Politics, uncertainty and interoperability challenges: the potential for sensemaking to improve multi-agency approaches

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Summary[5]

This briefing note sets out the results of initial scoping research into the potential for sensemaking for tackling challenges that arise when multi-agency teams are tasked with tackling the same problems – in this case, serious organised crime (SOC), illicit finance and corruption[6] – but with unclear and potentially competing (or even conflicting) mandates and incentives. Despite the interest expressed in early consultation with policymakers and practitioners for better understanding issues to do with politics, particularly when it comes to political will, there appears to be a fairly typical interoperability challenge. This needs to be overcome if we are to find better ways to bring together a wider range of evidence, data, actors, frames and so on to increase our knowledge, test our assumptions, construct new and better hypotheses, anticipate consequences and manage complexity, in order to more effectively target resources and efforts.

We look at the role that sensemaking can play in helping to better uncover the ways in which different agencies frame the problem to be addressed and the resources to which they have access, focusing in particular on framing effects where each agency tries to make sense of a problem in terms of its own assumptions, beliefs, desired consequences, expected risks and so on. We consider how different definitions of the problem and different approaches to sensemaking can lead to differences in consequences (intended or unintended) and potential for conflict between agencies, and suggest an approach to better understanding these issues in the next stage of the research for improved multi-agency analysis and decision-making.

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5   Future research aims to develop a Cooperative AI system to help better bring together multi-agency teams and to improve decision-making for SOC strategies and interventions in the future. For more information about the project, please contact c.baber@bham.ac.uk or h.a.marquette@bham.ac.uk.

6   From here on, 'SOC' is used as a shorthand to include organised crime, illicit finance and transnational corruption for ease of reading, though these are clearly not interchangeable in theory or in practice.

Background

Our starting point for this research is the evidence that lack of political will is a key factor undermining counter-SOC, anti-corruption and anti-money laundering strategy and operations (see Idris, 2022a).[7] Indeed, the UK's Serious and Organised Crime Strategy sets out the intention to 'drive up political will to address vulnerabilities in jurisdictions of risk, enhancing resilience and strengthening operational cooperation' (HMG, 2018, p. 80).

SOC ACE, and our fellow research programmes at Global Integrity ACE[8] and SOAS ACE,[9] have produced a number of evidence-based approaches to try to help policymakers and practitioners think and work in more strategic and politically-informed ways. These include, for example:

- P. Heywood & M. Pyman, *Strategy, Scale & Substance* (GI ACE)[10]

- M. Khan, A. Andreoni & P. Roy, *Anti-corruption in adverse contexts: strategies for improving implementation* (SOAS ACE)[11]

- M. Khan & P. Roy, *Making anti-corruption real: Using a 'Power Capabilities and Interests Approach' to stop wasting money and start making progress* (SOAS ACE)[12]

- H. Marquette, *Moving from 'political won't to political will' for more feasible interventions to tackle serious organised crime and corruption* (SOC ACE)[13]

- H. Marquette & C. Peiffer, *Corruption Functionality Framework* (GI ACE)[14]

- M. Pyman & P. Heywood, *The Sector Focus & Reformulation Approach (SFRA)* (GI ACE)[15]

- D. Ucko & T. Marks, *Organised crime as irregular warfare: strategic lessons for assessment and response* (SOC ACE)[16]

- J. Wedel, *The Mapping Method: A guide to charting corruption and influence processes* (GI ACE).[17]

Despite being well-grounded in extensive evidence, for these approaches to help transform and improve strategic thinking and decision-making the 'human systems' that they are intended to feed into need to be better optimised for taking on board potential insights for working together in a

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7   Idris, I (2022). *Political will and combatting serious organised crime*. SOC ACE Evidence Review Paper 1. Birmingham, UK: University of Birmingham.

8   https://ace.globalintegrity.org/.

9   https://ace.soas.ac.uk/.

10 Heywood, P & Pyman, M (2021). *Strategy, Scale & Substance*. Washington DC: Global Integrity ACE. https://ace.globalintegrity.org/wp-content/uploads/2021/01/GI-ACE-Research-Paper-Corruption-Strategy.pdf.

11 Khan, M, Andreoni, A & Roy, P (2019). *Anti-corruption in adverse contexts: strategies for improving implementation*. SOAS ACE Working Paper 013. London: SOAS ACE. https://ace.soas.ac.uk/publication/anti-corruption-in-adverse-contexts-strategies-for-improving-implementation/.

12 Khan, M & Roy, P (2022). *Making anti-corruption real: Using a 'Power Capabilities and Interest Approach' to stop wasting money and start making progress*. SOAS ACE Synthesis Report 001. London: SOAS ACE. https://ace.soas.ac.uk/publication/making-anti-corruption-real-using-a-power-capabilities-and-interest-approach-to-stop-wasting-money-and-start-making-progress/.

13 Marquette, H (2022). *Moving 'from political won't to political will' for more feasible interventions to tackle serious organised crime and corruption*. SOC ACE Briefing Note No. 1. Birmingham, UK: University of Birmingham. https://www.birmingham.ac.uk/documents/college-social-sciences/government-society/publications/moving-from-political-wont-to-political-will.pdf.

14 Marquette, H & Peiffer, C (2021). *Corruption Functionality Framework*. Washington, DC: Global Integrity ACE. https://ace.globalintegrity.org/wp-content/uploads/2021/01/GI-ACE-Research-Paper-Corruption-Framework.pdf.

15   Pyman, M & Heywood, P (2021). *The Sector Focus & Reformulation Approach (SFRA)*. Washington DC: Global Integrity ACE. https://ace.globalintegrity.org/wp-content/uploads/2021/01/GI-ACE-Research-Paper-SFRA.pdf.

16 Ucko, D & Marks, T (2022). *Organised crime as irregular warfare: Strategic lessons for assessment and response*. SOC ACE Research Paper No. 4. Birmingham, UK: University of Birmingham. https://www.birmingham.ac.uk/documents/college-social-sciences/government-society/publications/organised-crime-irregular-warfare-report.pdf. This paper sets out the case for adapting the authors' 'Strategic Estimate Framework' designed for counterinsurgency/irregular warfare to SOC; see also, Ucko, D & Marks, T (2020). *Crafting Strategy for Irregular Warfare: A Framework for Analysis and Action*. Washington DC: National Defense University Press.

17 Wedel, J (2021). *The Mapping Method: A guide to charting corruption and influence processes*. Washington DC: Global Integrity ACE. https://ace.globalintegrity.org/wp-content/uploads/2021/01/GI-ACE-Research-Paper-Mapping-Method.pdf.

different, more coherent way. As we increasingly see in research both on using artificial intelligence (AI) and machine learning for improved intelligence analysis, for example, intended aims are unlikely to be achieved if the same human systems we are concerned with here remain problematic.[18] More data and analysis, even 'better' data and analysis, fed into sub-optimal human systems cannot produce optimal results.

Our approach taken in this scoping research comes from two very different but perhaps surprisingly complementary fields: 1) approaches to 'thinking and working politically' that have emerged in the international development field in recent years,[19] and 2) the field of human-machine teaming in computer science.[20] Both fields are concerned with how to help people work better together, particularly when tackling complex – and sometimes so-called 'wicked' – problems where information is almost always incomplete and where current ways of working hinder better ways of thinking and working (see Box 1).[21]

By 'complementary', we don't mean these are fields that currently speak to each other, and readers of this briefing note should bear this in mind. Indeed, this is our first time collaborating as a team, and bringing our literatures together here has been extremely interesting but also challenging. We have tried our best to make this note digestible to a diverse set of readers – the sorts of multi-agency teams we have in mind, and we welcome thoughts on any aspect of this briefing note, of course, including its overall 'readability' across fields and agencies.

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18 Baber, C, Attfield, S, Conway, G, Rooney, C & Kodagoda, N (2016). 'Collaborative sensemaking during Intelligence Analysis exercises'. *International Journal of Human Computer Studies,* 86, 94-108; Kejriwal, M, Szekely, P & Knoblock, C (2018). 'Investigative knowledge discovery for combating illicit activities'. *IEEE Intelligent Systems,* 33(1), 53–63.

19 As Rocha Menocal explains:

Thinking and Working Politically (TWP) is an umbrella term that has evolved in recent years to describe the need for policy makers and practitioners to integrate an understanding of how politics affects their work, in ways that can undermine even technically sound, well-funded initiatives. Evidence over time has shown that promoting reform – whether in relation to trade, or the civil service, or health and education, or women's empowerment, or democracy and anti-corruption, or state- and peace-building, and so on – is not a simple technical exercise that is linear and relatively straightforward. Rather, change is profoundly political. It creates winners and losers and threatens vested interests -- and as such it is complex, often contested, and uncertain…[W]hile this particular terminology has come out of debates in the international development community over the past two decades, the need to understand how politics affects reform initiatives, policy implementation and strategy – and how to work more adaptively to take on board the implications of this understanding – has relevance and resonance well beyond the development field. The ability to think and work politically may not be a magic key that will seamlessly unblock obstacles to progressive change, but it does help to provide a compass to help navigate the political complexities we all face in our work.

See Rocha Menocal, A (2022). *Incorporating Serious Organised Crime (SOC) into elite bargains and political settlements analysis: Why it matters to understand prospects for more peaceful, open and inclusive politics.* SOC ACE Research Paper No. 15. Birmingham, UK: University of Birmingham, p. 12.

20 Human-Machine Teaming addresses the design of systems in which AI systems are not simply tools that perform analysis for people, but instead are active participants (or teammates) in analysis activity.

21 Indeed, this describes many other foreign and public policy problems, such as military interventions, conflict prevention, statebuilding, peacebuilding, disinformation, climate change, public health and so on, which suggests that the approach set out briefly in this note could potentially apply to a range of different fields as well.

Box 1: SOC as a 'wicked problem'

While we agree with Peters that some problems described as 'wicked' are merely complex,[22] we are confident that the problems identified here fit the typology set out in Alford & Head:[23]

Basic dimension	Causal categories	More detailed dimensions	Scale of wickedness
Problem itself (vertical dimension)	Inherent complexity	Contradictions/dilemmas etc Remedies causing problems	Contradictions/dilemmas present = more wicked Remedies causing problems = more wicked
	Clarity of problem	Hidden/disguised information Intangible phenomena	Problem unclear=more wicked
	Clarity of solution	Multiple variables Iterative discovery ('Ready,fire, aim!')	Solution unclear=more wicked
Stakeholders and institutions (horizontal dimension)	Knowledge	Institutional framing Knowledge fragmentation	Extensive reframing →↑level of attention = more wicked High knowledge-fragmentation = more wicked
	Interests	Interest differentiation/conflict	High interest differentiation/conflict = more wicked
	Power	Stakeholder power-resources	High stakeholder power resources = more wicked
		Enablers/constraints	More substantial enablers/ constraints = more wicked

Furthermore, we are also confident that SOC meets several, if not all, of the conditions Alford & Head describe as needing to be present in order for a problem to be more likely to be 'wicked':[24]

- *Structural complexity*: inherent intractability of the technical (that is, non-stakeholder-related) aspects of the problem.

- *Knowability*: not only is there little knowledge about the issue, but the nature of the problem or its solution is such that it is *unknowable* – that is: the relevant information is hidden, disguised or intangible; it comprises multiple complex variables; and/or its workings require taking action to discover causal links and probable outcomes.

- *Knowledge fragmentation*: the available knowledge is fragmented among multiple stakeholders, each holding some but not all of what is required to address the problem.

- *Knowledge-framing*: some of the knowledge receives either too much or too little attention because of the way it is framed, thereby distorting our understanding.

- *Interest-differentiation*: the various stakeholders have interests (or values) which are substantially in conflict with those of others.

- *Power-distribu*tion: there is a dysfunctional distribution of power among stakeholders, whereby very powerful actors can overwhelm less powerful ones, even if the latter constitute a majority consensus; or whereby sharply divided interests are matched by sharply divided power.

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22 Peters, BG (2017). What is so wicked about wicked problems? A conceptual analysis and a research program, *Policy and Society*, 36(3), 385-396.

23 Alford, J & Head, BW (2017). Wicked and less wicked problems: a typology and a contingency framework, *Policy and Society*, 36(3), p. 406.

24 Alford & Head (2017), p. 407.

Helping multi-agency teams to better manage politics and uncertainty in their analysis and decision-making

In early discussions with policymakers and practitioners as part of the scoping research, three connected challenges were identified as key areas where new research has the potential to make a significant contribution to improving SOC analysis, strategies and operations.

First, there was strong interest in developing a greater understanding of the political dynamics around SOC. While there is a fairly large body of academic and think tank research on the politics of SOC, as well as extensive work on this by investigative journalists around the world, early consultation suggests this is not generally seen to connect well with strategic or operational needs or with current ways of working, even imagining that policymakers and practitioners have the time to engage with much of this literature.

In addition, the multiplicity of often competing conceptual frameworks and the terminology used can be confusing and unhelpful. Paoli, for example, describes organised crime as a 'fuzzy and contested umbrella concept',[25] while Marquette and Peiffer explain that, 'Most corruption researchers and practitioners recognise that "corruption" isn't a very useful term to use in practice, because it simultaneously refers to a wide range of behaviours and actions in the abstract'.[26] As Marquette and Peiffer, again,

argue, '..trying to turn these umbrella terms into operational strategy means trying to overly simplify the incredibly complex, often without acknowledging that this is what we are trying to do'.[27]

This can be seen even just within the body of research that the UK government has funded in recent years to better understand issues such as violence, conflict, stabilisation, governance and development. As Rocha Menocal discusses,[28] the past decade has seen considerable investment in research that aims to help policymakers and practitioners better understand the critical role that political settlements[29] or elite bargains[30] play in managing conflicts and reducing violence. We have selected our own preferred definitions of political settlements *and* elite bargains here, but there are any number of other definitions and/or frameworks we could have chosen, each emphasising something different and/or speaking to different disciplines or policy communities. This is confusing enough, but for those policymakers and practitioners aware of this research and wanting to better understand how it relates to their work on SOC, very little of this research includes SOC actors and activities in a systematic way.

Second, and relatedly, this body of conceptual and empirical evidence (among others) has led to the development of policy-oriented political analysis frameworks and tools that aim to bridge the gap between theory and practice and to enable new ways of 'thinking and working politically'. However, while there have been efforts to bring political analysis tools (often called 'political economy analysis', or PEA) into SOC work, consultation and observation during this scoping research suggests that these do not

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25 Paoli, L (2013). 'Searching for the determinants of OC: Some preliminary reflections'. *Behemoth*, 6(1), 2.

26 Marquette, H. & Peiffer, C. (2021), p. 14.

27   Marquette, H & Peiffer, C (2022) 'Corruption and transnational organized crime'. In: Allum, F & Gilmour, S (eds.) *Routledge Handbook of Transnational Organized Crime* (2nd ed). London: Routledge, 469.

28 Rocha Menocal (2022).

29 For example, 'the informal and formal processes, agreements, and practices in a society that help consolidate politics, rather than violence, as a means for dealing with disagreements about interests, ideas and the distribution and use of power', Laws, E & Leftwich, A (2014). 'Political settlements'. DLP Concept Brief No. 01. Birmingham, UK: Developmental Leadership Program, p. 1.

30 For example, 'a discrete agreement, or series of agreements, that explicitly set out to re-negotiate the distribution of power and allocation of resources between elites'. Cheng, C, Goodhand, J & Meehan, P (2018) *Elite bargains and political deals project synthesis paper: Securing and sustaining elite bargains that reduce violent conflict.* London: HMG/Stabilisation Unit, p. 11.

yet appear to meet the demand from SOC policy or operational staff. While the demand for these sorts of analytical products definitely seems to be there, these also seem to be underutilised as potential sources of evidence to feed into wider SOC analysis (including intelligence), strategic planning and decision-making and operations, and it is unclear how they connect to other analytical and strategic products.

While it is not yet clear why this is, it has been suggested that this type of analysis is often not seen as being 'rigorous enough', that the language used often does not resonate widely or that final outputs are often too 'academic', too lengthy and not sufficiently grounded in operational reality, while also not presenting evidence or information in ways that various users find accessible or credible.[31] PEA, for example, is often conducted by consultants who tend to draw largely on a combination of secondary open-source information, academic and grey literature, as well as primary data, which is most often qualitative data in the form of semi-structured expert interviews. Depending on the product and the process, this analysis typically does not access or utilise more sensitive material, largely due to challenges to do with security clearance, but also because of lack of trust, disregard for some types of methods or data sources and the lack of a shared language to help pull the analysis together.[32]

Third, and finally, to further complicate matters, at analytical, strategic and operational levels, the multifaceted nature of SOC means that there is a great deal of multi-agency working. Unsurprisingly, we tend to find framing challenges between different agencies and teams involved in terms of: how they define the problem (such as one of security, politics, society, economics and so on); what they think of as the right starting point or solution (for example, military, law enforcement, conflict prevention, diplomacy, aid,

civil society, social policy, psychology and so on); where they see the ethical and moral parameters for strategy and action; what assumptions they bring in and typical mental models; what the primary purposes of analytical products are (such as to inform a short-term operational response versus developing a longer-term approach to tackle underlying causes and drivers of particular threats); and so on.

While a growing body of evidence suggests we need to develop the more problem-driven, politically feasible strategies and operations,[33] there are often differences of opinion in multi-agency teams on what this means and what is needed, particularly when it comes to external actors working outside their own countries. Some may translate this as a need to develop responses that reflect contextual realities on the ground and are politically feasible within that context, while others may believe it means that we need more political influence to convince or pressurise local counterparts to focus on our priorities. In practice, this can lead to situations where the activity of one agency might hinder that of another seeking to achieve its desired outcomes, intentionally or unintentionally. In the case of SOC, for example, this could mean that a local police operation to disrupt low-level drug dealing might disrupt a high-level operation to break a nationwide drug trafficking network, which might itself undermine a global counter-narcotics operation where the primary objective is to deny state or non-state actors access to illicit revenue for geopolitical and/or security reasons. It is important to note that no "hierarchy of purpose" is implied here; rather, we simply acknowledge that there *are* differences of purpose and priorities for different teams and that these may sometimes conflict.

Despite the interest in better understanding issues to do with politics, particularly when it comes to political will, there appears to be a fairly typical *interoperability* challenge at play here,

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31 We are not making any judgements ourselves here and are simply reporting what came through in early consultation discussions. Whether this is objectively true or not is not what we are interested in here but rather how perceptions might hinder more effective multi-agency working.

32 For discussion of some of the challenges of relying on external researchers and consultants to undertake sensitive analysis, see Fisher, J & Marquette, H (2014). *Donors doing political economy analysis: from process to product (and back again?)*. DLP Research Paper No. 28. Birmingham, UK: Developmental Leadership Program.

33 Marquette & Peiffer (2022), pp. 465-485.

which shouldn't be surprising. Overcoming this interoperability challenge is needed if we are to find better ways to bring together a wider range of evidence, data, actors, frames and so on to increase our knowledge, test our assumptions, construct new and better hypotheses, anticipate consequences and manage complexity, in order to more effectively target resources and efforts. In writing about military planning, General Sir Rupert Smith notes a similar dynamic at play. He writes:

> In considering the plan, it must be clear that the answers to the questions [he sets out for analysis to inform planning] lie with a wide range of agencies, of which the military are but one, and maybe only a minor one at that... The true institutional difficulty is bringing the agencies together to answer all the questions. Nevertheless this must be done if the use of force is to have a result that leads to the [desired] outcome rather than reinforcing the opponent.'[34]

Our research hopes to help overcome the institutional difficulty he notes here in order to support more effective multi-agency working that is needed to lead to the desired outcome of countering SOC, rather than potentially reinforcing it.

Interoperability, sensemaking and multi-agency operations

In our scoping research, the differences within multi-agency teams are considered in terms of the ways in which each agency frames the problem to be addressed and the resources to which they have access. We define these framing effects in terms of sensemaking (discussed below), arguing that each agency will make sense of a problem in terms of its own assumptions, beliefs, desired consequences, expected risks and so on.

When it comes to wicked problems, experience and expertise can fill in gaps left by missing information or can allow inferences to be drawn to explain ambiguous situations. Sensemaking is well-suited to such ambiguous problems, and expertise and experience allows gaps to be filled, inferences to be drawn and assumptions to be explored. Often such sensemaking is tacit and embedded in the cultural practices of a specific agency or analyst. While a 'common vocabulary' is important to aid sharing of information and discussion between agencies, there is a risk that the concept of a common vocabulary could be applied too literally; for example, through some glossary of terms that every agency is meant to use.

The problem with this is that the nuance of analysis performed within the traditions of one agency could be diluted or lost if it is forced simply to use the same words as other agencies, a process more likely to happen due to politics and power imbalances between agencies rather than through logical strategy. What would be far more useful, we believe, is the ability to highlight the ways in which beliefs and assumptions are expressed by different agencies and to reveal potential points of similarity and difference in reports, recommendations, strategy and so on.

For this scoping research, interoperability is defined as follows, '...the capability of organisations or discrete parts of the same organisation to exchange operational information and to use it to inform their decision making'.[35] While this emphasises 'operational information' it also implies a continuum that ranges from governance to standard operating procedures to technology to training to the use of equipment. In the emergency services, for example, problems

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34 Smith, R (2005, rev. 2019). *The utility of force: the art of war in the modern world*. London: Penguin Books, 385-386.

35 ACPO (2009) *Guidance of Emergency Procedures,* London: National Police Improvement Agency, p. 14. A similar definition comes from the Office of the US Director of National Intelligence: 'the ability to transfer and use information in a consistent, efficient way across multiple organizations and IT systems to accomplish operational missions. From a technical point of view, interoperability is developed through the consistent application of design principles and standards to address a specific mission problem.' See https://www.dni.gov/index.php/who-we-are/organizations/national-security-partnerships/ise/about-the-ise/ise-interoperability.

relating to interoperability are often addressed through technology, for example, in terms of ensuring that members of different organisations have access to the same equipment or can communicate on the same radio frequencies. However, an equally important factor is the use of a common vocabulary that can be used to describe events, convey intentions, and explain decisions.[36] This is where sensemaking comes in.

Sensemaking is believed to be important to any form of knowledge work – including PEA or intelligence analysis – and 'occurs when people face new problems or unfamiliar situations and their knowledge is insufficient for the task. Sensemaking finds critical patterns in a seemingly unstructured situation'.[37] As Baber et al. explain, 'Sensemaking happens when you experience a "gap", or contradiction, in your understanding of the context in which you are currently acting; it is a means by which uncertainty or discomfort can be dealt with through the recruitment of prior experiences or new information'.[38] For individuals and/or teams trying to make sense of illicit activities, such as SOC, especially in unfamiliar contexts where political and social relationships may include a large number of unknowns, this 'uncertainty and discomfort' around assessment and decision-making is likely to resonate.

There are well-known problems in human decision-making at both individual and group levels. Some of these problems arise from the choice of evidence (different decision-makers might favour different pieces of evidence), or the manner in which evidence is combined (decision-makers might seek to satisfice – or accept 'good enough' analysis – across many pieces of evidence in an intuitive manner), or the appreciation of outcomes of a decision (decision-makers might differ in whether they predict a particular outcome or whether they believe a particular consequence to be desirable). As the situation becomes ambiguous, it becomes more difficult to specify the problem in a way that is amenable to traditional decision-making approaches. Consequently, sensemaking is useful as a first pass in framing the situation.

The first of the problems noted above can be considered in terms of how the decision is framed. One common lens used to explore this is Klein's Data-Frame Model (DFM).[39] The concept is that people select 'data' (evidence that is available to them) and combine these into a 'frame' (an explanatory model) in terms of their prior knowledge, beliefs and expectations. As new data become available, so the frame can be elaborated or questioned. This offers a reasonable description of experts dealing with ambiguous and uncertain data. This process is seen as a visual in Baber et al.:[40]

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36 Cole, J (2010). Interoperability in a Crisis 2: Human Factors and Organisational Processes, London: Royal United Services Institute (RUSI) Occasional Paper, June 2010 (accessed: 23 March 2022) https://rusi.org/explore-our-research/publications/occasional-papers/interoperability-in-a-crisis-2-human-factors-and-organisational-processes.

37 Wu, A, Convertino, G, Ganoe, C, Carroll, JM & Zhang, XL (2013). 'Supporting collaborative sensemaking in emergency management through geo-visualization'. *International Journal of Human-Computer Studies*, 71, p. 6.

38 Baber, C & McMaster, R (2016). *Grasping the Moment: sensemaking in response to routine incidents and major emergencies.* Boca Raton, FL: CRC Press, p. 95.

39 Klein, G, Phillips, JK, Rall, EL & Peluso, DA (2007). 'A data–frame theory of sensemaking'. In: Hoffman, RR (ed.) *Expertise out of context: Proceedings of the Sixth International Conference on Naturalistic Decision Making*, London: Psychology Press, 118-160.

40 Baber et al. (2016), p. 95.

Figure 1. Data Frame Model of Sensemaking [Robert Hoffman, private communication]
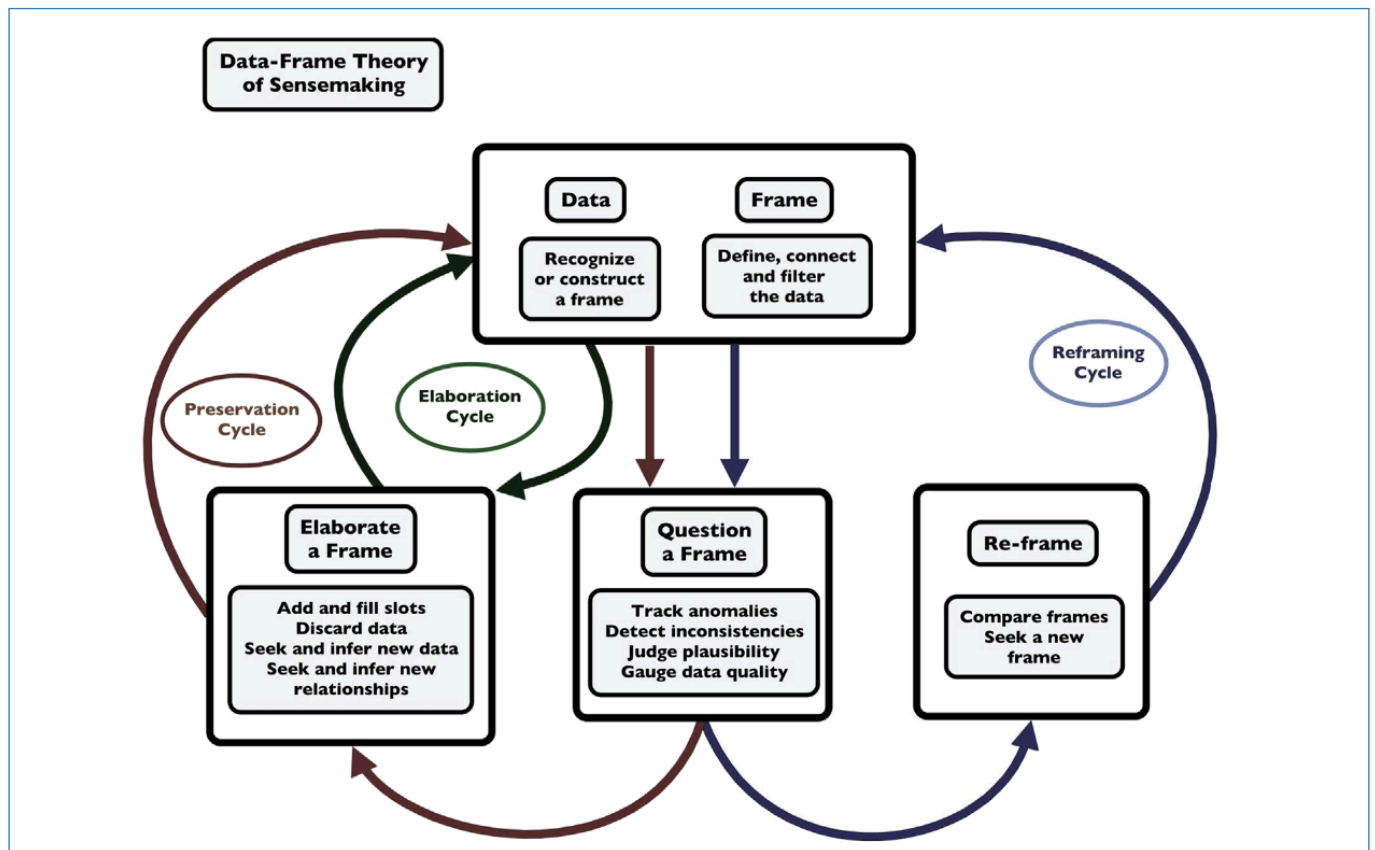
Rather than get tangled up in tautologies (such as that sensemaking means making sense), we prefer to define sensemaking in terms of abductive reasoning. Abductive reasoning involves reasoning from incomplete, ill-formed or ambiguous observations in order to produce a conclusion that is 'good enough' for the purposes of the analysis. [41] This has two implications for people engaged in sensemaking and people who might be affected by the assumptions and actions arising from this. The first is that the definition of 'good enough' will change depending on who is performing the analysis (and why they are doing it, how much time they have to do it, and so on). The second is that the definition of 'good enough' will change depending on the opportunity to collect new observations or question the current set of observations. The definition of 'good

enough' depends on the quality and availability of information and the prior experiences of the people who are doing the sensemaking. On the latter point, different agencies might bring different assumptions and expectations to sensemaking and this could lead to discrepancies in their interpretation of a situation.

If sensemaking, as abductive reasoning, works towards a 'good enough' solution to a problem, then it is important to understand the constraints and beliefs that influence the notion of 'good enough'. We assume that different agencies will prioritise outcomes that are relevant to their overall goals and will opt for activities that are supported by the resources available to them. This can mean that the same situation would evoke different responses from different agencies.

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41 Deductive reasoning means working from a theory or hypothesis to a set of observations to draw a conclusion, and inductive reasoning means working from a set of observations to define a conclusion which can lead to a theory. While deductive and inductive reasoning can be considered in terms of linear processes with a defined end point, abductive reasoning is necessarily cyclical; it does not have a clearly specified end point because there is unlikely to be a single, correct solution. The cyclical nature of abductive reasoning is compounded by ambiguous or incomplete information (where the sensemaker might need to fill in the gaps or draw inferences from known information to support reasoning) and complicated when different sensemakers (individuals or agencies) bring different assumptions and expectations to the reasoning.

Next steps for the research

We appreciate that the most pressing problems and challenges facing analysts involved in SOC, illicit finance and corruption relate to the quantity of unstructured data (or to the lack of access to relevant data). We also note that there are potential problems relating to the cooperation and collaboration between agencies where agencies might be working at cross-purposes due to differences in understanding (framing) of the situation. Our research concerns the ways in which it is possible to capture the constraints within which different agencies operate, particularly in terms of the ways in which such constraints might cause competition or conflict between agencies, and aims to better understand how the activities being performed could lead to outcomes, both desired and undesired.

Going forward, the aim is to use sensemaking as a lens to further explore conflict and competition in multi-agency decision-making and to consider ways in which these can be recognised, as well as hopefully contributing to improvements in structuring and sharing data and analysis.[42] The purpose of the approach is not to seek to eliminate such conflict and competition, because these are important to each agency. We agree with Dafoe et al. who argue in their work on cooperative AI:[43]

> …it is time to prioritize the development of cooperative intelligence that has the ability to promote mutually beneficial joint action, even when incentives are not fully aligned… Real-world relationships almost always involve a mixture of common and conflicting interests. This tension gives rise to the rich texture of human cooperation problems, including bargaining, trust and mistrust, deception and credible communication, commitment problems and assurances, politics and coalitions, and norms and institutions.

However, recognising how and why this occurs, and how it can affect the decision-making process, can be important to enable the sorts of discussions needed for more effective thinking and working politically for more effectively tackling SOC. This will involve use-cases of multi-agency operations to illustrate how the different agencies might apply different frames and the consequences that this can have for interoperability, in order to help develop improved approaches that hopefully lead to more politically feasible and effective SOC strategies and operations.

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42 It is worth noting that previous research does not sufficiently consider how approaches like the Data-Frame Model might apply to mixed teams, particularly when there might be marked differences in the prior knowledge, beliefs and expectations of individual group members as we find in real-life settings. Our research should make a useful further contribution to the field in this regard.

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