How To Detect Baloney
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The purpose of this presentation is to summarize three sets of baloney detection criteria.

This presentation is freely available from www.sticksandshadows.com. Contact the author at heafnerj@sticksandshadows.com.

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This presentation was created in conjunction with the LCTTA textbook project.

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Abstract

Baloney detection criteria by Sagan, Shermer, and Ehrlich are summarized.

I include an abstract.

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Sagan's Criteria

- Independent confirmation of "facts."
- Encourage debate by knowledgeable people.
- Don't appeal to authority.
- Consider all hypotheses.
- Don't promote a pet hypothesis.

(1) Everyone must agree on what the "facts" are. (2) Debate must be genuine rather than illusional and must involved people who actually know something about the topic being debated. Most people who participate in propaganda disguised as debate are not competent to speak on the relevant topics. (3) Just because someone says it's so doesn't mean it's so. (4) The first step in explaining something is to consider every imaginable explanation, no matter how far fetched. The science is the process of sorting through them and eliminating them. (5) It's easy to hold onto a hypothesis emotionally.

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Sagan's Criteria

- Be quantitative.
- All intermediate reasoning must be correct.
- Use Occam's Razor.
- Can the hypothesis be falsified?
- Test by experimentation and observation.

(1) Even rough quantitative estimates are useful in supporting a hypothesis or explanation. (2) Every step in the reasoning from initial to final must be valid for the entire explanation to be valid. (3) When there are two or more competing explanations that work equally well, choose the simplest one. Nature prefers simplicity. (4) If an hypothesis can't be falsified, it's not valid. (5) Predictions can and must be tested against experimentation and observation.

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Shermer's Criteria

- How reliable is the source?
- Does this source often make similar claims?
- Have the claims been independently verified?
- Does this fit with what we already know?
- Has anyone tried to falsify the claim?

(1) Unreliable sources can't and shouldn't be trusted. (2) Sources who keep making wild claims probably aren't reliable. (3) Independent confirmation is necessary, especially for potentially important discoveries. (4) Any new explanation must retroactively account for everything we already know about a phenomenon. If it doesn't, it's probably not correct. (5) Unfalsifiable claims are not valid.

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Shermer's Criteria

- Does evidence lead to this conclusion or to another one?
- Is the source playing by the rules?
- Are there multiple explanations?
- Does the new explanation explain what we already know?
- Is the source driven by belief or bias?

(1) Scientists must go where the evidence takes them. (2) Is the source doing things fairly? (3) Is the source intentionally or accidentally not accounting for other explanations in favor of a preferred one? (4) If a new explanation can't reproduce and account for what we already know it probably isn't correct and should be discarded. (5) Religious beliefs, political agendas, and financial incentives (the three are frequently intertwined) driving a proposed explanation?

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Ehrlich's Criteria

- Is the idea nutty?
- Who proposed the idea?
- How attached is the proposer to the idea?
- Does the proposer use statistics honestly?
- Does the proposer have an agenda?

(1) Ehrlich distinguishes between nutty ideas and crazy ideas in that the former stays within the framework of science and the latter compromises that framework. (2) Nutty people tend to propose nutty ideas. (3) Emotional attachment is almost always an obstacle to validity. (4) Statistics can be used to "prove" just about anything thanks to lack of understand by most people. (5) Political agendas are almost always behind pseudoscienctific movements.

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Ehrlich's Criteria

- How many free parameters are there?
- Does the idea reference other work?
- Does the idea explain too much or too little?
- Is the source open about data and methods?
- Does the idea agree with common sense?

(1) Free parameters are like "fudge factors" that are thrown in after the fact to make things work out correctly when they otherwise wouldn't. They shouldn't be necessary. (2) Science builds on previously established science. New ideas that do not are highly suspect. (3) Singling out one very specific thing is suspicious, as is explaining everything. (4) Secrecy about experimental procedures and data should sound alarms. (5) Got ya! Common sense absolutely can't be trusted. I assert that it doesn't even exist.

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Recognizing Crackpots

- Are they always certain of their claims?
- Do they frequently cite their own research?
- Do they flaunt academic titles?
- Do they describe suppression of their work by the establishment?
- Do they have an agenda or financial incentive?

I think Ehrlich's pseudo-experts are equivalent to my crackpots. (1) Scientists are skeptical, even of their own ideas. Someone who never doubts can't be trusted. (2) If all they cite is their own work, that's a clue to beware. (3) People who flaunt their titles are usually looking for recognition for the sake of recognition with no regard for the quality of their work. Credentials can be used and abused. (4) Crackpots are notorious for playing the role of the suppressed or silenced underdog. (5) Crackpots relentlessly propose the same previously discredited ideas, usually out of stupidity.

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References

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- Ehrlich, Robert. 8 Preposterous Propositions: From the Genetics of Homosexuality to the Benefits of Global Warming (Princeton, 2005)
- Sagan, Carl. The Demon-Haunted World: Science as a Candle in the Dark (Ballantine, New York, 1996)
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Thank you!

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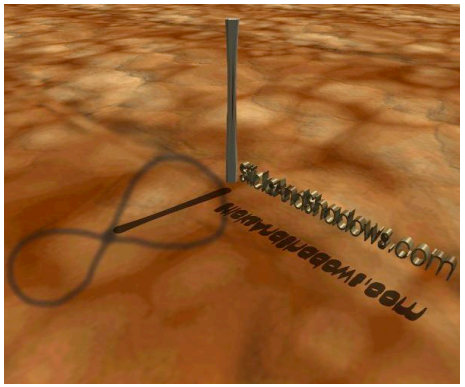

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