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Book Review

Review of *Data, Systems, and Society: Harnessing AI for Societal Good*

Munther A. Dahleh, *Data, Systems, and Society: Harnessing AI for Societal Good*. (Cambridge University Press, 2025)

Brant Entrekin [1*]

[1] Department of Philosophy, University of Tennessee, Knoxville, USA; bentreki@vols.utk.edu
* Correspondence: bentreki@vols.utk.edu

Abstract: This article presents a review of Munther A. Dahleh's recent *Data, Systems, and Society: Harnessing AI for Societal Good.* Dahleh's work is a hybrid between an introduction and defense of the new data, systems, and society (DSS) transdiscipline and an intellectual memoir of the founding of MIT's Institute for Data, Systems, and Society, the birthplace of DSS. This review acknowledges the strength and importance of this new transdiscipline but argues that Dahleh has not sufficiently incorporated normative theorists and theorizing into the core of DSS. As a result, I identify three failures with Dahleh's approach that could be remedied with the incorporation of normative theorizing into DSS: (1) an assumed inevitability of new technologies being introduced into all aspects of human life; (2) an unclear approach to choosing the ethical frameworks that AI systems are designed with; and (3) limited engagement with the problem of how to transform subjects of data collection into genuine epistemic stakeholders in these processes.

Keywords: data science; artificial intelligence; ethics of data; interdisciplinary research; ethics of technology; normative theory

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Munther A. Dahleh's (2025) *Data, Systems, and Society: Harnessing AI for Societal Good* starts in a Boston traffic jam. Dahleh describes the problems that Boston's notorious traffic jam poses for many different actors in a society: it causes lost hours of productivity for businesses, frustration for individual drivers, and wasted gallons of fossil fuels burned, adding to the climate change crisis. Importantly, the traffic jam problem is not one that can be solved with one simple, straightforward solution like "build more lanes." An adequate solution requires a complex, multifaceted approach among many different disciplines. As Dahleh suggests, "it is less a physical infrastructure challenge and more a data and networked decision conundrum" (xi).

The complex nature of issues like traffic jams means that more than one academic discipline will have insights to bear on potential solutions. It is this insight that led Dahleh to create MIT's Institute for Data, Systems, and Society (IDSS). There, Dahleh and his colleagues pioneered the new transdiscipline of Data, Systems, and Society (DSS). DSS is billed as "a transdisciplinary field that serves as the foundational methodology for addressing challenges that span multiple institutional and policy

domains" (106). In practice, this means that DSS is purported to be a discipline that can combine the insights, perspectives, and methodologies of various fields to, as the subtitle of the book suggests, harness AI for societal good.

Whether intentionally or not, Dahleh structures the book as a hybrid between two different projects. The first is an explanation and defense of DSS as its own unique transdiscipline equipped to handle societal problems that other data-driven disciplines are not equipped to handle on their own. This defense (roughly) covers chapters 1-3 and 5. Chapters 4 and 6-8 turn more towards a reflective intellectual memoir of the creation of the IDSS and the lessons that Dahleh and colleagues have learned about the formation and promotion of this new transdiscipline since its inception in 2015. What this results in is an institute that narrates itself, and this approach introduces some useful and revealing elements into the discussion while also foreclosing others. Dahleh provides an interesting and important new way of thinking about the study of data and this new discipline's ability to solve concrete issues, such as the example of traffic congestion. The defense and demonstration of DSS are strengthened through Dahleh's framing of these insights coming about over years of trial, error, and institutional reflection. However, Dahleh's approach also seems to lack an explicit normative dimension to the study of data, and I find that this forecloses various important ethical considerations. In short, while Dahleh's approach might be useful for problems like traffic congestion, there are still future problems worth exploring in trying to harness data for "societal good." I will begin with a discussion of Dahleh's explanation of DSS and then transition to some worries I have about this approach's utility for truly harnessing data for societal good.

Dahleh begins with the observation that any scientific study requires the collection of data, but "the collection and analysis of data, in and of itself, does not guarantee results" (3). Dahleh recognizes that "dirty data sets" can be one potential source of flawed scientific investigation. Science that relies on data sets plagued with problems like flawed sample sizes, overly narrow focuses, inconsistencies in collection and reporting, and others can cause erroneous conclusions. When we try to create policy based on those erroneous conclusions, we end up exacerbating societal problems instead of truly using data for societal good. Dahleh argues that bigger data sets are not a silver bullet for this issue—we, instead, need a more refined focus on our methodologies of collecting and analyzing data. Dahleh suggests this is especially true in our modern age where data-collecting technologies are omnipresent in our everyday lives, posing new possibilities and problems to be addressed. After discussing the recent history of new data-sensitive computing technologies (chapter 2), Dahleh argues that the solution to effectively resolving societal problems requires an approach to collecting and analyzing data that combines the insights from a variety of academic disciplines.

Dahleh argues that new technologies are raising important questions about privacy, democracy, and data control. As a result, disciplines must incorporate the insights of other disciplines in order to effectively and ethically collect and analyze data to resolve societal problems. Dahleh's solution here is the creation of the transdiscipline known as Data, Systems, and Society. Dahleh conceptualizes a transdisciplinary approach as a different way of relating fields together than an interdisciplinary or multidisciplinary approach. By a transdiscipline, Dahleh means a discipline that interweaves and connects other disciplinary approaches together to generate a new underlying approach that can be applied across various domains. Using the example of mathematics as a transdiscipline, Dahleh demonstrates how mathematics "embeds itself in existing fields…and fosters a seamless transfer of knowledge across traditional boundaries. Its integration into numerous disciplines… allows problems to be approached from new and invigorating angles" (61-62). As a transdiscipline like mathematics, DSS can, Dahleh argues, be embedded into many different disciplines to gain a better, more holistic approach to collecting and analyzing data for societal good.

The transdiscipline of DSS was created out of a commitment "to a data-to-decisions framework that would incorporate the most effective tools, methods, and technologies from engineering/computing and the social sciences for solving real-world problems" (65). This commitment is cashed out in the framework of the "IDSS triangle." The IDSS triangle is built on the interaction among systems data, institutional data, and data on social behaviors. As a case in point, Dahleh presents how the IDSS triangle was used in various domains during the COVID-19 pandemic to make policy recommendations on lockdowns. In the case of COVID-19, the systems data would include the biological facts about the coronavirus, the institutional data would include the government's policies and interventions, and the social data would include the interactions between people (70). Dahleh argues that, before the development of DSS, various disciplines would have been overly siloed and not have been in the best position to create effective policy recommendations (e.g., biologists might overly focus on the biological facts, sociologists might overly focus on the social reactions to various policies, etc.). Dahleh thinks that, by utilizing DSS, all disciplines are in a better position to make policy recommendations thanks to the important insights brought about by recognizing the inherent interconnectedness among these various kinds of data.

It must be said that the DSS approach is an important insight and that the IDSS triangle certainly serves as a useful framework for ensuring that disciplines are actively considering the complexity and multifaceted nature of social problems. In general, practitioners from many different disciplines would benefit from reading Dahleh's work and incorporating the insights from the IDSS into their own research. What Dahleh undersells, however, are the limitations of the DSS approach. While DSS might be a useful methodology for addressing problems like traffic congestion, Dahleh also wants the approach to be useful for domains like combatting racial disparities in

policing, resolving issues in healthcare, and monitoring and safeguarding democratic institutions. I am not as sanguine as Dahleh about the possibility of DSS, in its current form, adequately addressing these issues.

The reason for this is the lack of any normative dimension in DSS. In other words, while Dahleh claims to want to increase humanistic considerations in the collection and analysis of data (99), it seems that this is cashed out in terms of social science disciplines rather than engagement with philosophers, political theorists, or critical theorists. This lack of a normative dimension is evident in the way that Dahleh discusses ethics as mutable "systems of acceptable behavior," saying that a society "may change what it collectively considers acceptable through changes in law or the evolution of social norms" (46). This descriptive approach means that considerations of ethics within DSS focus on analyzing what is socially acceptable behavior as reflected in laws and social norms. But surely this is not the approach we would hope for in investigations into potential policy recommendations for social problems like racial biases in policing and wealth inequality. These inquiries are necessarily value-laden, as demonstrated by Dahleh's signaling the importance of values like fairness, equality, and privacy in this research. The lack of the incorporation of normative theorizing in this approach means that the DSS framework forecloses more research possibilities than Dahleh might recognize. Dahleh throughout recognizes the limitations of "utilitarian thinking" as an ethical foundation for public policy (47; 80; 124), but he seems to mean basic cost-benefit analysis in economics and governance. This means that there is very little substantive normative theory that Dahleh points to as forming the basis of DSS. Without direct engagement with normative theorists at the core of the DSS framework, I fear that Dahleh's framework leaves few tools to effectively incorporate insights that adequately weigh and address the normative issues that are at the heart of many contemporary issues that DSS is meant to address.

At various points, Dahleh grounds the importance of DSS in the inevitable implementation of new technologies in our everyday lives. This stance presupposes that our research should start from the assumption that such technology will be implemented and, thus, our goal should be to find policy recommendations that will mitigate the potential harms of its implementation while maximizing its benefits. Without being a Luddite about new technology, I still find it a real, substantive question as to what domains new technologies (such as generative AI) should be implemented in even when such technologies might offer some tangible benefits. While it is certainly a good thing to encourage researchers to consider policy recommendations that would mitigate harm, perhaps the most appropriate starting point should sometimes be whether the technology should be utilized in that fashion at all. It seems more proactive and powerful for research institutes to engage with this deeply normative question when thinking through questions about new technology, and it is not clear that the DSS model effectively encourages that kind of proactive stance.

Further, it is also unclear which criteria the DSS framework would utilize to create an ethical framework for new technologies. In discussing the questions we must answer when considering how and when we offload tasks to autonomous machines, Dahleh asks "how do we ensure that those machines adhere to predetermined moral and ethical boundaries?" (33). What is unclear to me, though, is how we would determine which moral and ethical boundaries we would even attempt to have machines adhere to in the first place. This is not to say that DSS must give us all the answers that we might want about policies for new technologies, but it is to say that any consideration of how to implement the ethical frameworks is downstream from which frameworks we are trying to implement to begin with.

Finally, Dahleh presents this approach as being able to provide "data for the people" (66). I agree with Dahleh that our stance towards the collection and interpretation of data should be for the benefit of all, not merely for the benefit of a few. However, I worry about Dahleh's methodology of abstraction discussed in chapter 5. While abstraction is certainly a powerful tool in data analysis, abstraction generates data from people while stripping them of their individuality and complexity. While the focus for DSS might be to promote societal good, it still abstracts people into data sets that are then collected and analyzed by academics who are then making policy recommendations based on those abstractions. The challenge remains: how to transform people into genuine epistemic stakeholders in these policy decisions without reducing them to mere abstractions. Otherwise, we risk the imposition of a conception of a "societal good" onto those who will be most impacted by the consequences of those policy decisions. As such, I have reservations about any framework that purports to create data for the people while also relying so heavily on the value of abstraction.

Overall, this book is a useful and important introduction to the transdiscipline of data, systems, and society, but I remain skeptical as to whether DSS will be as revolutionary for social problems as Dahleh thinks. While DSS will certainly serve as a useful framework for many researchers, further incorporation of normative theorists will be an important and necessary step in order to truly deliver on the promise of harnessing AI for societal good.

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References

Dahleh, M. (2025). *Data, Systems, and Society: Harnessing AI for Societal Good*. Cambridge University Press.