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**Wicked Problems Might Inspire Greater Data Sharing
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Introduction

In 2021, the United Nations Development Program issued a plea in their 2021 Digital Economy Report. “Global data-sharing can help address major global development challenges such as poverty, health, hunger and climate change. ... Without global cooperation on data and information, research to develop the vaccine and actions to tackle the impact of the pandemic would have been a much more difficult task. Thus, in the same way as some data can be public goods, there is a case for some data to be considered as global public goods, which need to be addressed and provided through global governance.” (UNDP: 2021, 178).

Global public goods are goods and services with benefits and costs that potentially extend to all countries, people, and generations. Global data sharing can also help solve what scholars call wicked problems—problems so complex that they require innovative, cost effective and global mitigating strategies. Wicked problems are problems that no one knows how to solve without creating further problems. Hence, policymakers must find ways to encourage greater data sharing among entities that hold large troves of various types of data, while protecting that data from theft, manipulation etc.

Many factors impede global data sharing for public good purposes; this analysis focuses on two. First, policymakers generally don't think about data as a global public good; they view data as a commercial asset that they should nurture and control. While they may understand that data can serve the public interest, they are more concerned with using data to serve their country's economic interest. Secondly, many leaders of civil society and business see the data they have collected as proprietary data. So far many leaders of private entities with troves of data are not convinced that their organization will benefit from such sharing. At the same time, companies voluntarily share some data for social good purposes.

However, data cannot meet its public good purpose if data is not shared among societal entities. Moreover, if data as a sovereign asset, policymakers are unlikely to encourage data sharing across borders oriented towards addressing shared problems. Consequently, society will be less able to use data as both a commercial asset and as a resource to enhance human welfare. As the Bennet Institute and ODI have argued, “value comes from data being brought together, and that requires organizations to let others use the data they hold.” But that also means the entities that collected the data may not accrue all of the benefits from that data (Bennett Institute and ODI: 2020a: 4). In short, private entities are not sufficiently incentivized to share data in the global public good.

Researchers have presented several reasons why societal entities should share data for the public good. NYU's Open Data Policy Lab stressed that gaining access to data sources and other assets held by organizations may facilitate business decisions, find and rectify errors, and gain new insights. These organizations can then test to see if their finding are replicable. Sharing data in the public interest could also enhance reputation and fulfill an organization's social responsibilities. It can help firms recruit and retain talent. Finally it can help organizations comply with regulations, become more transparent, or otherwise promote responsible data

management.¹ Meanwhile, the Open Data Institute in the UK found that data sharing in the public interest could improve market reach, help entities benchmark and gain insights into their performance, build relationships with stakeholders, optimize their supply chain; address sector-specific challenges, and build and sustain trust (ODI: 2020).

Despite these benefits to the firm and to society, policymakers are just beginning to suggest strategies or mechanisms to facilitate data sharing to achieve the *global public good nature of data*.² However, their plans generally describe data as a sovereign asset that should benefit their citizens. For example, in 2018, the French government asked Cédric Villani the French mathematician and legislator,³ to head up a task force on artificial intelligence for France and Europe's future.⁴ After investigating, Villiani and his colleagues stressed that "the benefits of data...are currently enjoyed by a set of a few major stakeholders" To address this problem of data inequity, he recommended that "the public authorities must introduce new ways of producing, sharing and governing data by making data a common good," where a community would define use and governance.⁵ In addition, he stressed that data policies must be designed to safeguard EU sovereignty, protect privacy and foster economic growth among the nations of Europe.⁶ In another example, Ravi Shankar Prasad, India's Minister of Law, Justice Electronics and Information Technology and Communications declared in 2020, "Data is a nation's asset. This great asset of data has to be properly used, processed and value added for healthcare, agriculture and education. Therefore, not only data ownership but also data sovereignty becomes important."⁷

Meanwhile firms are experimenting with a new form of corporate social responsibility called data stewardship, which facilitates data sharing for public good purposes.. The Open Data Institute describes data stewardship as the foundational activity in the lifecycle of data – collecting, maintaining and sharing it. Organizations that steward data make important decisions about who has access to it, for what purposes and to whose benefit.⁸ Data stewards are individuals who work to create public value (including official statistics) by re-using data and data expertise, identifying opportunities for productive cross-sectoral collaboration, and proactively requesting or enabling functional access to data and insights from that data.⁹ To this

¹ <https://medium.com/data-stewards-network/the-9rs-framework-establishing-the-business-case-for-data-collaboration-26585455ccc0>

² Governments are starting to propose strategies for cross-border data sharing, including Japan's free flow of data built on trust and Switzerland's proposal for trustworthy data spaces.

³ Cédric Patrice Thierry Villani is a French politician and mathematician.

https://en.wikipedia.org/wiki/C%C3%A9dric_Villani

⁴ CÉDRIC VILLANI, FOR A MEANINGFUL ARTIFICIAL INTELLIGENCE: TOWARDS A FRENCH AND EUROPEAN STRATEGY, Mission assigned by the Prime Minister Édouard Philippe, p. 5 https://www.aiforhumanity.fr/pdfs/MissionVillani_Report_ENG-VF.pdf

⁵ Villiani, "For a Meaningful, p.8.

⁶ Villiani, quotes on p.8.

⁷ <https://www.ndtv.com/india-news/data-nations-asset-must-be-secured-ravi-shankar-prasad-2265241>

⁸ <https://theodi.org/article/framework-for-responsible-data-stewardship/>

⁹ <https://medium.com/data-stewards-network/data-stewardship-re-imagined-capacities-and-competencies-d37a0ebaf0ee>; and presentation, <https://www.slideshare.net/StefaanVerhulst/reimaginig-data-stewardship-capacities-and-competencies>. We can see data stewardship in action at data.org, a platform for partnerships such as that between the World Food Program and Tableau (a data visualization firm) which maps food insecurity after

end, data stewards have created new entities such as data collaboratives¹⁰ and data trusts¹¹ to facilitate this process (Conley et al. 2020).

Many firms that collect data have a ‘data for good’ program.¹² Nonetheless, these efforts may not be scalable at the global level. Moreover, these programs are at the behest of the management of the private entity and may be uneven or could change over time. Finally, data for good, data stewardship, and data social responsibility strategies do not alter market conditions that act as a disincentive to data sharing.

This paper discusses why the world has made so little progress encouraging a vision of data as a global public good. As UNCTAD noted, data generated in one country can also provide social value in other countries, which would call for sharing of data at the international level through a set of shared and accountable rules (UNCTAD: 2021). Moreover, the world is drowning in data, yet much of that data remains hidden and underutilized.

But guilt is a great motivator. The author suggests a new agency, the Wicked Problems Agency, to act as a counterweight to that opacity and to create a demand and a market for data sharing in the public good.

Before beginning the analysis, the author makes several caveats. First, the author refers to data as a generic term, but acknowledges that there are many different sources (such as internet connected devices and satellites) and types of data (such as personal and non-personal). Most countries have adopted data governance laws that require officials to distinguish between personal and non-personal data. This paper does not highlight this distinction for two reasons: first much of the value of data comes from inferences about individuals based on a collective analysis (Taylor et al. 2021, Section 3.2.2). Moreover, as my colleague Sean McDonald writes, “It’s inherently flawed to base a person’s rights in a digital ecosystem on their data’s potential for use, not only because that potential is unknowable, but because it changes all the time.” (McDonald: 2020)¹³

Secondly, the author sidesteps the competitiveness and national security implications of data which affects data controllers’ willingness to share data. Thirdly the paper does not address all of the problems related to multi-sectoral data sharing for the public good—making the data findable, useable and shareable (provided in a machine-readable format).

This paper proceeds as follows: first I examine why/how data can be a public good. I next discuss why firms are reluctant to share data. Then the paper examines why policymakers are increasingly focused on data sovereignty and how it may impede cross-border data sharing in the

natural disasters or conflict. See www.data.org; <https://www.tableau.com/about/blog/2020/9/inside-look-world-food-programmes-data-driven-response-hunger-during-covid-19>

¹⁰ Data Collaboratives are a new form of collaboration, beyond the public-private partnership model, in which participants from different sectors—in particular companies—exchange their data to create public value.

¹¹ Data trusts and collaboratives are vehicles for different entities to share data in a trustworthy manner, whereas data stewardship acts as an incentive to share data.

¹² <https://data.org/news/charting-the-data-for-good-landscape/>; <https://dataforgood.facebook.com/>; and https://www.sas.com/en_us/data-for-good.html

¹³ Hence, the analysis does not focus on distinctions between personal and non-personal data and related topics such as anonymization, although these distinctions are essential to building and sustaining trust in data sharing,

public good. Next the paper discusses voluntary data sharing and how some governments are trying to encourage such sharing. The author concludes with a recommendation.

Why are we talking about data as a public good?

In most economies, we rely on market forces –supply and demand to produce needed goods and services. But markets don’t always work efficiently or equitably(Duch-Brown: 2017; Mirando Montoya et al: 2022). The people of the world don’t all have equal access, ability, and understanding to use data effectively (a data divide). Countries also have different abilities to collect and monetize data to enhance human welfare (UNCTAD: 2021). For this reason data is often described as a commercial asset *and* a public good (Aaronson: 2022; Bennett Institute and ODI: 2020).

A public good is a good or service that the ‘free market’ will underproduce because it is nonexcludable and nonrival. (Duch-Brown et al: 2017). Data doesn’t quite fit the public good paradigm. Data is inherently non-rival—it doesn’t get used up as most people use it. But users can be excluded through a wide range of strategies including intellectual property rights, trade rules, data governance rules, and price (Bennett Institute and ODI: 2020, 7),

Nobel prize winning economist Elinor Ostrom provided a model for governance of such public goods—a commons where various stakeholders would collaborate to ensure that these public goods could be provided and used in an equitable and efficient manner. According to economist Diana Coyle, “Conventional property rights make conflicts over who ‘owns’ this value inevitable, and hence the growing interest in forms of data governance that could deliver trustworthy access to data. A classic commons problem can be tackled by assigning private ownership and access rights; the challenge with non-rivalrous data is to assign common ownership and access rights” (Coyle: 2020).

Scholars and practitioners are developing strategies to govern data based on the commons model.¹⁴ The commons include software commons such as GitHub; licensing commons such as Creative Commons, open access scholarly journals, digital repositories, institutional commons such as digital libraries or Wikipedia, and subject matter commons.

But much of the world’s data is held by private firms that don’t reveal much about the data they collect and how they might use it for commercial purposes. Although shared models for access to data are gaining traction, data sharing and wicked problem solving is hampered by private sector data opacity and data hoarding.

Private Entities Prefer Not to Share the Data they Collect and Control

Private entities (firms, civil society groups etc.) control a growing portion of the world’s data. Some argue that private sector collection of data today is greater than that of many governments (Open Data Institute: 2020, 6). The author believes this assertion is difficult to prove given the opacity of firms holding such data, so one must rely on proxies such as who funds and accrues

¹⁴ <https://sustainoss.pubpub.org/pub/jqngsp5u/release/1>; and <https://foundation.mozilla.org/en/blog/a-practical-framework-for-applying-ostroms-principles-to-data-commons-governance/>

scientific data. For example, the OECD has found that in many fields of science, the private sector has become the main funder.¹⁵ In the US, the National Science Foundation (NSF) found that federal agencies provided only 44% of the \$86 billion spent on basic research in 2015. The federal share, which topped 70% throughout the 1960s and '70s, stood at 61% as recently as 2004 before falling below 50% in 2013.¹⁶ To the funder goes the profits and the data. And that data acts a force multiplier increasing the power of the firm.

For example, Google and Apple are now creating some of the world's most accurate and widely used maps, outstripping the capabilities of national mapping agencies. In addition, many of the social media platforms such as Facebook, Linked In and Twitter, know more about the social and work networks of their many customers than government officials (Open Data Institute: 2020, 6).

But data markets are characterized by information asymmetries. While every individual and entity creates data and can access some data, some entities have more data as well as greater access to data than others. The longer a firm or entity has been collecting, the more data that entity likely has. Firms and international organizations that collect data globally also likely have broader stores of data. These entities benefit from their ability to analyze data they have collected and by combining that data with other datasets from other sources.

UNCTAD reports that some 70 giant global firms hold the bulk of the world's collections of personal data.¹⁷ These platforms collect, monetize and control the use and reuse of much of the world's data (UNCTAD: 2021). Many of these firms have been collecting data globally, which gives these firms a huge competitive advantage. Companies can use this data to create new products and services and derive value from data 'far beyond initial purposes for which the data has been collected' (Taylor et al: 2021).

During the pandemic, the largest digital firms became ever larger, more valuable and more profitable (UNCTAD: 2021). These firms have many sources of power: gatekeeper power (they are essential distribution channels) leveraging power (use the data they have to compete with the firms that depend on their infrastructure; and information exploitation (to manipulate users to buy more or change their behavior etc.) These firms also use the information they have to create new products or thwart potential rivals. Hoarding may be essential part of their business model. (Khan: 2018, 9) . According to UNCTAD, control over many datasets gave some countries with such firms both "power and competitive advantages...in digital technologies such as data analytics, artificial intelligence, blockchain, the Internet of things, cloud computing and all Internet based services" (UNCTAD 2021, 3). So control of data entails control of downstream sectors. These network effects are leading to a "winner takes all" scenario (Acemoglu et al., 2019)

The opacity of data markets may also encourage firms to adopt or continue business practices that limit data sharing. For example, the platforms tend to use their own intellectual property

¹⁵ <https://www.oecd.org/sti/msti.htm>

¹⁶ <https://www.science.org/content/article/data-check-us-government-share-basic-research-funding-falls-below-50>

¹⁷ <https://www.security.org/resources/data-tech-companies-have/>; <https://seedscientific.com/how-much-data-is-created-every-day/and> <https://atlasvpn.com/blog/google-collects-almost-40-data-points-per-user-most-out-of-top-tech-giants>

(IP), such as algorithms, to analyze data. Because much of the data is personal data, that data constitutes a trade secret. A trade secret must have a commercial value because of its secrecy. Although some personal data can be trivial it gains value when groups of peoples' data is put together and analyzed. (Zech: 2016, 6), Moreover, under international IPR rules, these firms control the results of the analysis and the reuse of the analyzed datasets (Scassa: 2021) Finally, , corporate interests have extended legal ownership of intangible assets, particularly through copyright. They have restricted access to data using “technology protection measures,” which forbid the right to repair iPhone or Deere tractors because in so doing you might learn the secret sauce, licensing terms, and other “digital rights management” techniques to restrict access to information and control its use. As a result, much online content is now wrapped, packaged, and restricted – treated as private rather than common property (Boyle: 2002,).

But intellectual property rights are imprecise. Hence, in the US, some scholars have made the countervailing case for extension of the public domain to proprietary held data. These scholars often cite a 1966 Supreme Court case that held that Congress may not authorize the issuance of patents whose effects are to remove existent knowledge from the public domain, or to restrict free access to materials already available (Boyle: 2002). They can argue that many private companies, including the US based data giants benefited from taxpayer investment into the research that underpins the internet and other data driven technologies.

Meanwhile, while protecting their proprietary data, private firms also rely on open source models for innovation.¹⁸ For example, open source software may increase AI adoption by reducing the level of mathematical and technical knowledge necessary to use AI It advances science by making code available and easier to replicate. Moreover, computer and data scientists can get free feedback on their algorithms if they are open; and they can use that feedback to screen potential talent (Engler: 2021.)

Open source does not mean less corporate control of data—they still decide what data is to be shared and how.¹⁹ For example, Tesla agreed to make its patents open source and said it would not sue those who sought to build on them. Opening the patents gave Tesla better algorithms and employees.²⁰ The World Economic Forum described this process as moving from protectionism of intellectual property to democratization of it.²¹ But it is not so simple.

Unfortunately, as they extend control of data online, firms may learn to rely on rents from both their intellectual property and their monopoly control (Scassa: 2021; Ciuriak: 2018 (Mazzucato, Entsminger, and Kattel, 2020; and Gurumurthy and Chaimi: 2022)). Over time, their control over data stores may reduce innovation (Kraemer and Shekhar: 2022) .

¹⁸ The famous case is the partnership between Apple and Microsoft, where Apple agreed to use Microsoft explorer browsers on Apple products. <https://www.mac-history.net/apple-history-tv/2008-07-19/macworld-boston-1997-steve-jobs-returns-bill-gates-appears-on-screen>

¹⁹ <https://www.ibm.com/blogs/journey-to-ai/2020/09/ibms-open-source-strategy-champions-ai-trust-and-transparency/>;<https://www.weforum.org/agenda/2021/06/collaboration-data-sharing-enable-innovation/>

²⁰<https://www.tesla.com/legal/additional-resources#patent-pledge>.

²¹ <https://www.weforum.org/agenda/2021/06/collaboration-data-sharing-enable-innovation/>

To change the behavior of these giant firms, policymakers often focus on data controllers. For example, Europe's General Data Protection law defines a data Controller as a legal or natural person, an agency, a public authority, or any other body who, alone or when joined with others, determines the purposes of any personal data and the means of processing it. GDPR notes that "Data controllers are key decision-makers. They have the overall say and control over the reason and purposes behind data collection and the means and method of any data processing."²² UK GDPR has a similar perspective. Controllers are "the natural or legal person, public authority, agency or other body which, alone or jointly with others, determines the purposes and means of the processing of personal data."²³ Controllers must comply with the data protection principles listed in Article 5 of the UK GDPR.²⁴

International intellectual property law also targets data controllers. The members of the WTO have agreed to adhere to Trade Related Intellectual Property Agreement (TRIPS), Article 39 (2) delineates how and when entities may protect information as confidential. It states, "Natural and legal persons shall have the possibility of preventing information lawfully within their control from being disclosed to, acquired by, or used by others without their consent in a manner contrary to honest commercial practices."²⁵ As law professor Teresa Scassa notes, if the confidential nature of data is lost, the information may lose its value (Scassa: 2018)

Finally, rules governing public data also try to influence data controllers. Professor Scassa notes that while Canada provides a general right to access data held by government, federal and provincial laws contain exceptions for confidential commercial information, limiting access, use and reuse of that data (Scassa: 2018). The US takes a similar approach.

Hence, the individuals, firms, entities, government agencies, and individuals that control data are the puppet masters. They decide how and when to use and reuse data; whether to store or destroy it; whether it can be shared; and whether it can be monetized and sold. Yet even these firms don't really understand the amount or value of the data they collect and hoard. For example, Facebook has no idea where all of its user data goes, or what it's doing with it, according to a leaked internal document obtained by Motherboard. The document stated, "We do not have an adequate level of control and explainability over how our systems use data, and thus we can't confidently make controlled policy changes or external commitments such as 'we will not use X data for Y purpose.' And yet, this is exactly what regulators expect us to do, increasing our risk of mistakes and misrepresentation."²⁶

²² GDPR, "Data Controllers and Processors,": <https://www.gdpreu.org/the-regulation/key-concepts/data-controllers-and-processors/>

²³ UK Information Commissioners Office, Controllers and Processors, <https://ico.org.uk/for-organisations/guide-to-data-protection/guide-to-the-general-data-protection-regulation-gdpr/controllers-and-processors/what-are-controllers-and-processors/>

²⁴ UK Information Commissioners Office, What does it Mean if you Are a Controller, <https://ico.org.uk/for-organisations/guide-to-data-protection/guide-to-the-general-data-protection-regulation-gdpr/controllers-and-processors/what-does-it-mean-if-you-are-a-controller/>

²⁵ WTO, Uruguay Round Agreement TRIPS, Section 7, Protection of Confidential Information, https://www.wto.org/english/docs_e/legal_e/27-trips_04d_e.htm

²⁶ <https://www.vice.com/en/article/akvmke/facebook-doesnt-know-what-it-does-with-your-data-or-where-it-goes>

The Open Data Institute found that although private entities hoard much of their data, they also routinely share or sell data.. ODI examined some 270 UK companies and found about 50% used data from non-government sources, including other companies.²⁷ A 2019 EU consultation of nearly 1,000 small businesses found that a third acquire data from other companies²⁸ However, ODI found that many firms are reluctant to share or sell data because they see reputational and business risks (ODI: 2020). Business executives understand that innovation requires new ways of collaborating including data sharing with ecosystem partners and third-party organizations.²⁹ But thus far policymakers have not tried to leverage control of data stores into broad obligations for data sharing for the public good. Instead they have made a priority of keeping data sovereign.

What do we mean by data sovereignty and how might it impeded data sharing?

In recent years policymakers from Australia to Russia have talked about the need to keep data sovereign. But data sovereignty is a vague term. Sometimes we think of sovereignty as the state's regulatory power; while at other times we use sovereignty to describe the state's ability to act in the digital sphere without being restricted by others (Christakis: 2020). For the purposes of this article, we use data sovereignty to describe policies requiring data to be stored, processed and handled in its country of origin, in accordance with procedures to be determined by that country.(Christakis: 2020, 65-66).³⁰

The Chinese government was the first nation to adopt policies to promote data sovereignty. In 2010, it declared that although the internet was global, within China's borders, it was under China's jurisdiction."³¹ In 2015, President Xi explained that "respecting cyber-sovereignty" meant respecting each country's right to choose its own internet development path and public policies.³² The Communist party sees control of the internet and the data underpinning it as essential to both stability and growth. According to The Wall Street Journal, China's President Xi Jinping allegedly commented during a private meeting that, "Whoever controls data will have the initiative."³³

²⁷ Open Data Institute (2015), 'Open data means business', <https://theodi.org/article/open-data-means-business/>

²⁸ European Commission (2019), 'SME panel consultation – B2B Data Sharing', <https://ec.europa.eu/digital-single-market/en/news/sme-panel-consultation-b2b-data-sharing>

²⁹ <https://www.accenture.com/sg-en/insights/technology/technology-trends-2020>; and <https://www.weforum.org/agenda/2021/06/collaboration-data-sharing-enable-innovation/>

³⁰ Some use digital sovereignty in lieu of data sovereignty, but digital sovereignty generally describes a broader scope of regulations related to the digital economy vs. a narrower range of regulations governing data. As example, Chander and Sun I use the term "digital sovereignty" to mean the application of traditional state sovereignty over the online domain, including not only cross-border flow of data through uses of internet filtering technologies and data localization mandates, but also speech activities (e.g. combating fake news) and access to technologies (Chander and Sun: 2021, 10.)

³¹ http://www.china.org.cn/government/whitepaper/2010-06/08/content_20207978.htm. The document states, "the Internet is under the jurisdiction of Chinese sovereignty. The Internet sovereignty of China should be respected and protected.

³² <https://www.bbc.com/news/world-asia-china-35109453>

³³ <https://www.wsj.com/articles/chinas-new-power-play-more-control-of-tech-companies-troves-of-data-11623470478>; and <https://www.bloomberg.com/news/articles/2021-04-23/xi-s-next-target-in-tech-crackdown-is-china-s-vast-reams-of-data>

Data sovereignty is a bottom a strategy for nations to hoard and control data within their borders (Chander and Sun: 2021 Christaksis: 2020). Developing countries in particular are concerned that they will not be reap the benefits of data for development unless they control data locally. Hence many developing countries remain unwilling to negotiate the free flow of data until they have figured out how to control the data they create within their borders. (Aaronson and Struett: 2020; UNCTAD: 2021).

Nations espouse different reasons for adopting data sovereignty. Some state that it is a strategy to resist the exploitative and extractive practices of Western (and Chinese) technology giants (Pinto: 2018; Coudry and Meijas: 2018) Chander and Sun note that in the EU it is a means of addressing US/Chinese market dominance, whereas in Russia it is used to protect against foreign interference in governance and to assert stronger control over local infrastructure (Chander and Sun: 2021, 16-18). China, Russia and India, as example cite the need to protect data as a reason to justify data sovereignty. But these same governments have not enacted clear rules governing the use of such data by the public sector. These states may be using data governance to shift power from firms to government. Officials in these nations seem to believe that by controlling large supplies of data, they can achieve economic advantage in the digital economy and will be better positioned to counter the market power of the giant platforms (Aaronson: 2021). Another study found that of the nation's issuing data strategies use those data strategies as a plan to enhance the data-driven economy and inf act achieve competitive advantage in data. Of the ten nations with data strategies 6 were focused on achieving competitive advantage in data-driven services such as cloud or AI, and 7 planned to achieve economies of scale and scope in data (Aaronson: 2022).

Yet firms that hoard data and governments that assert data sovereignty may be making choices that can undermine long term development goals. researchers cannot yet ascertain if economics of scale and scope in data will yield competitive advantage. Around the world policymakers have adopted strategies to increase their competitiveness in data driven technologies such as AI, in the belief that such technologies are essential to economic and national security (Imbrie et al: 2020; Aaronson: 2022; Niklas and Dencik:). More than 25% of the world's nations have an AI strategy, and towards that end, policymakers have adopted policies to encourage the collection and hoarding of data locally. However, the supply of data is one of many indicators that collectively add up to AI prowess (Imbrie et al: 2020). Moreover, there are many AI applications that do not necessitate massive amounts of data such as transfer learning and reinforcement learning (Chahal et al: 2021). Yet almost every data strategy and AI strategy is built on this notion—large troves of data = prowess. However, we do know that if nations or firms hoard data, they may reduce data generativity and the public benefits of data analysis.

Voluntary Data Sharing and the Role of Governments

Around the world, private firms, data analysts, NGOs and government are collaborating to use data to serve those beyond their borders.³⁴ For example, Amazon partnered with Radiant Earth, to help developing countries monitor their sustainable development goals The two use and share

³⁴ <https://towardsdatascience.com/data-for-public-good-1414cbc99335>

open geospatial data and analytics to measure crops in Africa, and in so doing advance commercial agriculture operations and provide transparency to the agricultural supply chain market in developing countries.³⁵ Swarm, a company that provides satellite data has partnered with several NGOs to monitor and thwart illegal poaching.³⁶ The GovLab a NY think tank working on data governance, described how various governmental, NGO, and corporate entities have provided and analyzed data that has helped Ukraine and its neighbors (Davletov et al: 2022.) UNHCR’s created a map to visualize migrations happening across Europe as a result of the war, which shows where refugees have crossed borders and where they and the government that accepts them (e.g. Poland, Hungary etc.) may need assistance³⁷. Satellogic, which collects and analyzes satellite imagery partnered with the NGO Halifax International Security Forum (“to provide the Ukrainian government with a Dedicated Satellite Constellation (“DSC”), Ukraine is using the satellites to provide actionable information for the Ukrainian government so it can rapidly mobilize resources and evacuate civilians.³⁸ Premise, a marketing platform that pays consumers to provide data on consumption in real time³⁹, mapped access to food, water and fuel.⁴⁰ Clearview AI allowed Ukraine to use its data for free to uncover Russian assailants, combat misinformation and identify refugees and the dead.⁴¹

However, such data sharing is voluntary and limited.⁴² Some scholars have suggested that governments mandate data sharing(Prüfer & Schottmüller (2021), Parker et al. (2021)). However, using a game theoretic model to analyze the effect of data sharing obligations on market outcomes, competition and welfare, one study found while mandated data sharing increases the level of competition in secondary market, it lowers the incumbent’s incentive to innovate in the primary market (Kramer and Shiva 2022, p. 6., 27-29.)

Some governments are experimenting with various approaches to encourage data sharing in the public good, although most efforts aim to benefit domestic researchers, civil society groups and firms. The EU is trying to encourage data sharing for research purposes. The proposed Digital Services Act (DSA) would require the largest internet platforms to open up their data to independent researchers with Commission approval. The DSA would affect companies with at

³⁵ AWS Public Sector Blog Team, Geo-Diverse Open Training Data as a Global Public Good, April 22, 2019, <https://aws.amazon.com/blogs/publicsector/geo-diverse-open-training-data-as-a-global-public-good/>; and <https://satellogic.com/products/dedicated-satellite-constellation/>

³⁶ https://www.wired.com/story/satellite-constellations/?bxdid=5bd67f6824c17c1048036263&cndid=49426028&esrc=BottomStories&source=EDT_WIR_NEWSLETTER_0_DAILY_ZZ&utm_brand=wired&utm_campaign=aud-dev&utm_content=WIR_Daily_083022&utm_mailing=WIR_Daily_083022&utm_medium=email&utm_source=nl&utm_term=P2

³⁷ The UNHCR’s map to visualize migrations happening across Europe as a result of the war, which shows where refugees have crossed borders. The [data portal](#) aims to monitor the Ukraine refugee situation and reflect recent movements of refugees in order to better aid humanitarian actions.

³⁸ <https://satellogic.com/news/press-releases/satellogic-and-hfx-collaborate-to-equip-ukraine-with-satellite-tasking-capabilities/>

³⁹ <https://www.premise.com/why-premise/>

⁴⁰ <https://www.premise.com/blog/introducing-premises-open-build-ukraine-project/>

⁴¹ Clearview AI scraped the web for pictures. It claims it has more than 2 billion images from the Russian social media service VKontakte at its disposal, out of a database of over 10 billion photos total. <https://www.cnn.com/2022/03/13/ukraine-has-started-using-clearview-ais-facial-recognition-during-war.html>

⁴² https://docs.google.com/document/d/1J_YJb_mPwFLXVSuJBNK0pudIGKT9Ark0Gbw4ojW6qQo/edit

least 10% of EU citizens as active users, which would likely include Facebook, YouTube, Twitter, TikTok, Amazon, and others.⁴³ The European Commission has also proposed a Data Act that would provide the means for public sector bodies to access and use data held by the private sector in exceptional circumstances, particularly in case of a public emergency, such as floods and wildfires, or to implement a legal mandate if data are not otherwise available.⁴⁴ After considerable private sector comments that the Act was too vague, the government of the Czech Republic put forth a compromise which clarified that these exceptional circumstances must be unforeseeable and limited in time and scope. It also states that statistics and research are the only purposes for which any obtained data can be reused.⁴⁵

The EU is also creating shared data spaces for specific sectors in order to facilitate data pooling and sharing. The EU says it aims to “overcome existing legal and technical barriers to data sharing and, as such, unleash the enormous potential of data-driven innovation, and “thereby create the core tissue of an interconnected and competitive European data economy.”⁴⁶

In the UK, the Digital Economy Act of 2017 introduced a framework for sharing personal data for defined purposes across specific parts of the public sector and enables accredited researchers to gain access to deidentified data for research purposes. The act regulates data sharing practices for the purposes of research using public data, but it does not govern data sharing in other contexts.⁴⁷ Nor does it address the global public good nature of data.

Australia’s Information Commissioner’s Office has published and continually updated a Data Sharing Code of Practice since 2011.⁴⁸ The government plans to establish ‘data trusts’ to facilitate the ethical sharing of data between organizations holding data and organizations developing AI.⁴⁹ A UK advisory agency, the Centre for Data Ethics and Innovation, is responsible for developing these data trusts.⁵⁰ The Office for Artificial Intelligence also partnered with the Open Data Institute between 2018-2019 to run three data trust pilots.⁵¹ But here too, the government is focused on national data sharing.

⁴³ <https://cepa.org/a-bold-transatlantic-plan-to-open-corporate-databases/>

⁴⁴ https://ec.europa.eu/commission/presscorner/detail/en/ip_22_1113

⁴⁵ <https://www.euractiv.com/section/digital/news/czech-presidency-put-forth-compromise-on-government-access-in-new-data-law/>

⁴⁶ <https://digital-strategy.ec.europa.eu/en/library/staff-working-document-data-spaces>

⁴⁷ [https://ico.org.uk/for-organisations/guide-to-data-protection/ico-codes-of-practice/data-sharing-a-code-of-practice/data-sharing-across-the-public-sector-the-digital-economy-act-codes/#:~:text=processing%20by%20government-Data%20sharing%20under%20the%20Digital%20Economy%20Act%202017,DEA\)%3A%20the%20DEA%20framework.](https://ico.org.uk/for-organisations/guide-to-data-protection/ico-codes-of-practice/data-sharing-a-code-of-practice/data-sharing-across-the-public-sector-the-digital-economy-act-codes/#:~:text=processing%20by%20government-Data%20sharing%20under%20the%20Digital%20Economy%20Act%202017,DEA)%3A%20the%20DEA%20framework.)

⁴⁸ <https://ico.org.uk/for-organisations/guide-to-data-protection/ico-codes-of-practice/data-sharing-a-code-of-practice/>

⁴⁹ <https://www.gov.uk/government/publications/artificial-intelligence-sector-deal/ai-sector-deal>

⁵⁰ <https://publications.parliament.uk/pa/ld201719/ldselect/ldai/100/100.pdf>

⁵¹ <https://docs.google.com/document/d/118RqyUAWP3WYyyCO4iLUT3oOobnYJGibEhspr2v87jg/edit>

Canada's Bill C-11 (Digital Charter Implementation Act) proposes establishing public data trusts to allow for reusing de-identified data for "socially beneficial purposes." But it has not passed Parliament, and it is unclear if socially beneficial purposes extend to non-Canadians.⁵²

Some policymakers are beginning to pay attention to the global public good nature of data. As example, the UN and several supporting states created the Digital Public Goods Alliance, a platform where governments can share digital public goods, engage talent, and pool data sets. This platform, is open to all, and offers open-source software, open data, open AI models, open standards, and open content that adhere to privacy and other applicable laws and best practices, do no harm by design, and help attain the Sustainable Development Goals⁵³ According to the Alliance's web site, anyone can take, adapt and use these digital public goods. In order for something to be recognized as a digital public good, solutions must demonstrate use of an approved open license. Once a solution is recognized as a digital public good it is placed and made discoverable on a public registry, which contains almost 90 digital public goods that any developing country can use.

The website notes that the alliance welcomes participants from private sector technology experts, think tanks, governments, philanthropic donors, international implementing organizations, and the UN. It is governed by a board which includes representatives from the German Federal Ministry for Economic Cooperation and Development (BMZ), the Government of Sierra Leone, the Norwegian Agency for Development Cooperation (Norad), iSPIRT, UNDP, and UNICEF.⁵⁴

Two nations, Germany and Switzerland, explicitly describe data as a global public good in their data strategies but take a contrasting approach (Aaronson: 2022). Germany put forward a data strategy in 2021 that aims to "ensure that we...can both [add] value...[and] improve the lives of everyone."⁵⁵ The data strategy examines the role of one kind of IP protection, trade secrets, in preventing data sharing, reducing competition and potentially favouring the creation of monopolies (ibid., 21). Firms can use trade secrets to protect their algorithms and then they obtain control of any data they analyze with such algorithms. Hence, Germany is arguing for greater amounts of data to be viewed as a digital public good that should be shared openly while protecting privacy.

Germany has made the digital public good objective part of its development strategy with its FAIR Forward – Artificial Intelligence for All" program.⁵⁶ Germany is working with six partner countries: Ghana, Rwanda, Kenya, South Africa, Uganda and India to share of open, non-discriminatory and inclusive training data, models and open-source AI applications; digital learning and training for the development and use of AI; and advocates for value-based AI that is rooted in human rights, international norms such as accountability, transparency of decision-

⁵² <https://parl.ca/DocumentViewer/en/43-2/bill/C-11/first-reading>. The bill reads, "For the purpose of this section, *socially beneficial purpose* means a purpose related to health, the provision or improvement of public amenities or infrastructure, the protection of the environment or any other prescribed purpose."

⁵³ <https://www.un.org/techenvoy/content/digital-public-goods>

⁵⁴ <https://digitalpublicgoods.net/who-we-are/>

⁵⁵ See www.bundesregierung.de/breg-en/news/data-strategy-adopted-1845882.

⁵⁶ <https://oecd.ai/en/dashboards/policy-initiatives/http:%2F%2Faiipo.oecd.org%2F2021-data-policyInitiatives-26742>

making and privacy, and draws on European laws or proposals on AI and data governance regulation.⁵⁷

In contrast, while Switzerland acknowledges the public good nature of data, it emphasizes data protectionism. The plan notes that Switzerland will constantly monitor whether its legislation and the international agreements for the data economy are optimally designed: “Switzerland is developing an internationally coordinated data policy, which among other things covers issues of data sovereignty, access to government data, international data traffic, regulation of competition intellectual property, data protection and handling localization guidelines.”⁵⁸ In this regard, the government is updating its personal data protection laws and examining how to facilitate data portability and creating trustworthy data spaces.⁵⁹ Switzerland is examining whether “data sovereignty can be improved and dependence on the large international public cloud service providers can be minimized in the medium to long term.”⁶⁰

But at the global level, policymakers are not talking about incentivizing data sharing in the global public good. In September, as this paper was being finalized, the members of the G-7 hosted a roundtable of G-7 Data Protection and Privacy Authorities.⁶¹ The communique summarized their discussions, stressing, “We underline that to effectively protect the fundamental rights to data protection and to privacy, clear and precise rules governing the scope and the conditions under which privately held data might be accessed for national security and public safety purposes need to be laid down by appropriately enacted legislation which ensures that interferences are limited to what is strictly necessary and proportionate in democratic societies.”⁶² In that regard, the attendees discussed privacy enhancing technologies, deidentification standards, and international data spaces, an EU concept, building on the German/French cloud GAIA-X. International Data Spaces allow secure data transfer and “ensure digital sovereignty for data owners.”⁶³ But they did not discuss international data spaces as a venue to share data in global public interest.

So what could nations do to collaborate in the global public interest?

Data is both a commercial asset and a public good. But private entities are collecting, storing and monetizing ever greater amounts of data. These firms decide when and how to share it. Yet some of that data could be useful to solving a wide range of global problems.

⁵⁷ <https://www.bmz-digital.global/en/overview-of-initiatives/fair-forward/>

⁵⁸ See www.digitaldialog.swiss/en/objectives/switzerland-has-a-modern-coherent-legal-foundation-in-terms-of-the-rights-to-data-and-its-use.

⁵⁹ See www.digitaldialog.swiss/en/objectives/switzerland-has-a-modern-coherent-legal-foundation-in-terms-of-the-rights-to-data-and-its-use and www.digitaldialog.swiss/en/objectives/switzerland-has-trustworthy-data-spaces-in-which-residents-can-exercise-control-over-their-own-data.

⁶⁰ See www.digitaldialog.swiss/en/objectives/access-to-digital-content-is-improved and www.digitaldialog.swiss/en/objectives/the-need-for-a-%E2%80%9Cswiss-cloud%E2%80%9D-and-its-feasibility-have-been-examined.

⁶¹ G7 Germany, “Roundtable of G7 Data Protection and Privacy Authorities, Communique, September 8, 2022,

⁶² Ibid, p. 3#10.

⁶³ International Data Spaces, Enabling Data Economy, <https://internationaldataspaces.org/publications/most-important-documents/>

However, governments use their national data strategies to discuss how to provide data as both a public good and a sovereign asset, but few are yet incentivizing data sharing to address global problems. Whether high, low or middle income, many countries view the data created within their borders as a sovereign asset.

Meanwhile global governance has not caught up with the challenge of governing data. With a few exceptions, international institutions focus on voluntary approaches (such as the Digital Public Goods Alliance). Some governments propose to mandate that firms be transparent about the data stores they hold and mandate data sharing. Transparency about data stores will be extremely helpful but demanding that firms share data could impede firm innovation and competitiveness. Policymakers would need to make changes to corporate governance and intellectual property rules at the national level, which will take time. Meanwhile, firms will acquire ever more data and could restrict access in the interest of competitiveness.

But as every parent knows, guilt is a great motivator. Thus, the author suggests creation of a new international organization, a cloud based agency called the Wicked Problems Agency. The agency would encourage firms and other entities around the world to provide details both provide a list of potential data troves that could be utilized to better understand patterns of human, societal, and climatic behavior that cross borders. Data stewards at these firms would examine their data and see what troves might be helpful to share. Building on an idea first presented by scholar Linette Taylor, firms should be incentivized to share their data (Taylor: 2022). Hence, the Wicked Problems Agency would rent that data from these firms, allowing these firms to essentially maintain the scarcity of the data while also getting good publicity for sharing the data. The firms would be required to ensure that any personal data is anonymized and protected effectively.

This idea is not without problems. Data stewards at these firms may not know what data their employer holds that could be useful. Moreover, the proposal might signal to firms that it is ok to continue to collect large troves of personal data and undermine important concepts of data minimization (collection should be necessary and proportionate to the purpose for which it has been collected). Finally, the Wicked Problems Agency can't alter the fundamental economics of data or end hoarding by private entities. But by creating an additional market for some of the data, it might both counter data nationalism and encourage global data collaboration.

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