

## Who are the Guardians of Truth and Integrity?\*

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### Abstract

Brain Health Alliance (BHA), a 501c3 not-for-profit organization, will host an online virtual workshop at [ASIST 2022](#) for the library, data, and information sciences community to discuss the now tragically prevalent information cyberwars impacting global citizens of planet earth. These online information wars have resulted in real deaths with loss of life and destruction of entire cities that many believe should have been prevented, whether in the current fight to stop the spread of viral disease, in political election voting disputes and the fight to stop the spread of polarizing and extremified propaganda, and in military campaigns and the fight by freedom-loving peoples who defend their sovereign territory to stop unnecessary wars of aggression, invasion, and criminal genocide. We believe that when some choose to spread propaganda and lies for autocratic dictators, others must stand up and fight to defend truth and integrity in support of democracy and the freedom to live in safety without fear of being imprisoned or poisoned to death for speaking and writing the truth with integrity that should save lives. The BHA workshop on guardians of truth and integrity will provide tutorials with training sessions on open-source PDP-DREAM software and open-access NPDS data repositories from the PORTAL-DOORS Project with its mission to promote transparency, reproducibility, accountability, and citational justice in scholarly communications. In order to support democratic societies for all global citizens of planet earth who wish to be free and safe from unnecessary wars of criminal genocide, we must build the necessary software systems and electronic digital cyberinfrastructure to assure that all citizens of planet earth in every society and country have access to the free flow of information without censorship by any single person, organization, or government. (Text of abstract and pre-workshop proposal written 2022-05-04.)

### Keywords

Research integrity, citational justice, FAIR metrics, idea-laundering plagiarism, idea-bleaching censorship, misconduct, retractions.

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### Pre-Workshop Proposal

#### Workshop Questions

Early in the 17th century, the Habsburg Monarchy banned the works of Johannes Kepler as heretical (Bonner 2011). Later, the government of the Massachusetts Bay Colony did likewise to William Pynchon's *The Meritorious Price of Our Redemption* bringing the heavy-handed approach of Old World governments to the New World (Winship 1997). Shortly before its end, the Irish Parliament similarly banned John Toland's *Christianity not Mysterious* for going against the accepted orthodoxy (Gilbert 1854). However, in stark contrast more recently in 2017, the American Library Association adopted the position expressed in [Politics in American Libraries: An Interpretation of the Library Bill of Rights](#) that "A balanced collection need not and cannot contain an equal number of resources representing every possible viewpoint on every issue. A balanced collection should include the variety of views that surround any given issue." Others have critiqued the Library Bill of Rights as overly vague and blind to realities that influence the creation of knowledge resources, such as self-censorship by textbook companies that depend on the business of ideologically biased school boards (Baldwin 1996). These examples show both that collections of texts, artworks, and artifacts have long been key battlegrounds for control over what knowledge and ideas reach the public and that the role of curators has shifted dramatically over the centuries from enforcers of state-mandated orthodoxy to officially neutral maintainers of the arena. As the role practitioners of information science play continues to evolve, we face new questions and old ones in new contexts: What initiative should we take in helping readers to distinguish between a claim or opinion that someone at some point voiced and one that has support from extensive, reproducible, and validated scientific research? When does

representing all opinions supposedly in the ‘name of neutrality’ morph into irresponsibility by spreading fear of medical interventions such as vaccines when the overwhelming preponderance of scientific evidence and information (Jacobson et al. 2015) proves that those vaccines can save millions of lives? To what extent are different stakeholders responsible for calling attention to plagiarism, censorship, misrepresentation of others’ work, fabrication and falsification of data, and other violations of the trust placed in those whose profession should be the search for truth? What are the differences among retraction, de-platforming, and censorship? When is each one appropriate or not appropriate per *common sense for the common good*? Under what circumstances does presenting either some or all available information harm innocent people, and what lessons can we derive from the tension in the legal system between the need for openness and the need to protect the privacy of victims (Cameron 2013)? How can we keep up with the flood of new publications and identify those written with respect for truth and scholarly integrity in a world where bad-faith actors can spread wrongful information so effectively that mainstream news outlets succumb to the pressure to take even demonstrably false claims seriously (Prier 2020)? How can we help preserve the privacy and dignity of vulnerable populations when advanced algorithms can discern personally identifiable information from supposedly anonymized data sets, such as when researchers reported identification of individuals via their brain scans (Shivayogi 2013; Ravindra and Grama 2021)?

## Format and Schedule

The workshop will be organized as a half-day ( $\leq 4$ -hours) online virtual meeting combining both practical tutorials on the use of the NPDS cyberinfrastructure with PDP-DREAM software and also discussion of current issues with contributions solicited from community members.

### Hour 1: Information Cyberwars

Review of online information cyberwars and discussion of the problems described in the original 2006 blueprint for the PORTAL-DOORS Project (PDP) which persist today in 2022 (or perhaps have even worsened since 2006?) including information silos, idea-laundering plagiarism, idea-bleaching censorship, misinformation, disinformation, anti-information, caco-information, and mal-information. For more background on these topics, see C. Taswell (2008), Craig, Ambati, Dutta, Kowshik, et al. (2019), S. K. Taswell, Triggler, et al. (2020), S. K. Taswell, Athreya, et al. (2021), and He and Yu (2021).

### Hour 2: NPDS Cyberinfrastructure

Review of the Nexus-PORTAL-DOORS-Scribe (NPDS) cyberinfrastructure and how to use the open-source PDP-DREAM software and open-access NPDS data repositories to track the provenance of cultural artifacts and the provenance of concepts, ideas, and claims in the published literature. For an introduction to NPDS, see C. Taswell (2010), Craig, Hong, et al. (2020), and C. Taswell (2021).

### Hour 3: PDP-DREAM Ontology and FAIR Metrics

Review of the PDP-DREAM ontology and Fair Attribution to Indexed Reports (FAIR) metrics and how to use them to track progress on investigations into allegations of plagiarism, misrepresentation of the published literature, and violations of citational justice. For more background on these topics, see Craig, Ambati, Dutta, Mehrotra, et al. (2019), Dutta et al. (2020), and Craig and C. Taswell (2021).

### Hour 4: Open Contributions

Discussion and networking session with moderated contributions from the community with the goal of encouraging and developing international collaborations from organizations with global citizens representing planet Earth from countries across the world. We will adjust time allocation of the sessions (with 2 instead of 1) to accommodate more contributions from the community if there is strong interest from community members who wish to contribute 10 minute slide presentations.

## Post-Workshop Report

### Final Program

As planned, the workshop was a half-day online virtual meeting. Four invited speakers,

- Dr. Peter Wilmshurst, National Health Service, England,
- Dr. Jacqueline Lipton, University of Pittsburgh, Pittsburgh PA,
- Dr. Maria Haigh, University of Wisconsin, Milwaukee WI,
- Dr. V.A.(Vincent) Traag, Leiden University, The Netherlands,

accepted our invitations and prepared important and timely presentations relevant to the current state of affairs in the world. Therefore, we devoted the first three hours of the workshop to talks by invited speakers with the final hour reserved for a review of recent work by BHAVI students and workshop organizers. We honored Dr. Wilmshurst as our 2022 Guardian of Truth and Integrity.

#### Session 1

- 10:00 – 10:45 Peter Wilmshurst: “Research Misconduct: A Personal Experience” (ref: 2022 Guardian and Dr. Wilmshurst’s blog).
- 10:45 – 11:15 Q&A and break

#### Session 2

- 11:15 – 11:30 Jacqueline Lipton: “Authorship, Plagiarism, and the Law” (ref: Lipton 2020).
- 11:30 – 12:00 Maria Haigh: “How Ukraine is Winning the Information War” (ref: M. Haigh 2022).
- 12:00 – 12:30 Vincent Traag: “The Interactions between Social Media and Societal Debates” (ref: Traag 2022).
- 12:30 – 12:45 Q&A and break

#### Session 3

- 12:45 – 13:00 S. Koby Taswell, UC Davis: “Truth in Science and Integrity in Research” (ref: S. K. Taswell, Triggler, et al. 2020; S. K. Taswell, Athreya, et al. 2021; S. K. Taswell, Craig, et al. 2022).
- 13:00 – 13:15 Anousha Athreya, UC Berkeley: “Provenance and the Question of ‘Equal or Equivalent Entities?’” (ref: Athreya, S. K. Taswell, Mashkooor, et al. 2020; Athreya, S. K. Taswell, Craig, et al. 2022).
- 13:15 – 13:30 Adam Craig, Hong Kong Baptist University: “DREAM Principles and FAIR Metrics” (ref: Craig, Ambati, Dutta, Kowshik, et al. 2019; Craig, S. K. Taswell, et al. 2022).

- 13:30 – 13:45 Carl Taswell, UC San Diego: “Citational Justice” (ref: Craig, Lee, et al. 2022; C. Taswell et al. 2022).
- 13:45 – 14:00 Q&A

The following are selected highlights of each presentation based on notes taken during the workshop. Relevant published literature has been cited which may serve as further reading for those interested in exploring the topics discussed.

### Peter Wilmshurst

In 1981, Peter Wilmshurst was part of the team developing the cardiac drug Amrinone with Sterling-Winthrop (S-W), but initial tests showed it to be unsafe and ineffective (Wilmshurst 2007). The company offered him the equivalent of 2 years’ salary not to publish these results and threatened legal action if he did. Another doctor contacted him saying that the clinical records did not show the results Wilmshurst had reported, but this doctor had received copies of the records from S-W. Wilmshurst had retained the imprint copies of his clinical records forms substantiating his own findings. In 1984, after the US Food and Drug Administration had approved the drug, they received over 1400 reports of life-threatening side effects, leading S-W to tell the FDA they were withdrawing it worldwide. However, in 1986, Oxfam received evidence of over-the-counter sales of Amrinone in Africa. The major news outlets did not pay attention at first. *The Guardian* would later run the front-page headline “Drug firm ‘made threats,’” reflecting S-W’s attempts to stop publication of unfavorable reports (Erichman 1986). Eugene Braunwald, the first cardiologist to be a fellow of the National Academy of Science and author of a highly cited textbook, did not disclose that he was working with S-W when he and John Darsee published results contradicting these other studies. It would ultimately come to light that Darsee had fabricated some of the data, leading to the retraction of their paper. In March of 1996, *the British Medical Journal* and *the Lancet* asked Wilmshurst to give a talk to journalists and researchers. They also published pieces on ethics in research. These events lead to the formation of the Committee on Publication Ethics in 1997. Wilmshurst wrote *The Code of Silence* and made documentary evidence of his accusations available to *the Lancet* (Wilmshurst 1997). *The Lancet* threatened to sue, since he revealed they had concealed research misconduct for decades.

After the recall of Amrinone, Wilmshurst stopped doing industry research until 2004, when he participated in NMT Medical Inc’s Migraine Intervention with STARFlex Technology (MIST) clinical trial. Despite a strong theoretical basis for believing that the STARFlex implant could decrease occurrence of migraines by closing a *patent foramen ovale*<sup>1</sup> (Wilmshurst and Nightingale 2006), the clinical trial showed otherwise (Robbins 2012). Only 3 of 74 patients with implants showed improvement, not significantly different from the 4 of 73 who showed improvement with the sham procedure. One of the other participating researchers, Michael Mullen, declared a conflict of interest due to having received lecture fees from NMT. He and 14 coauthors published a paper claiming the efficacy of MIST. The paper listed Anthony Rickards as senior author even though he had died 6 months prior to the start of the study. Hildick-Smith and Mullen declared that they were share-holders in the NMT, but several other coauthors failed to disclose that they were also shareholders. A subsequent investigation found that coauthor Dowson had made up observations in patients he had not seen but

<sup>1</sup>Patent foramen ovale: a hole in the heart that closes during normal development but remains open in the abnormal condition termed patent.

was allowed to keep practicing. Nightingale and Wilmshurst refused to be coauthors due to these breaches of ethics. NMT subsequently identified the names of the three patients whose condition improved after use of MIST and had them give testimonials for use in promotional materials. The Royal Brompton & Harefield website claims that as many as 40% of patients may see some positive effect. Only after persistent requests did Wilmshurst convince them to take down the false information. When he spoke out about his concerns, NMT sued him for libel 4 times and continued to pursue legal action against him until they went into bankruptcy. The whole process cost Wilmshurst over 300,000 GBP in legal fees, but he recovered most of it during the liquidation of NMT’s assets. The UK General Medical Council (GMC) took 6 years to complete its report. Mullen’s hearing collapsed after 7 days, because GMC had not contacted appropriate expert witnesses. Dowson was temporarily suspended. The journal *Circulation* published a 700-word correction in September 2009 written by Dowson, but it still left many errors uncorrected.

### Jacqueline Lipton

Plagiarism falls into a gap between copyright, patents, and other laws. What the law does and does not do for scientific authors does not provide much comfort. When plagiarists misappropriate the work of others without attribution, the law is often not helpful. US law places less emphasis on functional protection in order to promote the spread of information. US law defends freedom of speech on the one hand and both intellectual property rights and defamation on the other. Few cases meet the standard required for defamation. Some American courts have suggested the use of trademark law, but the Supreme Court has rejected this legal approach as a remedy for the problem of plagiarism. Indeed, the US does not have a general law against plagiarism, and there is limited statutory protection for art and visual media.

Copyright is just about copying. It does not relate to properly or improperly giving or taking credit. The legal statutes in the US are similar to those in the UK and Australia. The reference Lipton (2020) addresses US law. Copyright grants the holder six exclusive rights in copyrighted works: the rights to 1) reproduce the work, 2) prepare derivative works, 3) distribute copies to the public, 4) perform the audiovisual work publicly, 5) display the audiovisual work publicly, 6) perform a sound recording by digital transmission [US Code Title 17 Copyrights](#). Of these rights, the first three are the main ones applicable to written works, though many books are now also available as audio-books. Copying a substantial block of a copyrighted text without permission is copyright infringement, regardless of the presence or absence of attribution to the original source. Exceptions granted under “fair use” depend on the purpose of use, the nature of the work, the amount of material copied, and the effect of copying on the market value of the copyrighted work, but not on appropriate attribution giving credit.

The Bern Convention, signed by many European countries, includes moral rights in the work, which is part of why the US did not sign it. These moral rights include rights of attribution and integrity. The US and UK only extend these rights to works of visual art, not written works. Many countries that have moral rights for the written word make them waive-able. To publish in Canada and many other countries, you need to waive these rights in the publishing agreement. For commercial purposes, the publisher needs to be free to keep republishing material. In the US, court justices have declared that current copyright law is insufficient and there there must be a remedy for the pervasive problem of plagiarism in fiction, non-fiction, and academic writing. Over a period

of 20 years between the signing of the Bern Convention in the 1980s and the Destar case in the early 2000s, lawyers hoped that trademark law might provide a legal basis for fighting plagiarism. However, the Supreme Court determined that trademark was not about artistic or scientific origin, as its original function was commercial: to ensure that consumers know whose product they are buying. For example, University of California Press, the publisher of Lipton (2020), might be able to sue a different publisher who printed unlicensed copies of the book, but Lipton the author herself could not sue for authorial credit if these copies attributed the work to a different author. For now, the main standards that codify what is plagiarism and how organizations should handle it are the honor codes of professional societies and universities. However, some publishers do respond to accusations of plagiarism due to the connotations of theft.

## Maria Haigh

The day of this presentation (M. Haigh 2022) was the 228th day of the war between Russia and the Ukraine. When the invasion began, all experts, including those in the US, were convinced Kiev would fall in 3 days. We do not know when or how it will end, but, for now, the Ukraine is winning the war in the hearts and minds of the world's people. The goal of any war is to eliminate the enemy. The tactics are information influence, moral disarmament, and physical neutralization.

One defining feature of a state is that people are willing to die for it. That is how we know the Ukraine still exists. Does Russia still exist in this sense? Many of Putin's supporters are fleeing to other countries.

On October 8, an explosion damaged the Crimean Bridge in the Russian-occupied portion of the Ukraine. This attack represented a major failure of Russian security and a blow to their supply chain. The Russians considered the bridge a symbol of Crimean annexation and Russian might, claiming the bridge was invincible, well protected from air and ground, and constantly monitored.

Laughter is also part of how Ukrainians defend themselves. Since Putin's 70th birthday was the day before the explosion, the head of the Ukraine's National Security and Defense Council, Oleksiy Danilov, posted to his social media accounts a juxtaposition of the explosion with the song "Happy Birthday, Mr. President" by Marilyn Monroe (Liffey and Kerry 2022).

An equally important front in the war is the fight to preserve history against Russian attempts to rewrite it. In July of 2021, Putin wrote an article making up a history in which Stalin created the Ukraine. In reality, the ancient Greeks and Jews are the earliest known settlers of the land, followed by Vikings and Tartars, with the first independent Ukrainian republic being founded in 1918 (Snyder 2022). Despite this heterogeneous ethnic composition and shifting borders, Ukrainians have a strong sense of collective identity and acceptance of differences. The Ukraine is only the second country to have a Jewish president. The Ukraine's cosmopolitan society has allowed them to engage more effectively in international outreach, and they have won the hearts and minds of the world, including bipartisan support in the US and elsewhere, leading to major influxes of humanitarian and military aid.

Russia is attempting memoricide, the killing of memory (Snyder 2021). In 1933, Russia pillaged grain from the Ukraine, resulting in the *Holodomor* in 1933, an artificial famine created to force the Ukraine to submit. Today, again, they are using grain price manipulation, along with kidnapping both children and adults, separating children from their parents, and imprisoning them in filtration camps. They have undertaken an organized and systematic effort to destroy cultural objects,

including the Skovoroda museum, the Taras Shevchenko monument, and the Sviatohirsk Lavra. They have begun burning history books and have declared the official language to be Russian.

Russia as a concept has long been familiar to Westerners, usually as an enemy due to Soviet-era tensions. The Western understanding of the Ukraine was much more nebulous, with many unsure whether it was part of Russia or not. The Russian annexation of the Crimea from the Ukraine in 2014 made it clear that they were separate entities.

The world has seen that the invasion of the Ukraine was a very poorly executed military operation and made clear that Putin did not understand Ukrainians. Russian TV stations have broadcast propaganda to the Ukraine. Russia spent billions of dollars on pro-Russian Ukrainian politicians who were supposed to function as a fifth column greeting the Russian army. Russians packed their dress uniforms for the parade. Russian agents sponsored a Ukrainian Parliamentary party called the "Party of Regents", later renamed the "Party for Life". However, Ukrainians relied on horizontal social networks, not top-down authority.

To those who know Ukrainian history, as does historian Timothy Snyder, the strength of Ukrainian resistance was no surprise (Snyder 2022). Since the 13th century when Ukrainian peasants broke free from serfdom, and again in 2018 as the Ukraine broke away from the Russian empire, Ukrainians have learned that formation of an independent nation is a process requiring constant struggle. The 30 years since the collapse of the USSR have been just another iteration. Unlike in Russia, government structures were separate from the strong, distributed, and entrepreneurial civil society. Every Ukrainian has a role in the war effort. A tractor pulling a disabled Russian tank has become a symbol. In another incident, Ukrainians put a Ukrainian flag on a Russian tank, and the Russians destroyed it. The Ukrainian people are so self-sufficient that it is not clear where society will go in the future. Will government interface with civil society or will corruption continue?

Many pundits previously said Putin was smart and strategic. Experts in Russia knew he was not, that he knew KGB tactics and how to play on the weaknesses of democratic principles in the West (Pomerantsev and Weiss 2014). The freedom of communication and glut of information that the internet provides have not united people but polarized them, which Putin has turned to his advantage. Plurality does not necessarily lead to better debate or democracy. The best information does not always float to the top. Recent studies have looked at fact checking efforts in the Ukraine and the US. But fact checking does not stop liars. It attracts attention, then people believe what they want, self-selecting their own reality that fits their identity (M. Haigh, T. Haigh, and Kozak 2018). Furthermore, social media tends to feed people the information that reinforces their beliefs.

Even so, though democracy has its flaws, it is the best available option and is under attack throughout the world. Timothy Snyder has written on the politics of time and created a framework that tells us from where we have come over the last 30 years (Snyder 2018). In 1989, former Soviet states thought that they did not have an enemy anymore and that future development was just a matter of economics. It seemed like capitalism and democracy were the only way to go. Snyder calls this belief the politics of inevitability: the belief that there are no other ideas or alternatives, only a predetermined path toward the future. When this disbelief in meaningful decisions or moral stances leads to stagnation and growing inequality, it creates an opening for the politics of eternity: the desire for a charismatic strong-man to return society to a mythic past. In Russia's case, Putin fashioned his public image to fit this desire and wove a tale of recapturing the glory of "forever big and

great” Soviet-era Russia. Russia reached this state of affairs already in the 2000s, but the rise of Trump in the US and of far-right parties in many European countries have shown that the West has also been heading in the same direction.

Fighting the rewriting, distortion, and destruction of history requires media literacy on a large scale (M. Haigh, T. Haigh, and Matychak 2019). The US State Department is helping to fund classes to teach elementary school students in the Ukraine information literacy, critical thinking, and understanding of others’ motivations. In a divided world, gaining wide-spread support is as much about listening as speaking. Paying attention to local needs and demands is paramount. Learning about particular media environments and social networks is more effective than broadcasting a single message.

## Vincent Traag

At the Centre for Science and Technology Studies (CWTS) of Leiden University, we are studying “scientific research and its connections to technology, innovation, and society” through nontraditional lenses (Traag 2022): How is a scientific research report used on different media platforms? How is science used beyond scholarly citations of published references? We consider any metric based on research products other than citations by tracking events on social media and online news platforms that are related to scholarly content and research scholars. We offer consultancy services based on alternative metrics, some of which are obtained from commercial data services such as Altmetrics (Priem et al. 2010) and PlumX (Plum Analytics 2023), where the latter service identifies five categories labeled as *citations, usage, captures, mentions, and social media*.

We can categorize websites based on how much they incorporate social media elements and how much they focus on a scholarly user base versus a more general audience (Wouters et al. 2018; Noyons 2019). Web of Science represents one extreme focused entirely on scholarly users with no social media elements. Researchgate represents another as a social media website intended exclusively for scholars. Twitter and Facebook represent another extreme as social media websites with no scholarly focus. We have not given attention to the fourth alternative, ie, websites with neither social media elements nor scholarly focus.

We can categorize the scientific literature itself by problem domain. Web of Science hosts 20 to 30 million research articles, recorded in-house and clustered into 4,500 clusters representing research topics. It then links these clusters into a larger structure of disciplines: social sciences and humanities, mathematics and computer science, physical sciences and engineering, and biomedical and health sciences. The life sciences overlap most strongly with both biomedical and physical but connect with all other areas. Patent citations are mostly in the biomedical and health sciences, though they are also common in physics and engineering, with a few in math and computer science. Almost none are found in the humanities and social sciences. Industry collaborations are especially common in physical science and engineering, as well as mathematics, computer science, and biomedical fields. Again, they are rare in the social sciences and humanities. By contrast, mentions in public policy documents, the main-stream news reports, and Twitter discussions are heavily concentrated in the social sciences, humanities, and biomedical literature with almost none mentioning mathematics or computer science.

We also completed an analysis of the COVID-19 literature published during 2019–2021 (Colavizza et al. 2021) and attempted to discern what role science played in Twitter debates. Which research reports and

topics were tweeted? Who was tweeting whom? How do we connect these two views of the picture? During the early stages of the COVID-19 pandemic, there was high centrality of references with health experts at the center of the debate, but over time, politicians and national leaders became more influential. Those sources of greatest interest provided practical information about testing, hospitalization, treatment, and other considerations rather than the underlying science.

Do scientists play a role in Twitter debates? Johnson et al. (2019) published the study “Officer characteristics and racial disparities in fatal officer-involved shootings”, reporting that they failed to find any racial bias in police shootings. Even though other scientists contested their analysis, and even though the authors themselves later retracted the article and published a correction addressing the flaws in their earlier analysis, many right-wing commentators on Twitter have continued to misinterpret the original study as evidence of the absence of racial bias in police shootings, some as recently as two days prior to this workshop on 2022-10-09.

## Koby Taswell

Our presentation (S. K. Taswell, Craig, et al. 2022) summarized concepts from two of our core literature reviews on truth in science and integrity in research.

In S. K. Taswell, Triggler, et al. 2020, our “Hitchhiker’s Guide to Scholarly Research Integrity”, we introduced and defined two important concepts, *idea-laundering plagiarism* and *idea-bleaching censorship*, relevant to situations in scholarly research communications deficient in truth and integrity. We use the phrase *idea-laundering plagiarism*, analogous to money laundering by crime syndicates, to describe the misconduct of plagiarism cartels which refuse to cite the original authors and published works of the content, concepts and ideas that the cartel plagiarizes. We also use the phrase *idea-bleaching censorship* to describe the accompanying behavior of editors, committees, and others in positions of authority who aid and abet the propagation of the plagiarism by silencing and suppressing complaints about the plagiarism received from the victims. The occurrence of these information wars in scholarly research publishing implies that a skeptical inquirer cannot assume that a published report in a scientific journal is necessarily either of true origin or benign intent.

In S. K. Taswell, Athreya, et al. 2021, our subsequent analysis of “Truth in Science”, we defined additional concepts identified as patterns of behavior when considering authors’ awareness of truth and their willingness to correct mistakes. Thus, we explored the propagation of false information from the perspective of two key questions: Do the authors who make false claims know before publishing that the information is wrong? If readers call attention to the falsehood after publishing, do the authors correct the mistakes? We also considered a third question: Should true information ever not be reported? We used these questions as the basis for a taxonomy of five kinds of harmful statements (definitions quoted from S. K. Taswell, Triggler, et al. 2020):

- **Mis-information:** “the authors were **not aware of the falsehood** before publication, and **agree to correct** the published literature after the mistakes are brought to their attention;”
- **Dis-information:** “the authors were **aware of the falsehood** before publication, but due to possible extenuating circumstances were unable to make corrections prior to publication, and then later **agree to correct** the published literature when given the opportunity to do so;”

- **Anti-information:** “the authors were **not aware of the falsehood** before publication, and the authors **refuse to correct** the published literature after the mistakes are brought to their attention;”
- **Caco-information:** “the authors were **aware of the falsehood** before publication, submitted the false information with purposeful intent to spread it, and the authors **refuse to correct** the published literature when given repeated opportunities to do so;”
- **Mal-information:** “the use with malicious intent of true or partially true information that may be based in reality, but abused in violation of laws, regulations, or codes of conduct, and then published with the purpose of harming other persons, groups of individuals, or the common good of society and public benefit.”

We concluded the presentation in [K Taswell slides](#) with a call to action summarized by three steps: 1) investigate whether the published information is harmful; 2) identify the kind of wrongful information in order to remediate it, correct it, and prevent it from spreading; 3) do not remain silent or complacent, instead act upon the discovery of the wrongful information to intervene before it causes further harm.

## Anousha Athreya

Our presentation (Athreya, S. K. Taswell, Craig, et al. [2022](#)) reviewed provenance in the context of the equivalent entities question (Athreya, S. K. Taswell, Mashkoo, et al. [2020](#)) whether two things are same, similar, related or different? Is a chameleon the same color as its background? Is the palimpsest the same as the top painting? To detect lexical plagiarism when comparing two documents, it may be enough to evaluate whether words or sentences match as character strings. However, to detect semantic plagiarism, we must establish a deeper understanding and ask whether the concepts and ideas expressed are equivalent on the spectrum of same, similar, related or different. In other words, it is necessary to trace the provenance of an idea: how a concept may be changed, related, or adapted. The Merriam-Webster Dictionary defines provenance as the history of ownership of a valued object. In the context of the PORTAL-DOORS Project (PDP), we interpret provenance to mean the origin and history of an entity, resource, or data item, with respect to creation and/or generation, ownership and/or management, and continuing curation of the item as well as sequential transfers of the corresponding roles for the persons involved as creators, owners, and curators.

PDP maintains development of the Nexus-PORTAL-DOORS-Scribe (NPDS) cyberinfrastructure for cataloguing and curating resource records collected in repositories organized by problem domain. For example, the Ashurbanipal diristry focuses its problem domain on resources related to cultural artifacts and archaeology. The struggle between those who would uncover the truth and those who would hide it is an ancient one. For example, until the late 20th century, historians and archaeologists knew little of Hatshepsut, a rare instance of a female Egyptian Pharaoh. They now believe that this dearth of information was the intended result of an ancient campaign of obfuscation by a later patriarchal ruler who had her image effaced from paintings and statues. Fighting the spread of wrong information by promoting right information requires not just good algorithms but correct data, as expressed by the old adage, *garbage in, garbage out*. Creating stores of such open access data for the common good remains one of the important goals of PDP at Brain Health Alliance.

## Adam Craig

Our review of the DREAM Principles and FAIR Metrics for PDP attempted some humor with cartoons about plagiarism, velociraptors guarding the henhouse, and the need for open, transparent, and accountable peer review (Craig, S. K. Taswell, et al. [2022](#)). Plagiarism has many victims: 1) the original authors of concepts and ideas, inventors of methods and tools, and investigators of research results who are victimized by the plagiarists, and who are then denied recognition, funding, and future opportunities, 2) the institutions which are duped into funding the plagiarists instead of authentic researchers who remain committed to truth in science and integrity in research, and 3) members of society who must rely on the innovations and knowledge that research produces ideally to make life better for all citizens. Any reuse of concepts and ideas taken from a prior creative work without attribution of the original work's creator constitutes plagiarism especially when the plagiarists' reuse intentionally misrepresents an equivalent entity (Athreya, S. K. Taswell, Mashkoo, et al. [2020](#)) as the creation of the plagiarist without attribution of the original author, for which malevolent intent can be confirmed subsequently by the plagiarists' refusal to correct the omission of citation and to participate in open public scientific debate of the historical record of published literature (S. K. Taswell, Triggler, et al. [2020](#)). Plagiarism includes not merely verbatim (text or image) copying, but also paraphrasing and summarizing collections of concepts and ideas, extending an entity representing a collection of concepts with additional material, and/or republishing that same collection of ideas under a different name, all without attribution of the original author and creator. As context, consider the ongoing arms race between developers of plagiarism detection software versus developers of applications that scrape the web for papers, paraphrase their content, and cobble it together into new papers, such as [SClgen](#).

Authors, reviewers, editors, and institutional ethics committees may all have their own reasons for denying that plagiarism has occurred even when conclusive evidence exists for flagrant cases, ranging from the individual desire to avoid acknowledging and debating a research competitor to the organizational pressure to avoid bad publicity for the plagiarists' institutions (S. K. Taswell, Triggler, et al. [2020](#)). Because of these and other misaligned incentives that contribute to the prevalence of plagiarism, open transparent and accountable review must become the next phase in the evolution of scholarly communications and publishing (Craig, Lee, et al. [2022](#)). Publishing reviews and editorial correspondence as citable documents forces the reviewers and editors to defend and remain accountable for their own statements, allows the rest of the scientific community and the public to catch falsehoods, and creates an additional incentive to take the review process seriously by making the time energy and effort spent on reviews generate a return on investment as publications that early-career researchers can list on their *curricula vitae*.

At Brain Health Alliance, our work continues with PDP to develop the Nexus-PORTAL-DOORS-Scribe (NPDS) cyberinfrastructure (C. Taswell [2021](#)). Maintenance and support of a specification for a message exchange protocol with web API that distributed network servers can use to share data repository records remains the core foundation of PDP for NPDS (C. Taswell [2008](#); C. Taswell [2010](#)). The reference implementation software PDP-DREAM (Craig and C. Taswell [2021](#)) supports tracking of many kinds of resources grouped into collections called diristries by problem domain. Multiple diristries can share records for the same resource if relevant to the various problem domains. These diristries maintain the declarations that enable the ability to check automatically

for relevance based on keyword tags and/or controlled vocabulary URI labels (Craig and C. Taswell 2022). NPDS supports embedding of a multiplicity of formatted facets, also called infosubsets, ranging from microformats with diverse lexical metadata to more complex semantic descriptions with markup languages. The generalizability, extensibility, and versatility of NPDS enables tracking of provenance with multiple versions of documents along with reviews of those documents as referenceable entities unto themselves. While NPDS data repository records are public by default, curators and administrators can configure them to be private. This flexibility makes the NPDS cyberinfrastructure suitable for both open peer review as well as use cases that require strict private confidential access control such as clinical research trials.

The original 2006 collection of PDP principles (C. Taswell 2008; C. Taswell 2010) did not include an explicit principle addressing the problem of whether two entities are equal or equivalent entities when asking the question ‘same, similar, related, or different?’ (Athreya, S. K. Taswell, Mashkoor, et al. 2020) despite the presence of principles addressing globally unique identification of an entity. To address this deficiency, we extended the original PDP principles to include an equivalent entity principle, and renamed the newly revised PDP collection of principles the DREAM principles (Craig, Ambati, Dutta, Kowshik, et al. 2019):

**D** Discoverable Data (also Decentralized, Distributed, Democratized Diristries)

**R** with Reproducible Results (also Reusable Repositories, Records, and Resources)

**E** for Equivalent Entities (also Enhanced, Extensible)

**A** with Accessible Attributes (also Accurate, Available, Accountable)

**M** and Manageable Metadata

When implemented with our PDP-DREAM software, the DREAM principles form a conceptual framework in support of the NPDS cyberinfrastructure for open access sharing of data and information in defense of truth in science and integrity in research.

We have also developed the Fair Acknowledgment of Information Records (FAIR) metrics, aka Fair Attribution to Indexed Reports (FAIR) metrics, as a family of quantitative measures that evaluate how correctly a scholarly work attributes concepts, ideas, and results to their correctly cited sources and references (Craig, Ambati, Dutta, Kowshik, et al. 2019). This family of measures includes:  $F_Q$  for correctly Quoted claims,  $F_M$  for Misquoted claims;  $F_P$  for Plagiarized claims; and  $F_N$  for Novel claims, where these measures were originally called respectively  $F_1, F_2, F_3, F_4$  in Craig, Ambati, Dutta, Kowshik, et al. (2019).

## Carl Taswell

The phrase *citational justice* can be defined as *giving credit where credit is due by searching, citing, referencing, and respecting the historical record of published literature*. It should be practiced by all who uphold a commitment to fairness, responsibility, and accountability in scholarly research communications. However, the current post-truth era has witnessed an increase in rates of plagiarism committed by both students and their teachers. Academic integrity offices enforce past traditional rules prohibiting plagiarism apparently only against their students while willfully disregarding these violations when committed by their teachers and university faculty. Rhetorically, we ask why should students be held accountable if their teachers are not? Unless all of us engaged

in the academic enterprise of education and research, both teachers and students alike, accept the duty and responsibility of practicing citational justice and fulfilling the scholar’s obligation to cite and discuss the original works, then plagiarism will continue to pollute and taint the historical record of published literature. Citational justice means breaking the code of silence and fighting against elaborate fiefdoms, citation cartels, and organized fraud in academia. Each and every one of us must make a proactive choice to refuse to participate in the fraudulent activity of propagating primary plagiarism with secondary and tertiary plagiarism that fails to perform the scholar’s due diligence of citing the original published works.

We must all collaborate to correct mistakes and fix the errors that have appeared fraudulently in the published literature if we want to maintain science and medicine as self-correcting endeavors. If we study *lying liars’ lies* collectively as a harmful phenomenon, we can consider it a behavioral disorder and current pandemic that affects global public health. Jennifer Freyd coined the acronym DARVO for the phrase “Deny, Attack, Reverse Victim and Offender” originally in the context of health care for female victims of sexual assault by male perpetrators (Freyd 1997). Adjectives such as narcissistic, sociopathic, or psychopathic lack popular panache. Yet the perpretration of DARVO on victims has become the now generalized, widespread, and wrongly so-called ‘normalized’ conduct of choice by bullying predators and political leaders alike including Trump and Putin when it should never be called, accepted or tolerated as ‘normal’. What will be the vaccine and cure that stops and prevents the wrongful choice of using DARVO words and actions whether as a leader or as a follower? We believe that words do matter and that meaningful consistent use of language and vocabulary does matter. That is why at our first Guardians workshop held in October of 2022, we introduced the term “darvomania” for the current health disorder and global pandemic afflicting so many persons around the world (C. Taswell et al. 2022). We will host this Guardians workshop annually in October and will accept nominations for recognition with the title of Guardian but not necessarily award the honor every year. We will only award this title to those who have spent their lifetimes speaking truth to power and guarding truth and integrity.

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