Considering Practices of Conflict Data Production, Analysis, Dissemination, and Practitioner Reception: Findings, best practices and recommendations

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THE DATAWAR PROJECT

Considering Practices of Conflict Data Production, Analysis, Dissemination, and Practitioner Reception: Findings, best practices and recommendations

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Executive Summary

How are representations of violence influenced by the 'agency of data', in other words the social practices of data collection, analysis, dissemination, and practitioner reception? The DATAWAR project builds on the hypothesis that scientific output in quantitative conflict studies is driven less by theoretical innovation than by the 'politics of data': the availability, reputation, and mathematical malleability of numerical observations of conflict. The perceptions of conflict developed by practitioners who employ quantitative methods and sources are prone to distortion as a result of the nature of the available data, the type of mathematical models used to analyse and potentially 'predict' conflict, and reliance on a selective subset of theoretical approaches. DATAWAR carried out the first systematic investigation of scientific practices in the field of quantitative conflict studies as well as the impact of these practices on practitioners' vision of war, covering the full lifecycle of conflict data, from collection and analysis to their use and dissemination by military and diplomatic institutions, humanitarian organisations, and the media. The unique, cross-actor and cross-national perspective of DATAWAR improved our understanding of the interactions between scholarly and applied uses of conflict data, beyond the established divide separating 'data pessimists' and 'data optimists'. At the end of this policy briefing, we present a series of policy recommendations. dedicated to a decentering process for avoiding some excess of positivism: proposing good practices and identifying principles for promoting a reflective pedagogy of conflict data.

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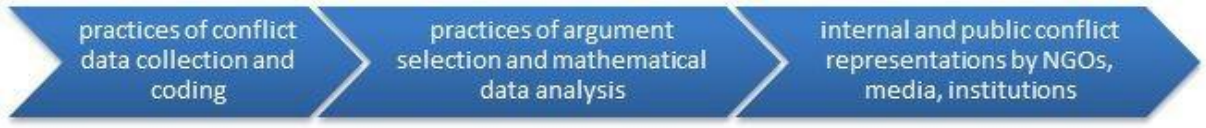
Introduction

The DATAWAR project seeks to explore the following research question: how do social practices of data collection and analysis in quantitative conflict studies influence practitioners' representations of armed conflict?

DATAWAR does not aim to exploit data in order to develop and test yet another large-N statistical model to 'explain' or forecast international violence. Instead, the project examines how academic scholars produce and analyse quantitative data on armed conflict and how these practices shape perceptions and interpretations on the part of professionals in the field of conflict management as well as the media. This ambition responds to widespread calls for greater reflexivity with respect to often-overlooked biases and potential side-effects of data-driven and algorithm-based analysis of human behaviour. In an age when more and more private and public actors are turning to 'big data' to understand and even predict political conflict and violence, there is a surprising and worrying knowledge gap between day-to-day practices of scientific data collection and analysis, on the one hand, and practitioners' perceptions and normative conclusions concerning the causes, dynamics, and management of armed conflict, on the other.

To this end, DATAWAR investigates both scientific practices in the field of quantitative conflict studies and the impact of these practices on practitioners' vision of war, covering the full lifecycle of quantitative conflict data, from collection and analysis to their use and dissemination by military and diplomatic institutions, humanitarian organisations, and the media.



We conceive of 'impact' here not in terms of a narrow causal link, by which a given scientific discourse would directly 'produce' a specific type of perception, but rather as all of the ways in which actors receive, filter, and interpret the output of quantitative conflict analysis. Thus, contrary to a strict positivist perspective that takes data as neutral, we focus on how practices governing the very definition of armed conflicts, the collection and coding of quantitative data, and the mathematical testing of 'dependent' and 'independent variables' affect the perception of armed conflict, its causes and dynamics. To give an example: whether armed conflict is defined according to a threshold of 25 as opposed to 1,000 battle-related deaths will play an important part in determining the perceived frequency of war in international relations and contribute to a more or less pessimistic outlook on the prospect for future conflagrations[1].

Drawing on insights from Bruno Latour's sociology of science (Latour, 1987; Mackenzie, 1991) and Theodore M. Porter's critique of the politics of quantification (Porter, 1995), this project explores the hypothesis that scientific output in quantitative conflict studies is driven less by theoretical innovation than by the 'politics of data'; that is to say, the availability, reputation, and mathematical malleability of numerical observations of conflict. One consequence of the 'agency of data' in quantitative conflict studies may be to prioritize nomological theoretical approaches with little or no attention to contextual, hermeneutic factors. Although quantitative methods are not intrinsically incompatible with interpretative or critical approaches (Baillat, Emprin, & Ramel, 2016; Balzacq, 2014), we expect a to find a preference for theoretical concepts that can be easily tested using available large-N datasets, and whose empirical indicators do not require in-depth research (Lindemann, 2016, pp. 44-48). As a result, we anticipate that the perceptions of practitioners who rely on quantitative conflict research are likely to be biased by the nature of the available data, the type of mathematical models employed to analyse and potentially 'predict' conflict, and reliance on a selective subset of theoretical approaches.

DATAWAR has been organized in three work packages (WP): **WP1** deals with the scientific practices of conflict data collection and analysis; **WP2** looks as how practitioners of conflict management (humanitarians, journalists, diplomats, and members of the military) use quantitative conflict data as well as the resulting scientific output; **WP3** is in charge of dissemination activities, including towards non-academic audiences such as students and practitioners.

DATAWAR's methodological framework

Why is this project relevant?

Many of the most influential accounts of the causes and dynamics of armed conflict have benefited from quantitative research, as reflected in the contents of high-impact factor academic journals such as the *Journal of Peace Research* or the *Journal of Conflict Resolution* (Gleditsch, Metternich, & Ruggeri, 2014). Indeed, key results of conflict studies that are known among practitioners and the media – such as the 'Democratic Peace' thesis – have become established only after thorough quantitative testing and refinement, while only a small percentage of the most frequently cited articles on the subject do not make use of quantitative methods.

The history of quantitative conflict research is closely linked to the emergence of International Relations (IR) as a distinctive social science discipline, whose theoretical and methodological foundations were for the most part first laid in the Anglo-American world. In the face of resistance from pioneers of 'classical' IR such as Hans Morgenthau, who worked largely with historiographic, hermeneutic methods, behaviouralist scholars such as Kenneth Waltz argued in favour of the formulation of general theoretical laws that could be used to explain – and also 'predict' – the behaviour of states and the outbreak of war across an array of spatial and temporal contexts (Kratochwil, 2006). On this view, understanding the phenomenon of war requires comparison between a large number of cases and the specification of variables and correlations so as to test theoretically formulated causal mechanisms.

Construction of the first generation of databases 'measuring' conflict dynamics and potential causal indicators began in earnest during the so-called behaviouralist turn of the 1960s (Dieckhoff, Martin, & Tenenbaum, 2016, p. 251). Since then, work based on large-N datasets (e.g., those produced by the Correlates of War Project (COW) and the Peace Research Institute of Oslo (PRIO)) has helped to bolster and refine a range of propositions, such as the decline of interstate conflict since 1990 (Harbom, Melander, & Wallensteen, 2008) or the role of foreign aid in explaining the success of post-conflict reconstruction (Girod, 2015). In the same way, political institutions, NGOs, and the press have all drawn on insights from quantitative studies to forecast armed conflict and adapt their analytical and normative stances (Colonomos, 2016; De Franco & Meyer, 2011; Meyer, De Franco, & Otto 2019; Ward et al., 2013).

However, it appears that a number of recent theoretical shifts in the study of conflict, such as the 'pragmatic turn' or the even more recent 'emotional turn' (Bauer & Brighi, 2008; Clément & Sangar, 2018), have been less frequently taken up by quantitative conflict analysis than traditional, 'objective' considerations, such as the distribution of military power or the scarcity of economic or ecological resources. In other words, the empirical work done by quantitative scholars may only partially reflect important, ongoing theoretical debates in the study of conflict. Furthermore, to date there has been little systematic study of the actual research practices that go into the collection, coding, interpretation, and dissemination of quantitative conflict analysis. There is also practically no research available on the ontological and normative impact of quantitative conflict research on practitioners (such as government officials, media actors, or NGO analysts). It may be the case that practitioners' perceptions are distorted as a result of the bias in quantitative scholarship towards 'material', non-ideational causes of conflict. Last but not least, it has been confirmed that the nature of the data in the major quantitative conflict databases differs greatly, with important consequences for the interpretation of the causes of conflict and ensuing normative conclusions (Eberwein & Chojnacki, 2001).

In recent years, an expanding body of research has sought to grapple with the 'politics of numbers' and 'governance by numbers' (Supiot, 2015). This literature mainly focuses on how numbers are used by *governments*, whether to control populations at home or wage war abroad (Fioramonti, 2014; Franz, 2017; Greenhill, 2010; Hansen & Porter, 2012). One important finding within this scholarship, developed by Thierry Balzacq and others, is that in international security quantitative data are typically used for the purposes of persuasion, (de)politicisation, and standardisation. (Baele, Balzacq, & Bourbeau, 2017). Quantitative data thereby serve to enhance the 'rationality' of governing and controlling populations – although rival social actors can attempt to thwart its instrumentalisation or utilise it to resist political domination (Bruno, Didier, & Prévieux, 2014). Other recent studies have explored the (mis)uses of quantitative conflict studies in internal bureaucratic struggles over the allocation of organizational resources (Beerli, 2017).

What was missing was a rigorous examination of the ways in which scientific practices themselves, including the internal logics of data collection and academic publishing, shape how practitioners perceive, interpret, and

anticipate armed conflict. This lack of interest in the practice of data collection is all the more surprising considering that some quantitative scholars of conflict have themselves spoken out to criticize the state of the field. A reviewer for the *Journal of Peace Research*, for example, observes: '*In recent years, I have found myself increasingly frustrated with the quantitative papers I am sent to review, whether by journals or as a conference discussant [...] the typical paper has some subset [...] of the following irritating characteristics: [...] Uses a dataset that has been previously analyzed a thousand or more times; [...] The reported findings are the result of dozens – or more likely hundreds – of alternative formulations of the estimation.'* (Schrodt, 2014, p. 287).

We believe that informal and – to the extent that they are generally not disclosed in academic publications – hidden practices of data collection, analysis, and dissemination weigh more heavily than is commonly recognized in the framing and interpretation of armed conflicts. It is a paradoxical situation, in that a group of datasets are taken for granted as authoritative sources and the coin of academic excellence, while the very scholars who exploit them acknowledge the more or less serious limits they pose to understanding the phenomena they putatively canvass. This impression was confirmed by a study of quantitative data in the context of peace-keeping operations, which concludes that '*the collection and use of data replicate and are poised to extend the theory-practice divide that exists between researchers who study violence – those working 'on' conflict – and the peacekeepers, peacebuilders, and aid workers who work 'in' the midst of it.'* (Fast, 2017, p. 706)

Only a handful of scholars have noted that quantitative datasets often implicitly promote a particular conception of war, for example by ubiquitous analogy with disease, with etiology the prerequisite to cure (Duursma & Read, 2017; Freedman, 2017). Others have criticized conflict studies for failing to engage with the insights of quantum theory in natural sciences and the inevitability of non-deterministic processes (Der Derian, 2013). Habitual use of linear mathematical models might likewise be thought to encourage the straightforward deduction of future threats from observed demographic or ecological trends. As a result, the future too often looms as an apocalyptic version of the present, with contemporary menaces deterministically amplified. This form of 'presentism' (Hartog, 2003) seems to be linked to a degree of pessimism and scepticism concerning the possibilities for peaceful change that has been detected in threat assessment and conflict forecasting exercises (Colonomos, 2016).

At the same time, the greater availability of conflict databases and related scholarly output (as a result of open-access initiatives) makes it increasingly likely that practitioners will encounter such scholarship in their daily work routines. The UN, for instance, has developed quantitative systems to survey conflict perceptions and the needs of local populations, although research document 'how UNAMID staff and local populations move often in parallel worlds, and how this distance is being maintained even in encounters deliberately instigated to collect data on violent incidents' (Müller & Bashar, 2017, p. 775). The EU's 2016 'Conflict Early Warning System' contains a 'Global Conflict Risk Index' which identifies a number of material and institutional risk indicators yet does not take account of discursive factors such as the proliferation of 'hate speech' or demands for recognition (Lindemann, 2011). Moreover, some scholars suggest that practitioners equipped with 'big data' may be inclined to reject theoretical explanations altogether, ushering in 'a new era of empiricism, wherein the volume of data, accompanied by techniques that can reveal their inherent truth, enable data to speak for themselves free of theory. The latter view has gained credence outside of the academy, especially within business circles' (Kitchin, 2014, p. 130.

Against this backdrop, DATAWAR intended to trespass the aforementioned 'theory-practice divide' and scrutinise conflict-data practices across institutional boundaries, taking into account specific organisational cultures, needs, and mission profiles. In so doing, the project situates itself in a context in which the initial enthusiasm for data as a tool for conflict prediction and prevention, summarised by Sheldon Himelfarb's article 'Can Big Data Stop Wars Before They Happen?' (Himelfarb, 2014), has given way to more cautious, realistic discussion.

DATAWAR's mixed-methods approach, combining a quantitative examination of the uses of conflict data with a hermeneutic inquiry into how academic scholars and practitioners incorporate conflict data in their daily routines, contributes to a nuanced, comparative assessment.

Analysing scientific practices of conflict data collection, analysis, and dissemination

As the use of quantitative methods in the study of war has effloresced over the past two decades, so too has criticism of their dominance, associated with ills ranging from the decline of grand theory to mathematised obtuseness and loss of policy-relevance (Mearsheimer & Walt, 2013; Desch, 2019). If the rise of quantification can be dated with reasonable precision, the explanation for its take-off might be thought similarly straightforward (Li, 2019). The parallel development of computing technology and relevant software systems has transformed the arduous, time-consuming and costly coding and analysis of data, once performed by teams of undergraduate and graduate assistants, and brought advanced statistical tools to the personal computers of individual researchers. More recently still, advances in natural language processing (NLP) and machine learning techniques have encouraged expectations that manual coding might be dispensed with altogether (Schrodt, 2012).

Yet such a narrow explanation is not entirely satisfying. It ignores both the reasons for the failure of previous endeavors to catch on, insofar as these cannot be reduced to limited computational power alone, and the actual findings of the research programs in question. To give an adequate account of the phenomenon, we must look at whether and how the use of statistical and mathematical techniques and large-N sample sizes has produced new answers to old problems, or opened up areas of inquiry hitherto ignored by more traditional approaches. It is also germane to consider the historical context for the shift under consideration, both internal (to English-language IR scholarship) and geopolitical; finally, at the intersection of these two contextual queries, we can ask how realignments of the post-Cold War period affected the relationship between mainstream international security studies (ISS) and the fissiparous field of peace research, long at the positivist avant-garde (Buzan & Hansen, 2009).

Accordingly, our research project has proceeded on three fronts. First, we have reconstructed the proximate origins of scientific conflict research and the evolution of the two outlets at the forefront of the field, the *Journal of Conflict Resolution* and the *Journal of Peace Research*, charting the challenges posed to both journals by the intellectual and political shockwaves of the 1960s and 1970s, consequences of the 'failure to predict' the collapse of the USSR for quantifiers in IR (Lebow & Risse-Kappen, 1995), and the subsequent, meteoric ascent of research using quantitative conflict data. Second, we have undertaken the systematic coding and analysis of a corpus of articles drawn from the two journals from 1990 to the present, using a framework that integrates theoretical paradigm(s) referenced, methods and data employed, along with generality of explanation, implied likelihood of future conflict, and normative conclusions. These findings are in the process of being integrated into a searchable ATLAS.ti database, with the ambition of detecting similar patterns in the wider literature. Third, we have constructed a second, thematic corpus — articles on the 'rise of China,' drawn from a sample of quantitative and non-quantitative journals — that has yielded a series of preliminary conclusions from the application of the same analytical framework. We interrogated this sample to determine whether positivist scholars have a more securitized stance towards Chinese politics than scholars who advocate a more interpretive approach to international relations.

Analysing the 'agency of data' with regards to impact on practitioner representations of armed conflict and the interpretation of their causes

To analyse the impact of quantitative conflict studies on public and private representations of armed conflict among journalists, political institutions, and NGOs, WP2 has relied on a combination of corpus-based quantitative document analysis and qualitative research interviews for the selected case countries: France, Germany, and the UK.

In year 1, WP 2 focused on the analysis of the impact of quantitative conflict research on press articles, foreign policy papers, and NGO reports. In order to investigate this impact, we created three different corpuses. We established a list of armed conflict databases related keywords that we used as a base for the corpus (media articles) or looked for in documents (policy papers and NGO reports).

The media corpus was constructed using FACTIVA and Europress and was composed of more than 4000 articles mentioning the selected conflict databases from ideologically and politically diverse periodicals in the three countries for the period 1989 - 2020.

The policy paper corpus was built from online documents, available on each country's Ministry of foreign affairs (*Ministère de l'Europe et des affaires étrangères*, Foreign, Development and Commonwealth Office, *Auswärtiges Amt*) and Ministry of Defense (*Ministère des Armées*, UK Ministry of Defense, *Bundesministerium der Verteidigung)* websites. A little less than 200 documents manifestly mentioned quantitative data (however not from the pre-established list of academic armed conflict databases), with many of them calling for strengthening the use of quantitative data in conflict prevention, have been identified in the last ten decades.

The NGO reports corpus gathers annual reports from 17 peacekeeping NGOs found online. More than 200 documents were analysed and reveal considerable use of quantitative data. However, they either did not cite their sources or cited sources absent from our pre-established list – most of the time, these sources consisted in UN databases or internal data.

In year 1 and 2, WP 2 also conducted more than 70 interviews with journalists, foreign policy practitioners and humanitarian workers. Journalists and humanitarian workers interviewed have a position in the same media or NGOs whose documents have been compiled in the corpus. Foreign policy practitioners hold office in each country's Ministry of foreign affairs and Ministry of Defense and related institutions (embassies, internal think tanks and institutes): directions and sub-directions prone to use quantitative data were identified and contacted. Intelligence services were put aside for confidentiality reasons. Additional interviews were done with some representatives of armed conflict databases, such as ACLED or the IISS. For a detailed presentation of the construction of the document corpus (list of periodicals, policy papers, NGOs and keywords), please see our methodological Working paper published in 2021.

Collecting practitioner input and disseminating project results and policy advice

The overall objective of WP 3's research program was to develop practical guidance for practitioners involved in conflict management, including diplomats, military officers, journalists, and NGO staff, so as to encourage greater awareness regarding the use of quantitative conflict data and new theoretical insights, as well as vigilance with respect to potential data-engendered biases.

Our intent was to help practitioners in their day-to-day work by fostering a more reflective use of quantitative conflict data in analysis, decision-making, and operations. Taking into account the feedback we gathered in three non-public workshops with NGO workers, military officials, and journalists, WP3 has prepared the major dissemination outcome of DATAWAR, the **Conflict Database Compass** (CDC), available at:

https://cdc.univ-lille.fr/

The CDC website is the first publicly accessible and interactive guide on the metadata of available academic sources of quantitative conflict data, organized according to specific practitioner needs. The CDC will thus assist practitioners, who are often less familiar with the pitfalls of gathering social science data while working under time pressure, in quickly identifying the conflict database that is most reliable and germane to their particular needs.

Students were another dissemination audience of WP 3. We implemented several pedagogic innovations, including a collaborative game modeling the role of data gathering and sharing in the management of an international crisis, as well as student workshops in which they were encouraged to experiment with open-source data to check complex theoretical arguments on the causes and consequences of armed conflict.

Main findings

Is there a deterministic bias among quantitative scholars?

Based on a comparison of the 'causes' of armed conflict in the fifty most-cited articles published in two leading quantitative journals (the *Journal of Conflict Resolution* and the *Journal of Peace Research*) and two more qualitatively oriented journals (*Security Dialogue*, *Millennium*), we have examined the relationship between methodological orientation and determinist visions of war. Overall, we find strong evidence that quantitative articles chiefly mobilize 'material' variables in their research design (such as balance of power, regime type, economic interdependency, and natural resources), while 'interpretative' approaches accord greater consideration to the meaning actors assign to their actions (the construction of identity, norms, and emotions). At the same time, quantitative studies that measure conflictual interactions typically present a more pessimistic vision of conflict-avoidance than sociologically and historically oriented qualitative work. This has led us to the hypothesis that the positivist attempt to establish regularities may in some circumstances favor inflated threat perceptions, both by homogenizing actors and through explicit or implicit meteorological analogies, likening war to natural calamity.

To examine this question concretely, we looked at the specific case of expectations concerning a future military conflagration involving China. We tested the hypothesis that quantitative models based on large case comparisons tend to be more pessimistic and more deterministic in their evaluation of the rise of China, as expressed in the so-called 'Thucydides Trap' (Allison, 2015), the vocabulary of which has increasingly been adopted by US policy-makers as well as IR scholars. Our tentative conclusion is that differences in how the Chinese 'threat' is evaluated and the policy recommendations that ensue reflect not only paradigmatic choices but also more or less positivistic outlooks.

Our corpus included a sample of the most-cited articles in five leading journals referring to the thematic of China and possible conflict with its neighbors, the US, and other countries. The selection principle combined two criteria: journals' ranking according to the Thomson Reuters citation index, and their contrasting epistemological and methodological orientations. The *Journal of Conflict Resolution* and the *Journal of Peace Research* are both widely cited and share an outspoken positivist epistemology, while *Millennium* and *Security Dialogue* are well-established forums for critical, post-positivist scholarship. Finally, we included the *Chinese Journal of International Relations*, an epistemologically orthodox journal devoted to the thematic area of interest.

To analyze this corpus, we applied a standardized framework. First, we looked to the production of data: are data 'standardized' via quantification or other casing procedures? Do authors employ data to establish 'regularities' irrespective of temporal and spatial context, or are they sensitive to contextual factors? We assume that authors who standardize data through quantification also tend project past patterns into the future, issuing in a more 'fatalistic' appreciation of threats than approaches that emphasize changes and breaks in the history of IR. Second, we identify the methods used. Do scholars rely on statistical models to verify causal relations? What variables are adduced and how are they coded? Is there a preference for 'measurable' over less measurable factors? Third, we attempt to identify the underlying social ontology of the research programs under investigation. Do positivists, as we expect, privilege structural determinations over actors' agency? How do they qualify social relations: are they reduced to considerations of utility maximization, or do they integrate 'social' attitudes and affects? Do they postulate the existence of trends or even laws, including teleological conceptions of progress or decline?

The fourth element of the framework poses two final, decisive questions. First, does the author expect that war or commercial conflict between China and other powers is more or less likely? Second, what kind of policy recommendations, if any, does the author propose? Interrogation on these lines has permitted us to examine the links between methodological positivism, worldview, and framing of international conflict.

Our findings are the following. First, positivists using quantitative data and correlations share little consideration for frictions, messiness and possible incoherences inside aggregated wholes. Thus, states are often seen as powerful and strategic with harmful intentions. Second, positivists tend to believe that history repeats itself and is submitted to given regularities. Positivist scholars tend to exaggerate current threats that have some similarities with past ones. Thus, while power-transitions were dangerous in pre-nuclear times and in a context where war was considered as a legitimate means of politics, there are many arguments to consider that these transitions are much less of a concern under current conditions. Quite interestingly, nomothetical positivist approaches might struggle to identify threats that do not conform to past patterns, such as the Covid 19

pandemic. Third, social bonds are neglected and nomological positivists often overestimate the strategic aspects of social behavior. Many positivists disregard trust, confidence building, or sympathy in conflict prevention. Overall, it seems that for positivists there is no true sociability in international relations. Lastly, one may suppose that positivist alarmism is triggered by negative trends. More often than not positivists are attached to a linear conception of progress and do not readily accept the idea that trends are reversible. As we have seen for China, most positivist analyses simply disregard the view that Chinese growth is not in itself threatening and in any case might well slow down and even stagnate in years to come. These analyses also neglect that power depends on legitimacy and the ability to form alliances.

Do media and institutions actually use academic conflict data in their output?

Results related to the corpus analysis:

Media: While the scope and range of journalistic sources was purposefully large, spanning over 30 years, three countries and numerous journalistic outlets findings demonstrate a strikingly poor utilization of conflict-related databases in the media: the search engines could only spot 4968 articles mentioning ACD in total. Nonetheless, references to ACD have grown steadily over the years with larger peaks after 2001 and the start of the "War on Terror" by the United States and its allies. **Policy papers.** Most of the keywords' research analysis was unsuccessful: some documents were using quantitative data, but very scarcely, and not from the pre-established list of armed conflict databases. Nevertheless, more general elements on the use of quantitative data found in these documents have been integrated in the chapters on French practitioners and on early-warning systems.
NGOs. The annual reports, although flooded with quantitative data, did not cite their sources or else cited sources absent from our pre-established list – most of the time, these sources consisted in UN databases or internal data. An article based on these elements was published in the Journal of Humanitarian Affairs (2023).

Results related to the uses of data by practitioners:

Based on the corpus analysis, but mostly on the interviews, we can summarize the results achieved by WP 2 in five main findings. The three first relate to the similarities between the practitioners in the three countries. First, practitioners generally do not work with scientific literature using quantitative data (in political science or international relations). There is, therefore, only a narrow dissemination of these works in European institutions. There is a temptation to do so among younger generations, but it remains quite limited compared to other sources of conflict knowledge (embassy reports, press review, qualitative academic or think tank analysis). In line with this, our second finding shows that very few open-source databases are actively used. These are systematically the ones provided by SIPRI, ACLED or the IISS Military Balance. When it comes to SIPRI or ACLED, this seems logical as these are easily accessible online and regularly produce reports or update the database. The IISS Military Balance requires a subscription but foreign policy practitioners, especially within ministries of defense, unanimously agreed that this database was the one not to be missed, as it provides granular data on military capabilities. Our third finding relates to three functions of conflict data for practitioners: rhetoric, descriptive and diagnostic. Rhetoric use (i.e. using data to support a statement) is certainly the most prominent one, with the perception of a persuasive effect on decision-makers, public audience and donors. In the case of the media, for instance, data are often used in "fact-checking" articles or to support an argument. On the contrary, the diagnostic use (i.e. using data to analyze the situation and make conclusion) remains very limited because of little time, few skills, but also distrust of the reliability and objectivity of the data. Diagnosis is rather done on the humanitarian workers' side, with the evaluation and monitoring of population needs, but begins to be incorporated in foreign policy institutions with early-warning systems. It also appears in some press articles willing to explore war-related trends, such as the evolution of military spendings. Between the two, the descriptive use of data (i.e. using data to describe a situation) is mainly the work of journalists or foreign policy practitioners who try to grasp the dimensions and trends of a conflict.
When it comes to national variations, we have sufficient data for a comparison at the level of foreign policy practitioners. Our interviews have shown that the United Kingdom is the most innovative in this respect, with several early warning projects and associated, plus the fact that quantitative data is regularly used as additional information (for instance for a "first overview of the situation"). Nevertheless, the drive for more quantitative data is highly criticized by practitioners, although used to it. If they do not question their scientific character, they consider it politically biased in their uses. In Germany, there is definitively curiosity for quantitative data through early warning projects. Two have been implemented: PREVIEW and IT Crisis Early detection support. Nevertheless, in practice, practitioners also question the added value of such systems, with a criticism of the

quantitative approach and the underlying fear of being replaced by the machine. In France, there is almost systematic resistance to the use of conflict data, perceived as questionable in all aspects: its collection, its coding, its displaying, its political use... This is less true at a military operational level, but this was not part of this study. On this matter, the quantitative analysis based on the media corpus also revealed some national variations: references to ACD are almost three times as frequent in British media that in French and German media, reflecting different approaches and perceptions of the value and usefulness of numbers.

Finally, we have noted potential challenges in these uses, especially linked to early warning systems. First is the risk of worsening cognitive biases in the perception of conflicts, especially as data on conflicts are easily accessible. This is true for all type of information, but numbers specifically act as "anchor" and can continue to be used even if proven untrue. As Andreas and McGreen explain,
"when information supports a person's preconceived notions, he or she is less apt to question it, while when the opposite is true, he or she can be quite adept at summarily dismissing it (...). Furthermore, once people proffer or adopt numbers, they will have strong tendencies to try to confirm them, a psychological idiosyncrasy that can create motivated biases even in previously disinterested parties." (2010: 18)
Second is the instrumentalization of the data, especially if coming from an early warning system, to support political decisions that want to appear "objective" or press articles wishing to appear as neutral in their depiction of conflicts. Ultimately, this runs the risk of a depoliticization of the debate: the quantitative representation appears more scientific and therefore less questionable.
Last but not least is the "managerialization" of foreign policy decisions. Early warning systems, in the form of indexes, maps and graph, may give the impression to decisionmakers of an issue that can be easily manageable. This only aggravates the risk of de-contextualization quantitative analyses already suffer from and which have proven to be detrimental to foreign policy decisions.

Beyond the 'data pessimists' – 'data optimists' divide: The case of practitioners

Scholarship on the use of quantitative conflict data by practitioners is structured by a divide that applies to a greater or lesser degree across the different actor categories analysed by DATAWAR. This has already been observed for the area of international peacekeeping by Roger Mac Ginty, who notes that 'significant debate exists between what might be called digital optimists and digital pessimists' (Mac Ginty, 2017, p. 698), as well as for the area of conflict analysis by Larissa Fast, who emphasizes the existence of an opposition between the 'perspectives of the "data enthusiasts" and the concerns of the "data sceptics"' (Fast, 2017, p. 709).
In our preliminary practitioner workshops and informal encounters, conducted in April 2021 with practitioners from humanitarian organizations, we have been able to confirm the existence of this bipartite opposition– with a few nuances, however. First, the 'pessimist-optimist' can be found even within organizations, reflecting a struggle between competing professional cultures rather than top-down organisational decisions. Second, even among actors that clearly qualify as 'data optimists,' insofar as they highlight the potential of quantitative data to improve decision-making, early hopes in the forecasting capability of quantitative analysis seem to have been tempered. The 'optimists' with whom we spoke generally emphasize that quantitative data should be seen as a useful complement to existing, qualitative assessment procedures, not a satisfactory replacement for the latter. In particular, it appears that the expectations placed on predictive and early-warning approaches have been disappointed because it is simply too difficult to identify the causal mechanisms that would enable reliable data-based forecasting. Third, we were surprised that most organisations rely on quantitative data collected as part of their own activities and do not make use of academic conflict databases, which are perceived as insufficiently precise and up-to-date. From our early consultations as well as the media analysis conducted by WP2, it appears that ACLED is the only 'classical' database to be used across different practitioner groups. Furthermore, although some organizations endeavour to promote exchange between scholars and practitioners, such exchanges tend to be ineffective due to the divergent timelines and priorities of researchers and practitioners.
Ongoing consultations with practitioners indicate a growing interest as well as genuine concern over the challenges posed by forms of data-dependency in multiple professional sectors. Information dominance, a contemporary conceptual development made possible by increasing possibilities for real-time management of data flows, is at the heart of an ongoing transformation of military institutions. For their civilian counterparts, the risk of being instrumentalized in decision-makers' quest to resolve complex contingency needs underlines the threat as well as the promise of big data as a means of exercising operational power.

Perspectives and Policy recommendations

During the various project activities, the coherence between the three work packages has been reinforced. For instance, reference to historical analogies to make sense of contemporary data is a transversal concern for the perception — whether alarmist or irenic — of international conflict by scholars, soldiers, diplomats, NGO analysts, and journalists. Second, in order to decode varying attitudes among different communities of users we analysed and understand how database functionality is integrated within a broad range of outlooks, personal and professional orientations (styles of argumentation and justification, worldview…). Third, changes in the global system affect the demand for knowledge about war; renewed interest in high-intensity interstate warfare, for example, undoubtedly has significance for the production and use of data. The part the transformation of strategic relationships plays became an emerging then essential dimension of the DATAWAR project. This policy brief formulates two sets of recommendations dedicated to a decentering process for avoiding some excess of positivism: proposing good practices and identifying some principles for promoting a reflective pedagogy of conflict data.

Proposing good practices

Decentering interpretations of armed conflicts beyond positivism

Data driven positivist scholars tend to underestimate the potential to avoid conflicts which are perceived to be governed by immutable laws. Accordingly, social reality is not the product of human will but is due to abstract forces. Positivist inspired research generally deduces "threats" from existing "trends". In order to predict the future, positivists often assume that the recent past and the present offer a compelling path. What exists in the recent past is often seen as a kind of truth which tells us how the future will unfold. Interestingly, positivists have a marked tendency to underestimate threats that have not yet existed or that seem to be triggered by irrational behavior.

Cultivating good practices for practitioners

Based on the results of WP1, a first recommendation is to train policy makers not only to focus on past trends but also on "expecting" the unexpected (the so-called "strategic surprise"). Beyond this open-minded process, three other elements should be taken into account.

Defining Data as social constructs

Data is created according to (often but not always) specified definitions, norms and collection methods which influence their very shape. This construction is not visible when looking at the raw numbers and thus often overlooked. Therefore, contextualization is key before working with data (definitions used by the database, means of collection, data processing, …).

Developing Precautions, recognizing and avoiding cognitive biases

Mobilizing data requires some precautions. First, it is necessary to corroborate several sources to ensure that the data used does not suffer from excessive bias linked to its construction. Furthermore, there is a risk of overreliance on the data because of their 'objective aura'. They should not be used on their own: qualitative materials must corroborate or refute the quantitative elements. Ideally, both should work together and not one at the service of the other. Relying on quantitative data alone may reinforce cognitive biases such as confirmation bias, retrospective bias, or "magical thinking".

Improving reasonable dissemination of knowledge and data pedagogy

Data pluralism

To facilitate the autonomous building of awareness, a pedagogy of conflict data should be pluralist, that is, present a range of epistemological perspectives on conflict data (from "problem-solving" to "critical") without necessarily adopting one perspective from the outset.

Symbiosis of data and theory

To make sure audiences become aware that numbers and statistics are not just results of simple "counting" procedures of phenomena objectively existing in the social world, a pedagogy of conflict data should consistently highlight the symbiotic relationship between (often hidden) theoretical assumptions (such as, violence being a phenomenon that necessarily involved people being killed) and resulting datasets and their visual representations.

Data as source of deliberation and normativity

To avoid the perception that quantitative conflict data deliver objective, uncontroversial responses to existing scholarly debates or real-world organizational struggles, a pedagogy of conflict data should emphasise how different data sources can promote different perceptions of conflict and resulting normative agendas. While these can enhance the picture painted by qualitative sources (such as victim interviews or media reports) quantitative data provide an additional tool for deliberation and normative debate, rather than definitive answers.

Bottom-up experimentation and learning

One key insight of the DATAWAR project has been that conflict data are used much less strategically and systematically than some of the critical literature would suggest. Therefore, a pedagogy of conflict data should encourage learning audiences to engage in the kind of improvised, ad-hoc uses of conflict data observed in many humanitarian, military, and diplomatic institutions. The aim is to raise awareness of the importance of making theoretical assumptions explicit on the one hand, and on the other hand of the implications of choosing one data source over another because of reasons of relevance, accuracy, accessibility, pricing, or ergonomics.

Data emancipation

Students and practitioners lacking a specific training in data science may assume that they are not qualified to engage in substantial discussions on conflict data, including in their later professional career. We believe that this is a danger as it could result in conflict data being treated as a "black box", to be opened only by the "real specialists" such as mathematicians and statisticians. However, this would block the critical and emancipatory potential that is inherent in the appropriation of conflict data even by "untrained" social science graduates or junior practitioners. Therefore, a pedagogy of conflict data should show audiences that they do not need advanced skills in statistics, nor in the use of specialised software, to be able to use data to understand potential links between conflict phenomena – but also to see how arbitrary such representations can be, depending on the chosen definitions, data sources, and operationalisations. Ideally, this should result in a more informed but also more sceptical view on the integration of conflict data in day-to-day decision-making, and ultimately demonstrating the epistemological authority of social science graduated within organisations involved in conflict analysis and management. Ultimately, trainees should be empowered to identify and use data not as a tool to criticize existing power hierarchies in international politics.

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