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arXiv:
in Silico Lessons

“The Astronomers’ Correction”

National Academies of Sciences Apr 2025

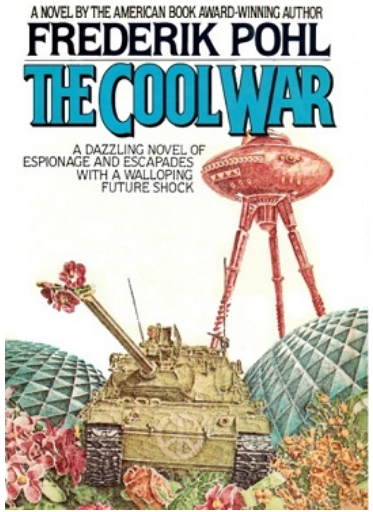
Astronomers' Correction

- Data tables published by an agency
  - originally MASSIVE computational effort…
- "Correction" to data for astronomical applications
  - not a violation of the Principla of Equivalence…
- Corrected quietly some *decades* later

- Deliberate error - cf Anarchist Cookbook
  - computational modeling outside experimental range
  - contradicted by observations
  - original modeling HARD
  - (much) later trivial to redo and correct

arXiv:

- 20,000+ per month
  - versioned
- ~ 2% in q-bio
  - ++ med-ph, Comp Sci
- Content types
  - ab initio models
  - data analysis
  - data modeling
- very little clinical
- social engineering
- misinformation
- confounders



- Concerns:
- Normative or not?
- Intent?

- **<u>cautionary tales -> how to</u>**
- looks ok but is bad
- looks bad but is ok
- easier synthesis
- novel designs
- viral changes
- optimizing epidemiology
  - minimizing impact

sometimes it all comes out

VIII. WORKING AND LIVING WITH EXPLOSIVES, 1943-1945

Given an unparalleled opportunity to combine development of basic knowledge and the art of science to benefit the country and the allied war effort, many engineers and scientists, including George Kistiakowsky, spent many hours of every day and night working to develop and perfect an implosion design clearly intended to change the world as they knew it. Many scientists believed initially that it would be impossible to create a functional implosion atomic bomb. When it became clear that it could actually be built, they raced to develop it before Heisenberg and the Germans, and they hoped that the gadget they created would not just end the war, but end all "great" wars. Their spirits were high, and the enthusiasm for success had no bounds. The tempo, while unsustainable for an extended period of time, was extremely high, and generated many opportunities for ingenious improvisation and decision making. For balance, given limited vacation or travel opportunities, scientists and engineers made do with creative parties, hiking, and skiing in the nearby hills (Figure 9). Work was often merged with entertainment, and as the explosive's Division Leader, Kistiakowsky was a prime example of this. To quickly improve a ski run for the many Europeans working on the hill who loved skiing, Kistiakowsky creatively used surplus plastic

Figure 9. Niels Bohr skiing at Sawyer's Hill during the Manhattan Project (early 1945) (left). The photograph was classified until 1950 to protect the work performed at Los Alamos. The Los Alamos staff worked a six-day week, making Sundays the time for recreation. On a hike, from left to right, standing, Emilio Segré, Enrico Fermi, Hans Bethe, H. H. Staub, Victor Weisskopf; seated, Erika Staub, Elfriede Segré (right). (Source: AIP Emilio Segrè Visual Archives).

VI. COMPOSITION B, A NEW MOLECULE AND EXPLOSIVE FOR WORLD WAR II OFFERS A FAST EXPLOSIVE

Composition B, often referred to as Comp B, is a mixture of 59.5 wt% RDX, 39.5 wt% TNT, and 1.0 wt% wax desensitizer. It is one of the family of mixtures of RDX and TNT (molecular structures shown in Figure 7) known as cyclotols. Composition B has been a common melt-castable high explosive for a wide range of convention explosive ordnance, including artillery projectiles, rockets, land mines, hand grenades and various other munitions. It is worth noting that unlike TNT that had been around since 1863, RDX was not initially developed until the early days of World War II by Britain's Woolwich Arsenal.[30] It offers about 1.5 times the explosive energy of TNT per unit weight and about 2.0 times per unit volume, so for security reasons, Britain named it "Research Department Explosive", which continues on as "RDX". The British discovered that by adding TNT to a mixture with RDX, the resulting product was more stable during shipping, and they named it Composition B.

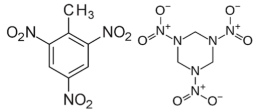


Figure 7. Molecular depiction of TNT (2,4,6-Trinitrotoluene), on the left, and RDX (1,3,5-Trinitro-1,3,5-triazinane), on the right.

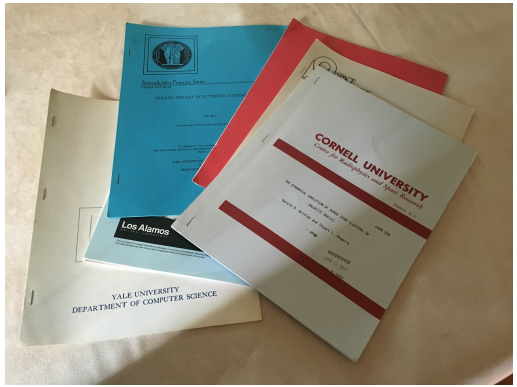
https://arxiv.org/pdf/2103.05714

Amelioration

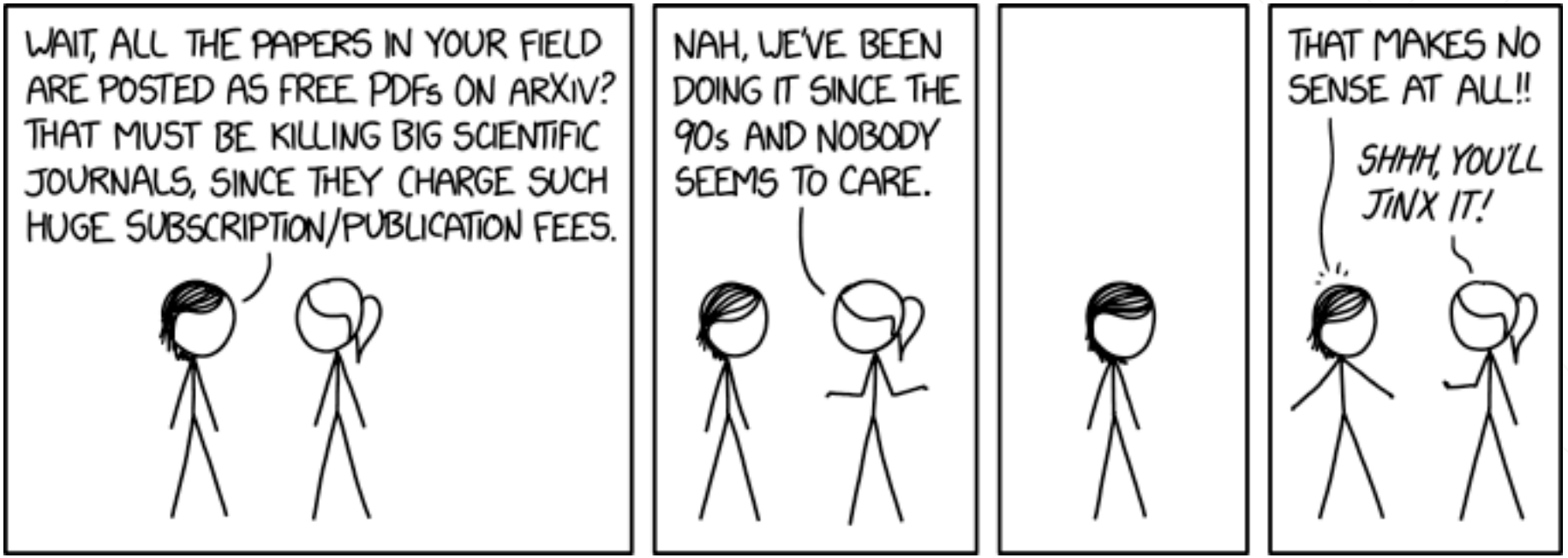
- content instantly duplicated and archived by third parties
- Actions:
  - correct; takedown; retract; remove
  - explicit examples of actions - not hypotheticals
- Says who?
  - author
  - moderator or staff, including tools
  - reader
  - legal
  - governing authority

Closing the gates...

- Futile
  - Content is forever
- Everything is a Red Queen Race
  - *Streisand Effect*
  - ***Greater use of AI tools for content scanning***
- It is not always appropriate to correct
  - Errors are expected; reproduction critical
- What direction is information flowing…
  - discoverability
- Open science is worth the risk



XKCD 2085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NAH, WE'VE BEEN DOING IT SINCE THE 90s AND NOBODY SEEMS TO CARE.
THAT MAKES NO SENSE AT ALL!!
SHHH, YOU'LL JINX IT!