rankings (from SJR data on 1,044 journals)

- Rank title

1. 562 Analyses of Social Issues and Public Policy (SJR index =0.5)
2. 4 Behavioral and Brain Sciences (20.8)
3. 597 International Journal of Aging and Human Development (0.4)
4. 574 International Journal of Humor Research (0.5)
5. 572 International Journal of Sport Psychology (0.5)
6. 215 Journal of Behavioral Decision Making (2.1)
7. 294 Journal of Cognition and Development (1.7)
8. 241 Journal of Cross-Cultural Psychology (1.9)
9. 571 Journal of Organizational Behavior Management (0.5)
10. 251 Learning & Behavior (1.9)
11. 10 Perspectives on Psychological Science (9.5)
12. 6 Psychological Bulletin (14.8)
13. 14 Social, Cognitive and Affective Neuroscience (7.4)
14. 299 Social Psychology (1.7)
15. 1 Trends in Cognitive Sciences (21.9)

Number of retired people (N = 12) choosing each journal to browse in a doctor's waiting room

Rank	N	title
562	7	Analyses of Social Issues and Public Policy
4	6	Behavioral and Brain Sciences
597	3	International Journal of Aging and Human Development
574	6	International journal of Humor Research
572	1	International Journal of Sport Psychology
215	9	Journal of Behavioral Decision Making
294	4	Journal of Cognition and Development
241	4	Journal of Cross-Cultural Psychology
571	3	Journal of Organizational Behavior Management
251	7	Learning & Behavior
10	1	Perspectives on Psychological Science
6	0	Psychological Bulletin
14	2	Social, Cognitive and Affective Neuroscience
299	5	Social Psychology
1	6	Trends in Cognitive Sciences

Enter the world of science journalism

The job

- Most science journalists do not have degrees in science
  - But many have a good sense of their audience, and writing skills
- The population of science journalists is in decline
  - Fewer people = fewer stories
- Journalists strive to attract attention
  - Good visuals, quotable sound bites, shocking headlines
- Journalists work under relentless deadline pressures, article-length or story-length limits
  - 1-2 stories filed each day, column inch maximums, 60-second TV limits
- Journalists are subject to “editorial review” and must please their editors
  - no tenure in journalism!
- Editors are under pressure to increase audience size and advertising revenue
  - So whatever attracts more attention is repeated, often by copying more successful competitors

Some demands and constraints on journalists

- High stress
  - Constant time and deadline pressures, limited resources, little job security, editorial scrutiny, etc.
- Limited time to be critical or thoughtful
- Pressure to maintain/increase readership
  - Corporate goals to increase advertising revenue
  - Competition from other news media
  - Second-guessing readers' interests – "A good storyline"
- Limits of their media
  - Necessity of a "story line"
  - Word/time limits (column inches, sound bites and all that)
  - TV preference for "good visuals"
    - Scientists in white lab cots, in front of computers

How do journalists get story ideas?
Good social connections!

- Personal connections with academics, neighbours
  - Who knows what; whom to trust/avoid
- Scanning new journal issues for titles that catch their eye (rare)
- Looking for a "scientific perspective" on a recent headline
  - Find an expert
- Keeping a personal list of websites offering writing tips and pre-written press releases. Examples
  - APA
    - http://www.apa.org/news/press/releases/index.aspx
  - AAAS
    - http://www.aaas.org/news
  - Journalists Resources
    - http://journalistsresource.org
  - Carleton University
    - http://research.carleton.ca
- Developing a sense of the interests of their audience

A sense of the audience

- Ends
  - capturing and sustaining attention
- Means
  - Learn what interests prospective readers, viewers
  - Learn of their constraints (time, attention, background)
  - Select topics that stimulate their interests and adapt to their constraints
- What interests the “general public”
  - Several different audiences within the general public each with different criteria of interest
    - Example: academic peers in their specialization are interested in truth, conceptual importance; willing to tolerate bad writing
    - Example: academics out of their element join many others in attending to “weird and wacky”, “Gee whiz”, infotainment

Demonstration: Which story would you read? Which story would your students read?

- SPSS announces new class of ordinal time-series analyses
  - Fills gap in fractionally-replicated designs
- or
- New rumours of political sex scandal
  - Film stars deny claims, try to remove photos from Internet
- And we are not immune
  - Dillon (1969) evolution of the colon ":"

What science journalists teach their students

https://www.theguardian.com/science/series/secrets-science-writing

- What is a good science story? Famous science writers answer
  - *Something that makes the reader think "wow", or see the world slightly differently as a result of reading it*. Linda Geddes
  - *Something that makes you go "huh?", "wow!" and "hmm … " at the same time.* Jacob Aron
  - *One that you start reading and can't put down*. Helen Pearson
  - *[One] that illustrates the ways that science is essential to our everyday life.* Deborah Blum
- How to pitch articles to editors
- How to report from a science conference
- How to avoid common mistakes in science writing
- How to create a successful science blog
- How to write a science feature
- Talk to me! Top tips for conducting interviews with scientists
- How to write a science news story based on a research paper

An assortment of tips for science writers

- Write about science which applies to people's lives
- Explain something trending
- Combine fun and serious learning
- Look to popular culture for science stories
- Find a good paper
  - *Thousands of scientific papers are published each week. The majority will not make good news stories. Look for work that is entertaining, fascinating, important or controversial. Ask yourself: will anyone care? Be brutal about this. Move on if the answer is no.*
- What do you leave out of your stories? (Roger Highfield)
  - *Anything that draws the reader's attention away from the central point you are trying to make along with jargon, pomposity, obscure references, muddled ideas, tangled narratives, lazy adjectives, Latin and convoluted sentences.*

Enter the world of public interest

Background: Economics of attention

- Attention is the stuff we pay to convert information into knowledge, and knowledge into information
  - To ingest, digest, manifest, and exchange information
  - To consume and produce information
  - To read and write, listen and speak
- Attention is a finite and nonrenewable resource
  - About 700,000 hour of it in a lifetime
- People collectively produce far more information than any one person can pay attention to
  - So attention must be selective
    - Example: About 150,000 psychology articles published each year; a diligent academic might read 25 of these
- How do people make their attentional choices?
  - Ask other people to make recmmendations!

The two cultures: Attention and thinking, shallow and deep

Attention criteria	Deep thought	Shallow thought
Comprehension	Consumer's responsibility	Producer's responsibility
Truth	Assessed by logic and scientific study	Assessed by personal experience, anecdote, social influence
importance	Conceptual, aesthetic criteria	Practical, personal, political criteria
Interest	Related to the intellect	Related to the senses
Time required	Large (books, literature reviews)	Small (sound bites, summaries)
Training required	Lots (an acquired taste, like opera)	Little (a natural taste, like sweet and sour)
Manifestations	Academic libraries, textbooks, documentary films	Public libraries, comic books, action movies
Preferred by	Academics, intellectuals, other specialists	General public, executives, politicians, other generalists

So what?

- Selective attention and agenda setting
  - Public discourse requires attention
    - We don’t discuss what we ignore
    - What the public attends to sets the agenda for political choice and action
  - What we and our professional peers choose at worthy of our funding and publication agendas may rarely meet the criteria of public interest
    - When we fail to meet the criteria of public interest, we will be ignored

A Canadian example

- Until about 20 years ago, almost all government funding for the social sciences and humanities was allocated to projects chosen by peer review.
- Since then, more and more of the funding (now over 50%) is allocated to research on topics chosen by government. Three examples:
  - *What might the implications of global peak population be for Canada?*
  - *How can emerging technologies be leveraged to benefit Canadians?*
  - *What knowledge will Canada need to thrive in an interconnected, evolving global landscape?*

If we do want to “connect with the public,” more often, how can it be done?

- Traditional
  - Take a journalist to lunch
  - Write our own press releases
  - Offer training to science writers about our work
  - Teach more people how to be deep thinkers
- Untraditional
  - What insights can PEERE offer the world?

PEERE research opportunities
A Brave New World

- Can we simulate and predict which research ideas will capture public imagination?
  - Think ADHD, PTSD, micro-aggression, gravity waves
  - Think sociology of knowledge, the functions of myth
- Can we document and assess the cognitive rules governing preferences for information?
- Can we influence public demand?
- Can we modify the rules of scientists, journal editors, or the public to increase consensus about what research is worthy of funding/and publicity?

¡Gracias!
Merci!
Kheili mamnoon!
Thank you!