4

Interpretation Dynamics in CIL

An Entropic Approach

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> A throw of the dice never, even when truly cast in the eternal circumstance of a shipwreck's depth, will abolish chance.
>
> Stéphane Mallarmé, French poet, 1842–98

> The tossing of a dice – the symbol of chance, uncertainty and unpredictability.
>
> Jiří Kylián, Czech former dancer and choreographer, b. 1947

1 Uncertainty and Change: The Dynamic Character of CIL

The uncertain character of CIL has been discussed time and time again among academics and practitioners. To most of them, the uncertain character of CIL entails a twofold defect: first, uncertainty is perceived with respect to the identification of the rule, since we may not know whether there is a valid legal rule,[1] and second, uncertainty is perceived with respect to the content of the rule, since we may not know the precise meaning of the rule.[2]

Thus, uncertainty is viewed as the basic reason for the lack of coherence and consistency attributed to CIL rules. In turn, it is argued that uncertainty is a doctrinal issue discussed among scholars but not among judges. However, judges will inevitably deal with uncertainty, even indirectly, when they have to assess the meaning of the rule to apply in the case at

[1] See eg M Jovanovic, *The Nature of International Law* (Cambridge University Press 2019) 228–33; J Kammerhofer, *Uncertainty in International Law: A Kelsenian Perspective* (Routledge 2010) 3–4, 59.

[2] Such cognitive questions lie at the heart of the epistemological debate concerning CIL's uncertainty. See J Kammerhofer (n 1) 3–4. Yet there is not necessarily a strong connection between certainty and knowledge. AP Martinich and A Stroll, 'epistemology', *Encyclopedia Britannica* (26 August 2022) <www.britannica.com/topic/epistemology> accessed 10 January 2023.

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hand. Uncertainty will in this respect lead to unpredictability (and, consequently, even greater uncertainty) when different legal meanings taken from a range of probabilities are assigned to a CIL rule. But if uncertainty is taken to mean ambiguity – i.e. different interpretive approaches to an applicable rule – then, by induction, there can be no evolution of CIL, which leads to rigidity and denial of change. Yet, not only is such an inference irrational but it does not even correspond to existing judicial practice.[3] Therefore – and to hark back to H. L. A. Hart once again[4] – the quest for certainty is of vital importance in attempting to soften the shadows of uncertainty.

At the same time, uncertainty in terms of unpredictability, although seen as a 'necessary evil' by its discussants, ought to be avoided in order to strengthen state compliance with judicial rulings.[5] Understandably, therefore, both practitioners and scholars, albeit through different paths, have tried and are still struggling to manage uncertainty in international law in order to better apprehend the nature of CIL and how it functions.[6] To this end and inasmuch as uncertainty cannot be eliminated, it can be argued that 'reduced' uncertainty is preferable as the 'lesser of two evils'.[7]

Vital questions also arise regarding the way CIL develops. One such question is, how does interpretation of CIL rules functions in a complex environment with a multiplicity of actors generating 'polycentric disputes',[8] if indeed the interpretation process applies to CIL at all? And where international courts interpret CIL, what kind of change can be

[3] P Merkouris, 'Interpreting Customary International Law: You'll Never Walk Alone' in P Merkouris, J Kammerhofer and N Arajarvi (eds), *The Theory, Practice, and Interpretation of Customary International Law* (Cambridge University Press 2022) 4.

[4] HLA Hart, The Concept of the Law (1st edn, Cambridge University Press 1961) esp 12–13.

[5] A Guzman, 'A Compliance-Based Theory of International Law' (2002) 90 CLR 1823; A D'Amato, 'Legal Uncertainty' (2010) Faculty Working Papers 108 <http://scholarlycommons.law.northwestern.edu/facultyworkingpapers/108> accessed 10 January 2023.

[6] Jovanovich (n 1) 232 n.

[7] Use of probabilistic reasoning to frame and manage risk, and thus uncertainty, by predicting a number of possible outcomes and adopting preventive measures seems to offer a way out of the uncertainty gap. S Townley, 'The Rise of Risk in International Law' (2018) 18 CJIL 593; M Ambrus, R Reyfuse and W Werner (eds), *Risk and the Regulation of Uncertainty in International Law* (Oxford University Press 2017) 3–10. Yet such an approach is based upon a fragmented view of international law, as the various legal regimes function according to their own rules and procedures, hence the need for a 'different modelling for framing and regulating their inherent uncertainties'. See Jovanovich (n 1) 3.

[8] The concept of a polycentric policy dispute was introduced by LL Fuller, who described a situation of interacting points of influence among a large number of parties that generates a polycentric problem, which, he argued, is beyond the limits of adjudication. LL Fuller and KI Winston, 'The Forms and Limits of Adjudication' (1978) 92 Harv L Rev 353.

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expected with respect to the application of CIL? Is there a 'spontaneous' change like a Grotian moment,[9] or a slow-developing process that rarely leads to change in CIL rules? And is it likely to contribute to the progressive development of CIL or to its decline?

Providing answers to these questions is of crucial importance to understanding the proper function of CIL, given that uncertainty is a fact of life, and as such characteristic of the international legal system, too. Yet, what seems to be missing from the entire discourse on uncertainty is a focus on how CIL functions. Although a number of theories have been formulated, extensively discussed, and even strongly debated,[10] there are no persuasive answers that would explain when and how changes in CIL occur, the significance of CIL inertia in resisting these changes, and the effects these changes may produce with respect to a certain time and place. In other words, the dynamics of CIL, as the driving force behind its evolution, remain essentially unexplored.[11]

Providing answers to these questions requires in-depth understanding not only of the structure of CIL but also of the processes that occur in and out of CIL during its operation as a social system. In this respect, the discussion on uncertainty is closely connected to the complexity of the law. When lawyers refer to the complex nature of legal problems, they are pointing out not only the density of the legislation and its lack of simplicity but also the difficulty of understanding the meaning of the law. Thus, issues of indeterminacy, uncertainty and, often, unpredictability arise when multiple meanings become available through interpretation of the law.

The present chapter is divided into four parts. Section 2 focuses on the dynamic character of CIL and what dynamic complexity entails for the system of CIL. In Section 3 we discuss how complexity science may throw light on the functioning of CIL and explore CIL's construction as a social

[9] A Grotian moment occurs when a fundamental change within the international system, acting as an accelerating agent, enables CIL to form rapidly and with less state practice instead of the ordinary long-term process. See M Scharf, 'Hugo Grotius and the Concept of Grotian Moments in International Law' (2022) 54 CWR J Int Law 17. See also T Sparks and M Somos, 'Grotian Moments: An Introduction' (2021) 42 Grotiana 179.

[10] PH Verdier and E Voeten, 'Precedent, Compliance, and Change in Customary International Law: An Explanatory Theory' (2014) 108 AJIL 389.

[11] The word dynamics comes from the Greek *denames*, meaning force. Authors who have dealt with the dynamic character of CIL have mostly treated the subject through the lens of political science. See the insightful work of P Diehl and C Ku, *The Dynamics of International Law* (Cambridge University Press 2010) esp 1–27, in which, through the lens of international relations, the authors offer an explanation of how and why international law evolves with a view to closing the gap between international law and international relations.

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system. In Section 4 we demonstrate the force that sets the CIL system in motion and gives it its dynamic character: this section attempts to construct a physically based representation of the interpretation process in the CIL system. Since the present analysis regards interpretation of CIL as a process, we introduce the concept of entropy, a fundamental concept of nature, to explain the functioning of CIL as a complex social system. In Section 5, focussing on the interpretative authority of international criminal courts, we will uncover the various phases of the interpretation process followed by those courts in their case law. The analysis will, thus, adopt an entropic approach to interpretation in order to explain the progressive development of CIL.

2 The Theoretical Foundations of CIL's Dynamic Character: A Study in Physics

It has been rightly maintained that complex laws are the inevitable price of human society that is itself complex.[12] But what exactly is complexity in relation to CIL, and why is it something we only acknowledge 'when we see it'?[13]

To begin with, complexity concerns the dynamic expression of a whole – that is, a system comprising a hierarchy of multiple interacting components. As described in the natural sciences, complexity usually implies the existence of a hierarchical, multi-component system in which each component is networked and interacts with a multiplicity of other components at all hierarchical levels. Accordingly, complexity includes a process that distributes/re-distributes energy throughout the system; owing to the multiplicity of local and remote connections at all levels, this causes the system to evolve in an apparently simple but formally unpredictable manner.[14] In other words, the multiplicity of actors and the large number of issues generated between them are the main characteristics of a complex system. The prime example of such a 'polycentric situation' is a human society,: it involves a great number of interacting social forces

[12] E Kades, 'The Laws of Complexity and the Complexity of Laws: The Implications of Computational Complexity Theory for the Law' (1997) Faculty Publications 646 <https://scholarship.law.wm.edu/facpubs/646> accessed 25 January 2023.

[13] The expression 'I know . . . when I see it' was famously used by US Supreme Court judge Potter Stewart in 1964 when referring to hard-core pornography, which lay outside the Constitution's protection of obscenity. *Jacobellis v Ohio* (378 U.S. 184).

[14] To a layman, a complex problem might seem equivalent to a complicated problem; however, this is far from the truth since the two concepts are qualitatively different. See Section 3.

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that create various network structures, which in turn interact with their environment. Such a scheme is prone to change in order to adapt to new realities, especially when the existing law cannot address them.

The present analysis looks at CIL as the outcome of social processing within a constantly evolving international milieu, as originally perceived by G. Scelle.[15] It will show that this dynamic character of CIL is inherent to its social identity, since complexity serves as a frame of reference for CIL. Thus, CIL is not considered as a self-referential system, but a communicative, flexible and adaptive network analogous to physical systems.[16] In turn, interpretation, as the main function of the judiciary, will be treated as an internal property of the CIL system that initiates changes according to the particular circumstances of each individual case. In this context, interpretation plays a cardinal role in ensuring legal security.[17] Such an approach cannot of course confer on CIL the consistency and coherence it is alleged to lack, but it can explain how legal interpretation works in a complex social environment like that of CIL.

Such an approach to CIL may raise objections. Pre-emptively addressing these provides an opportunity to make a number of clarifications and further delimit the scope of the present analysis. To begin with, there is no doubt that the transfer of concepts and definitions from one discipline to another is subject to many risks. One example is the possible misinterpretation of the phenomenological basis and semantics of concepts deriving from different scientific areas. This would undermine a common effort to ask the right questions and seek the proper answers: the interpretative tools of different disciplines are by nature distinct and those of one may not fully apply, or be transposable, to the conceptual constructs of another. By way of illustration, a deterministic approach to the law does not fully correspond to how determinism functions in physics. Determinism in the natural sciences

[15] G Scelle, *Manuel de droit international public* (Domat-Montchrestien 1948) 9–10 and esp 577–78.

[16] On interpretation as a self-referential construction that 'invents [its] own origin and regulates [its] own functioning', see J d'Aspremont, 'Bypassing the Authority of International Law: The Virtue of Modern Self-Referentiality' (21 September 2017; forthcoming in G Hernandez and G Jokubauskaite (eds), *Constructing Authority in International Law*) <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3040975> accessed 1 February 2023. On the basic characteristics of complex adaptive systems, see B Parsons, 'Using Complexity Science Concepts When Designing System Interventions and Evaluations' (*InSites*, April 2010, revised March 2012) <https://insites.org/wp-content/uploads/559c709812d66-InS.10.CASConcpts.pdf> accessed 1 February 2023.

[17] According to Scelle, legal security is achieved through the judicial function. See Scelle (n 15) 662–64. See also Section 4, where it will be argued that these conclusions are mirrored in the process of CIL interpretation by international criminal tribunals.

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implies exact knowledge, a mathematical description of natural processes. Complicated, multiparametric physical systems involving interdependent physical processes subject to different random effects may evolve in totally unpredictable ways depending on the initial conditions.[18] Prime examples of such chaotic systems are the weather, the geomagnetic field and celestial dynamics. By contrast, the law associates determinism with strict predictability through causation; in other words, an event is causally determined if, and only if, a set of prior events has taken place. Accordingly, the law 'argues' that future events can be predicted with reference to prior events. The assessment of CIL is a mirror image of this construction.

If, on the other hand, we oversimplify the way things work, we tend to underestimate the complexity of both nature and society and risk producing unwarranted assumptions that do not correspond to reality – an outcome that often occurs to the detriment of both disciplines.[19] Trying to find all the answers to the questions presented is a most ambitious undertaking that cannot be realized within the restricted limits of the present chapter. Instead, our analysis will merely try to define a basis for elaborating a functional model to explain how judicial interpretation of CIL works as the main force for the motion and, accordingly, the development of CIL. The ensuing analysis will further explore the mechanics of CIL by placing a special focus on international criminal justice.

The findings of international criminal courts and tribunals are of interest mainly due to the strong ties that international criminal law maintains with CIL. As one of the sources of international criminal law, CIL has been applied not only to fill gaps in the characterization of 'criminal conduct' as a war crime or a crime against humanity, but also to introduce new crimes for future mass atrocities that allegedly contravene the principle of legality. In this regard, much attention has been given to the case law of the ICTY – in contrast to the ICC, whose statutory foundations in the Rome Statute has had the effect of reducing the role of CIL, since the latter constitutes a secondary source of law for the ICC.[20]

[18] This deterministic view of nature is chaotic (deterministic chaos). Chaos, as perceived in natural sciences, is not to be confused with disorder and decay. On the contrary, it describes dynamic systems that evolve over time depending on their initial conditions and the precision with which these conditions can be measured. Thus, determinism is related to a probabilistic view of things but not to strict predictability. See M Cattani and others, 'Deterministic Chaos Theory: Some Basic Concepts' (2017) 39(1) RBEF e1309-1.

[19] RP Crease, 'Comment: The Quantum Moment' (2013) 26(3) Physics World 25.

[20] Y Tan, *The Rome Statute as Evidence of Customary International Law* (Brill 2021) 1–27; WA Schabas, *The International Criminal Court: A Commentary on the Rome Statute* (2nd edn, Oxford University Press 2016) 519–23; L van den Herik, 'The Decline of Customary

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This is not to say that CIL has lost its importance; instead, it functions as both a source of international criminal law (ICL) and an interpretative instrument for the purpose of clarifying or filling gaps in the text of the Rome Statute, which 'is not in all aspects an authoritative account of the current state of the law'.[21] For there is persistent debate over possible breaches of the legality principle,[22] which creates even more uncertainty than that which interpretation of the relevant CIL rules seeks to remove.

3 CIL as a Complex Social System: The Shared Understanding of CIL

As the outcome of 'social constraint',[23] CIL is distinguished by its diversity and adaptability to a constantly changing societal environment, thus reflecting the maxim *ubi societas, ibi jus*. It is this dynamic character of CIL that makes it a complex system and, in particular, a complex social system.

The idea of explaining societal functions and interconnections in terms of complexity has its roots in systems theory as proposed by Talcott Parsons in the 1950s and much later by Niklas Luhmann at the beginning of the 1990s. Concurrently, system dynamics was introduced by Jay Forrester in the mid1950s as an aspect of systems theory, though in a different setting. Whereas Luhmann held that social systems, including the law, are closed ones tending to (re)produce themselves, Forrester, an engineer, introduced a methodology and a mathematical model for understanding and solving complex problems, initially in the corporate domain but later also in non-corporate areas where the focus was on the world's socioeconomic system.[24] Notwithstanding the influence of Luhmann's theory on the law, the author of the present study argues that CIL is an open system whose interacting elements also interact with its environment.[25]

International Law as a Source of International Criminal Law' in C Bradley (ed), *Custom's Future: International Law in a Changing World* (Cambridge University Press 2016) 230–52.

[21] C Stahn, *A Critical Introduction to International Criminal Law* (Cambridge University Press 2019) 95.

[22] A Bufalini, 'The Principle of Legality and the Role of CIL in the Interpretation of the ICC Statute' (2015) 14 LPICT 233.

[23] The term, from the French *contrainte sociale*, belongs to Scelle, who argued that sociability (*sociabilité*) describes the true nature of contemporary international society. Scelle (n 15) 577–78.

[24] JW Forrester, *World Dynamics* (2nd edn, Wright-Allen 1973).

[25] C Mesjasz, 'Complexity of Social Systems' (2010) 117 Acta Phys Pol A 706, 707–08; S Wheatley, *The Idea of International Human Rights Law* (Oxford University Press 2019) 45–48; A Siegenfeld and Y Bar-Yam, 'An Introduction to Complex Systems Science and

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In short, complexity theory as developed to explain social behaviour rests upon the findings of sociology, which viewed societal institutions as autopoietic, dynamic and chaotic. However, the concept of complexity originated in the physical sciences is not defined, as sociologists or lawyers would expect, according to their normative background. As a result, the concept of *complexity* is often confused with the concept of *complicatedness*. A complicated system is one made of an intricate arrangement of many individual components and can be understood by explaining the function of each of its constituent parts. On the other hand, complexity concerns the dynamic, evolutionary behaviour of a system and is manifested by dynamically emergent properties that arise from interactions between its constituent parts; complex systems can be understood only by interpreting the multiple interactions between their multiple components.[26] Besides, the exchange of energy within and through a system's boundaries is of critical importance in comprehending the functioning of open complex systems. Accordingly, 'complexity' refers to the capacity of a 'living', dynamic system to change, adapt and evolve and should not be confused with complicatedness, which refers to a collection of discrete elements that can be de-assembled and re-assembled. Thus, a complicated problem is usually difficult to solve, although it may be simple in its structure, whereas a complex problem may be understood by studying how the whole system operates.[27]

Therefore, to consider CIL a complex system is to acknowledge that human society is part of nature and functions in compliance with its fundamental laws. As pointed out in Section 2, the construction of an adequate model of CIL is essential to understanding how complexity works in this area of international law. To be functional, such a model must be

Its Applications' [2020] Complexity <https://onlinelibrary.wiley.com/doi/epdf/10.1155/2020/6105872> accessed 1 March 2023.

[26] Although complex systems may be complicated, this is not their inherent characteristic. A car and an aircraft are examples of complicated systems, since they can be dismantled and their parts put back together again. As far as legal systems are concerned, the large number of laws and the ambiguity of their content does not necessarily mean that there are many interactions between the system's components. See D Bourcier and P Mazzega, 'Toward Measures of Complexity in Legal Systems', *ICAIL '07: Proceedings of the11th International Conference on Artificial Intelligence and Law* (June 2007) <https://dl.acm.org/doi/10.1145/1276318.1276359> accessed 27 May 2024.

[27] For a digest of the distinctions between the two concepts, see JM Kamensky, 'Managing the Complicated vs. the Complex' (IBM Center for the Business of Government, Fall/Winter 2011) <www.businessofgovernment.org/sites/default/files/JohnKamensky.pdf> accessed 1 March 2023.

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representative of the society it simulates or, in mathematical terms, be isomorphic to the physical setting of CIL. To clarify, isomorphic models are not identical to the entities they represent; instead, they are structured in such a way as to preserve the arrangements and binary relationships between the elements of those entities. Let us give an illustration from elementary algebra: adding together two numbers and then multiplying the sum by a third number gives the same result as multiplying each natural number by the same third number and then adding together the products (distributive property); so these sets of numbers are isomorphic, since one set can be mapped onto the other set of numbers.[28] In the present analysis, isomorphism can aptly represent the two-way relationships developed between the elements of the 'complex CIL system'. Accordingly, and for the purposes of this study, the CIL model will comprise a network of multiple, connected (interacting) states, each engaged in two-way, one-to-one interaction with international criminal tribunals.[29]

At this point, it is necessary to clarify that the current CIL social order is shaped by various actors, both state and non-state, operating at the international or transnational level. International and regional organizations, general or specialized, play a significant role in building the 'practice' endorsed by states; armed groups originating from various environments contribute to building 'practice', often through their involvement in conducting military operations; judicial institutions even forge state practice through compliance mechanisms.[30]

[28] WL Hosch, 'isomorphism', *Encyclopedia Britannica* (15 July 2009) <www.britannica.com/science/isomorphism-mathematics> accessed 1 March 2023.

[29] Modelling a complex social system, like CIL, will inevitably entail a simplified representation of reality, since, especially at this early stage of research, it is not possible to depict all possible interactions, direct and indirect, between the agents of the system (see Figure 1). See C Castellano, S Fortunato and V Loretto, 'Statistical Physics on Social Dynamics' (2009) 81 RMP 591; M Boon and T Knuuttila, 'Models as Epistemic Tools in Engineering Sciences' in AWM Meijers (ed), *Philosophy of Technology and Engineering Sciences* (Elsevier 2009) 695–703.

[30] It is important to note that these developments are also recognized by the ILC in 'Draft Conclusions on Identification of Customary International Law, with Commentaries' (30 April–1 June and 2 July–10 August 2018) UN Doc A/73/10. Yet the ILC emphatically states that, as a constituent element of customary international law, general practice refers primarily to the practice of states and only secondarily to the practice of international organizations. As far as other non-state actors are concerned, their practice can play only an indirect role 'to the extent that *States have endorsed or reacted* [to these practices]' (Conclusion 4, emphasis added). For text accompanying n. 35 for a characteristic example of states' reactions. On the behaviour of non-state actors regarding CIL and how they affect transnational behaviour, see also RB Baker, 'Customary International Law: A Reconceptualization' (2016) 41 BJIL 458.

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An illustration of the diversity of actors who join other actors in the field of CIL can be found in the recent *Ongwen* case before the ICC.[31] The ICC stressed that human communities shape their own concept of property according to their customary rules and principles. For the ICC, the content of such 'communal property' must be taken into account when considering the material element (*actus reus*) of ownership in relation to the war crime of pillaging within the context of a non-international armed conflict.[32]

Such a kaleidoscope of actors renders the system of CIL even more complex, adding components and interactions that call for further study in respect of their input and output. The diversity of actors may also lead to the emergence of multiple clusters;[33] new relationships will arise between the agents of the system, and the feedback the agents receive from one another but also from their environment will probably lead to new processes and patterns of behaviour. This two-way feedback will reflect shared or opposing views of the law.[34] Such movement entails exchange of energy between the various components of the system and may influence its evolution. Yet, one thing is certain: a complex CIL system is dynamic, since it can change in response to changing circumstances over time.

The United Kingdom's position on air strikes in Syria in 2013 and 2018 is illustrative of the interactions between the diverse actors within the complex CIL system and between CIL and its environment, since it reveals how CIL is assessed and functions. In deciding to join with the United States and France in their efforts to reduce Syria's chemical weapons capability, the UK

[31] *Prosecutor v Dominic Ongwen*, ICC-02/04-01/15 (4 February 2021).

[32] ibid [2766]. Customary practices regarding land ownership adopted by indigenous peoples have been taken into account not only by the ICC but also by human rights judicial bodies. As a result, possession of land by indigenous communities should suffice for official recognition of ownership even if a title of ownership is missing. *Mayagna (Sumo) Awas Tingni Community v Nicaragua* (Merits, Reparations and Costs) IACHR Series C No 79 (2001) [151].

[33] A cluster is defined as a group of states that, on occasion, operate coherently towards a specific objective.

[34] The concept of shared understanding of the law draws upon the theory of interactional law as conceived and developed by J Brunnée and S Toope, 'International Law and the Practice of Legality: Stability and Change' (2018) 49 VUWLR, 429, 433–37. The present author similarly considers that 'the law is grounded in a society's shared understanding' and further argues in favour of a dynamic CIL system, capable of change and subsequent evolution, while acknowledging the need to safeguard its predictable character. See also van Aaken's view on the role of states and international courts in the interpretation process from the perspective of veto player theory. A van Aaken 'Interests, Strategies and Veto Players: The Political Economy of Interpreting Customary International Law' (2022) ESIL Reflections 11(2) <https://esil-sedi.eu/wp-content/uploads/2022/09/ESIL-Reflection-Anne-van-Aaken_final-version.pdf> accessed 2 April 2022.

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Department of Defence argued in favour of a right to humanitarian intervention as the legal basis for its actions.[35] It is significant to note that in 2013 the UK did not take part in the air strikes since the British parliament rejected the government's motion for intervention. In both 2013 and 2018, however, the UK tried to establish a general doctrine of intervention applicable in situations of humanitarian necessity and to give the doctrine the force of customary law.

What is significant here is the reaction of several states to the UK's position on the right of humanitarian intervention. Those actors and the various interactions between them and the UK form a cluster (often ephemeral) within the CIL system. Systems do not function in a vacuum, but operate within a specific environment which affects them through the exchange and redistribution of energy. In a complex legal system, like that of CIL, the flow of information regarding the meaning of the law is defined to be the energy source of the system (see Section 4).

The UK's complex system lies within the environment of the United Nations; that environment affects the UK through the UN Security Council's decision on air strikes against Syria.[36] Although the air strikes were not qualified as an act of aggression, it seems that there was no agreement with the UK as to the customary law status of humanitarian intervention, since no state referred directly to a right of humanitarian intervention in accord with the UK's reasoning.[37] It is interesting to note that the states which rejected the proposal by the Russian Federation to condemn the air strikes – eight out of fifteen – did not openly disagree with the UK on the need to alleviate humanitarian suffering nor on the need to

[35] UK Government, 'Chemical Weapon Use by Syrian Regime: UK Government Legal Position' (Policy paper, 29 August 2013) <www.gov.uk/government/publications/chemical-weapon-use-by-syrian-regime-uk-government-legal-position/chemical-weapon-use-by-syrian-regime-uk-government-legal-position-html-version> accessed 7 March 2023. Yet, like its allies, the UK relied on the customary law status of the prohibition on the use of chemical weapons that most states accepted. For present purposes, we do not consider whether the UK's position was valid according to the interpretation of CIL current at the time.

[36] A system's environment encompasses factors beyond its natural boundaries that affect it through the exchange of energy/information. See K Bailey, *Social Entropy* (State University of New York Press 1990) 51.

[37] None of the four states that abstained referred to this issue. UNSC 8233rd meeting (14 April 2018) UN Doc S/PV.8233 (Provisional) <https://documents-dds-ny.un.org/doc/UNDOC/PRO/N18/108/91/PDF/N1810891.pdf?OpenElement> accessed 30 April 2022. See M Milanovic, 'The Syria Strikes: Still Clearly Illegal' (*EJIL:Talk!*, 15 April 2018) <www.ejiltalk.org/the-syria-strikes-still-clearly-illegal/> accessed 30 April 2020; C Henderson, 'The UK Government's Legal Opinion on Forcible Measures in Response to the Use of Chemical Weapons by the Syrian Government' (2015) 64 ICLQ 179.

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ensure compliance with the prohibition on the manufacture and use of chemical weapons. The absence of such feedback could signify that a shared understanding on the content of humanitarian intervention by the states was wanting.

The principal characteristic of the complex environment of CIL is the diversity of the components' internal activity, explained by the fact that they possess a considerable degree of freedom:[38] it is the discretionary power of the judiciary that confers such diversity on the agents of the system. Under the influence of Hersch Lauterpacht, the International Criminal Court underlined that the 'constant presence of judicial discretion in matters of customary international law [entails] the "constant necessity of making a choice . . . between conflicting and equally legitimate principles of interpretation"'.[39] In the context of an international organization (the UN in the UK example), the multiple interactions between states and other actors even accelerate the process of international standard-setting. In this respect, the UK example mirrors the model of an open system that can adapt to changing circumstances thanks to the degrees of freedom that its agents possess. In turn, when making choices, international courts cannot ignore the statements made by state leaders – nor their silence – within an international organization; thus, the courts can adapt to the developing needs of the international community.[40]

Accordingly, there may be a two-level complexity in the structure of a CIL system, with a number of complex CIL sub-systems operating within the main system (see Figures 1 and 2).

The result is a network, in which a broad array of interactions link the system's various actors, the nodes of the system.[41] Therefore, understanding the binary relationships between states and international courts as a one-to-one correspondence constitutes the first crucial step in explaining the function of CIL as a complex system, and in turn its dynamic character.

[38] PH Schuck, 'Legal Complexity: Some Causes, Consequences and Cures' (1992) 42 DLJ 9.

[39] *Prosecutor v Uhuru Muigai Kenyatta*, ICC-01/09-02/11 (18 October 2013) [102]–[103], citing Hersch Lauterpacht, *The Development of International Law by the International Court* (Cambridge University Press 1996) 395–96.

[40] *Prosecutor v Uhuru Muigai Kenyatta*, ICC-01/09-02/11 (18 October 2013), separate further opinion of Judge Eboe-Osuji [12].

[41] These may be 'short path lengths' and/or 'high clustering coefficients' (i.e. the links between two or three neighbouring nodes). F Schweitzer, 'Sociophysics' (2018) 71 Physics Today 2, 40. With regard to a CIL complex system, see also Figure 2 (public domain map available at <www.freeworldmaps.net> accessed 20 March 2022)

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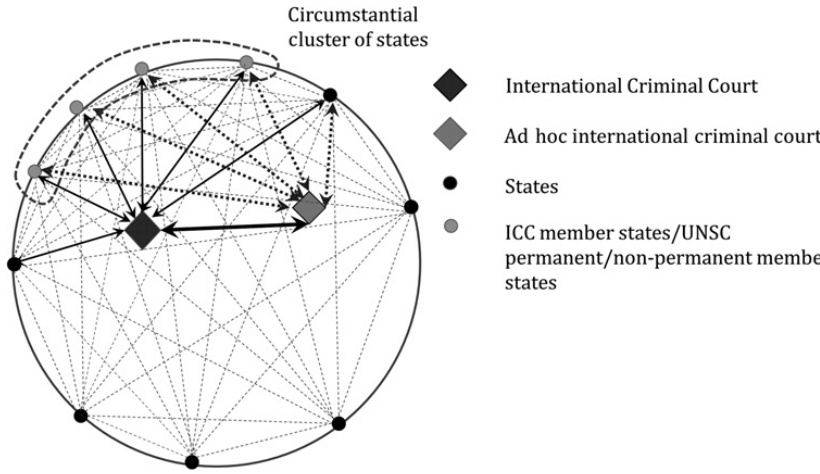


Figure 1 A one-to-one, binary relationship

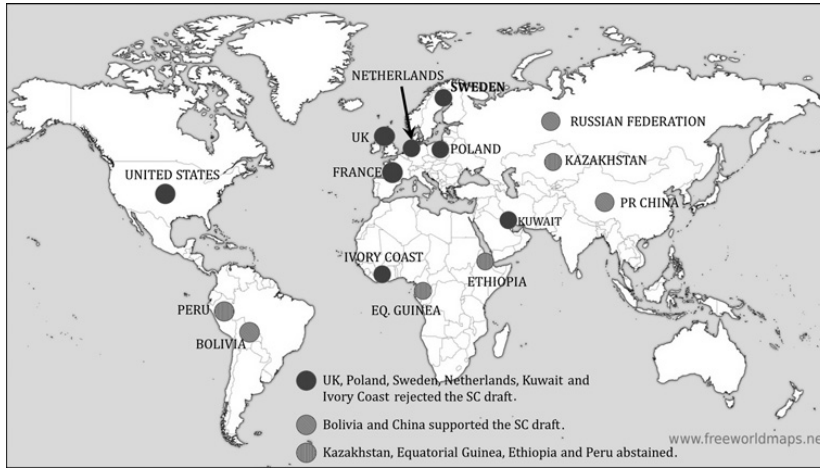


Figure 2 Security Council draft resolution proposed by the Russian Federation

4 The Mechanics of CIL: A Manifestation of Entropy

Having designed our CIL complex system with its basic units and interacting constituent parts (states, international courts, international organizations and other non-state actors as agents), we shall now proceed to explore the forces that cause it to react and stimulate its evolution. We will refer to these

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dynamic processes as the 'mechanics' of CIL and its 'laws of motion'.[42] It is the relationship between the force that excites a system and the motion it causes that defines the dynamic response of the system, causing it to change, if necessary adapt and subsequently evolve.[43] This is true of the CIL system, which is prone to change, to adapt whenever required and, therefore, to evolve. In this respect, the CIL is not a deterministic system. This fundamental characteristic of CIL constitutes both its strength and its weakness, since unpredictability is the offspring of change, whereas predictability – or, better, foreseeability – is an essential requirement of our legal universe.[44]

In order to account for these conflicting characteristics, we will have recourse to the concept of entropy as applied by information theory. Rooted in the field of thermodynamics and statistical mechanics, information entropy is the measure of the number of possible ways in which information is distributed in a system. A neologism derived from Greek, the term and concept of entropy was introduced by Rudolf Clausius in the mid nineteenth century[45] to describe a thermodynamic property of all physical systems. To the German physicist, entropy was related to transformation and change, since thermodynamics deals with the exchange of energy between different physical systems and the work done during this process.[46]

The melting of an ice cube is the classic illustration of what entropy is, given that heat is a form of energy corresponding to a definite amount of mechanical work: when heated, ice turns into water, leading to higher internal energy (entropy) as the molecules have more freedom to move around in the liquid than in the ice cube's solid state. For the liquid to revert back to a solid state, thermal energy must be removed and the new ice cube will not be the same as the old one. Thus changes are irreversible.

[42] D Goodstein, 'mechanics', *Encyclopedia Britannica* (21 August 2020) <www.britannica.com/science/mechanics> accessed 2 April 2022.

[43] The German mathematician and philosopher Leibniz (1646–1716) conceived the word dynamics from the Greek word δύναμις (*denames*), meaning 'force', 'strength' or 'power', which in turn comes from the Greek word δύναμαι (*denamai*), meaning 'I can' or 'I am able'.

[44] On the 'paradox of custom as a source both dynamic and stabilizing', see O Corten and others, *A Critical Introduction to International Law* (Éditions de l'Université de Bruxelles 2019) 311–14; P Staubach, *The Rule of Written International Law* (Routledge 2018) 56–63.

[45] The German physicist and mathematician Clausius (1822–88) synthesized 'entropy' (*entrepein* in Greek) from the terms 'energy' and 'trope' (i.e. direction of motion); it literally means to turn about, to change.

[46] Thus, entropy was defined as the thermodynamic state of a physical system according to the distribution of its internal thermal energy. See GWF Drake, 'thermodynamics', *Encyclopedia Britannica* (15 May 2023) <www.britannica.com/science/thermodynamics> accessed 10 April 2022.

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In turn, this led to the 'second law of thermodynamics', which is one of the most fundamental axioms of nature and essentially states that entropy cannot decrease. Later, Ludwig Boltzmann linked entropy with probability in relation to the thermal motion of particles in systems with large numbers of agents (like gases composed of large numbers of molecules), thus introducing the discipline of statistical mechanics.[47] In other words, the second law of thermodynamics is explained as the system's tendency towards more probable states. Consequently, entropy tends to maximize when the internal thermal energy is evenly distributed among the agents of a system – that is, when all probabilities (expectations) tend to be the same and no energy can be extracted from the system.

Information entropy offers an analogous definition: here, entropy is the measure of the amount of uncertainty represented by the probability distribution of unavailable information in a system.[48] The entropic state of a physical or informational system cannot be reversed unless an outside force removes internal energy from the system, but that will always be at the expense of increasing entropy elsewhere and in the Universe at large. Consequently, entropy is the sum of the probabilities of all possible microstates (configurations) of a physical or informational system.[49]

As already explained, entropy defines the thermodynamic state of a physical system, which may be reversible or irreversible depending on the ability of the system to exchange energy with its environment (i.e. with other systems).[50] In closed/isolated systems that cannot exchange energy

[47] It was thus clear that the second thermodynamics law was essentially statistical; thus, entropy can be measured to give us the total number of possible states of particles distributed within a given system. See J Sethna, 'What Is Statistical Mechanics?' in *Statistical Mechanics: Entropy, Order Parameters and Complexity* (2nd edn, Oxford University Press 2021) 6.

[48] ET Jaynes, 'Information Theory and Statistical Mechanics' (1957) 106 Phys Rev 620, 622. As successfully argued, 'the purpose of probability theory is to help us in forming plausible conclusions in cases where there is not enough information available to lead to certain conclusions; thus detailed verification is not expected.' (ibid 622).

[49] It is crucial to note that entropy is *always* a property of the whole (i.e. a system) but *not* of the microstates that form the system. As a probabilistic concept, entropy 'does not focus on individuals or small sub-sets, [but] presupposes a macroscopic view of the [physical] phenomena'. D Koutsoyiannis and GF Sargentis, 'Entropy and Wealth' (2021) 23 Entropy 1356.

[50] In a social context, entropy has been applied to indicate disorder, social disintegration and possibly the decay of society, largely due to its ability to increase. As a natural property, however, entropy is an objective concept and not a subjective one with negative implications for the future of humanity. E Michaelides, 'Entropy, Order and Disorder' (2008) 2 Open Thermodyn J 7. In this respect, entropy constitutes the driving force of evolution, since in a state of uncertainty there is a plurality of options, which in turn

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with their environment, entropy is irreversible; although it cannot decrease, entropy can remain constant, in which case the system is said to rest in thermodynamic equilibrium.[51] In short, isolated systems are incapable of changing and, thus, evolving. If a system is not isolated and can exchange energy with its environment, then it cannot remain in equilibrium and must evolve. Human societal constructs are by nature open systems, as they are embedded in, and continuously interact with, other human societal constructs: their internal energy is subject to continuous redistribution, putting them in a state of perpetual non-equilibrium resulting in continuous change and evolution.

The definition of entropy in statistical mechanics is, to all intents and purposes, identical to that introduced by Claude Shannon in information theory/communication science in 1948.[52] It applies to social systems, and most certainly to legal network systems such as CIL. There, the exchange of information assumes the role of the exchange of energy in inducing excitation and response of the system. In non-technical parlance, Shannon entropy quantifies the expected value of information in a message:[53] the more information is transmitted/received, the less uncertainty results and the less information entropy in the system, causing the possible outcomes of the exchange of information to be highly predictable. Flipping coins or rolling dice provide characteristic examples of measurable Shannon entropy – namely, the difference between the information contained in the message and the part of information provided by the message (i.e. the coin or the dice). Before we flip a coin, we are uncertain about what will happen when it is flipped. After the coin is flipped, the uncertainty immediately drops to zero since we now know the response (i.e. heads or tails). This, in turn, means that we have gained information on the content of the message. As a measure of uncertainty of a random variable,

entails freedom to choose among the most probable outcomes. See Koutsoyiannis and Sargentis (n 49) 1364.

[51] Although the concept of equilibrium is crucial in structuring a system, it has been misinterpreted as the self-maintenance of order in a system and the non-randomness of the system's variables. However, drawing an analogy between equilibrium and regularity has been correctly characterized as arbitrary, since in a state of equilibrium there can be no change in a closed or isolated system except where an external force acts upon parts of the system. See Britannica, The Editors of Encyclopedia, 'equilibrium', *Encyclopedia Britannica* (21 July 2022) <www.britannica.com/science/equilibrium-physics> accessed 12 May 2022.

[52] C Shannon, 'A Mathematical Theory of Communication' (1948) 27 BSTJ 379 and 623.

[53] O Rioul, 'This Is IT: A Primer on Shannon's Entropy and Information' in B Duplantier and V Rivasseau (eds), *Information Theory* (Progress in Mathematical Physics vol 78, Springer 2021).

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this definition of entropy is probabilistic in nature; accordingly, the information exchanged is a measure of that entropy's reduction.[54]

Transposing this fundamental physical process to CIL allows us to make some very interesting observations. The CIL system's elements – namely, states and courts – exchange information regarding the meaning of CIL; states respond through their practice and courts by interpreting rules. The greater the number of probable meanings assigned to the rules in question, the greater the entropy of the CIL system; conversely, when there are fewer probable meanings, there is less uncertainty as to the content of the rule and thus minimal entropy. To this end, legal interpretation plays a fundamental role in reducing the entropy of the CIL system by providing the information that was originally not available (i.e. the concrete meaning of the CIL rule). In particular, the exchange of information about the most probable, or even precise, content of a CIL rule creates a network of binary relations between the courts that transmit the message contained in the information and the states that receive it. When international courts like the ICC form binary relations with states, this creates a one-to-one connection between them, since they are the sole components of the complex CIL system concerned.[55] The transmission of the precise content of a CIL rule to states by international courts through the interpretation process shapes the connections between the courts and the states, for courts receive feedback from the states, regardless of whether the states comply with the court's judgment.

Having said this, the analysis will now focus in Section 5 on what we call an entropic approach to the interpretation of CIL and how it is reflected in the jurisprudence of the ICC and other international criminal tribunals.

5 Modelling the Interpretation of CIL: What Do International (Criminal) Courts Say?

Traditionally, the function of the judicial power – that is, courts and tribunals *stricto sensu* – is to state the law (i.e. not only to decide which legal rules are applicable but also to determine their content in

[54] JP Sethna (n 47) 99.

[55] Based on mathematics and computer science, a binary relation is represented by a line connecting the two entities. There are three types of binary relations: one-to-one, where one entity is related to another entity; one-to-many, where one entity is related to many other entities; and many-to-many, where each entity is related to many other entities. A characteristic example of a many-to-many binary relation is a university student enrolled in many courses with each course having many students enrolled in it. For present purposes we are referring to a one-to-one binary relation between international criminal courts and individual states in a simplified form (see Figure 1).

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a concrete case).[56] The legal reasoning that unfolds during the process of interpreting a CIL rule has a concretizing function (i.e. to give a concrete meaning to a CIL rule, the content of which is by definition general).[57] Legal interpretation is an exercise akin to the solving of a mathematical problem; when judges seek to determine the content of a rule in a particular case, they apply their skills to solve the problem by either settling the dispute or establishing the guilt of an accused individual.

In the case of CIL interpretation, courts determine the content of a rule by searching for states' shared understanding of the rule. Such was the approach taken by the International Criminal Court when its Appeals Chamber dealt with the thorny issue of immunity for heads of state having committed international crimes under the Rome Statute in Sudan. As Judges Eboe-Osuji, Morrison, Hofmanski and Bossa in their concurring opinion openly stated, 'the consistent and repeated rejection of immunity (even for Heads of State) in sundry instruments of international law since World War II … has resulted in *a general understanding of customary international law* in that way'.[58]

[56] The judicial function is the main feature of the judicial authority. Literally, *juris dictio* means to state what the law is. Scelle (n 15) 694–95. Notwithstanding the debate over the susceptibility of CIL rules to the same form of interpretation as treaty law, the arbitration tribunal in the *Lake Lanoux* case of 1957 clarified that 'international law does not sanction any absolute and rigid method of interpretation'. See *Lake Lanoux (France v Spain)* (1957) 12 RIAA 281. See also M Herdegen, 'Interpretation in International Law' (MPEPIL 2020) <https://opil.ouplaw.com/display/10.1093/law:epil/9780199231690/law-9780199231690-e723> accessed 26 April 2024. Accordingly, the present author argues that interpretation has an entropic character since it gives meaning to CIL rules by transmitting information about their content. On the discussion regarding the role of the international judiciary, see also GI Hernández, 'Interpretative Authority and the International Judiciary' in A Bianchi, D Peat and M Windsor (eds), *Interpretation in International Law* (Oxford University Press 2015) 166–85.

[57] Merkouris and Mileva have argued that interpretation of a CIL rule performs an evolutive function in addition to the concretizing one. See P Merkouris and N Mileva, 'Introduction to the Series: Customary Law Interpretation as a Tool' (2022) 11(2) ESIL Reflections <https://esil-sedi.eu/esil-reflection-introduction-to-the-series-customary-law-interpretation-as-a-tool/> accessed 20 May 2022. The present author believes that there is no clear-cut distinction between these two functions of legal reasoning; in practice, they are intertwined with each other, like ivy on an oak tree, and shape the content of a CIL rule through evolutive interpretation. The content-determination process of interpretation is an inherent part of adjudication. On the content-determination process and its distinction from the law-ascertainment process of interpretation, see J d'Aspremont, 'The Multidimensional Process of Interpretation: Content-Determination and Law-Ascertainment Distinguished' in A Bianchi, D Peat and M Windsor (eds), *Interpretation in International Law* (Oxford University Press 2015) 111, 117–18.

[58] *Prosecutor v Al-Bashir*, ICC-02/05-01/09-397-Anx1 (6 May 2019) [66] (emphasis added). It has been said that this judgment 'has added another important layer of jurisprudence,

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Yet, interpreting CIL rules in a criminal law context runs the grave risk of overstepping the principle of legality, which is one of the basic pillars of international criminal justice. Since international criminal courts are not permitted to 'expand uncritically the scope of [international] crimes',[59] they are confronted with a challenge when called upon to determine the content of a CIL rule with a view to characterizing it as a core international crime.

In the *Kupreskic* case, the ICTY adopted an interpretation with interesting reasoning when, following extensive analysis, it defined the content of the residual category of 'inhumane acts' as crimes against humanity.[60] Based on the notion of 'humane treatment' included in Common Article 3 of the Geneva Conventions 1949 and international human rights standards, the ICTY ruled that it is possible to 'identify a set of basic human rights' whose violation could amount to a crime against humanity. Bearing in mind that Common Article 3 had already been recognized as having *erga omnes* effect and that basic rules protecting human rights have the force of customary law, the ICTY defined the notion of inhumane act as a rule having 'less broad' customary law content.[61] The flexibility with which the ICTY handled the issue of CIL interpretation is particularly revealing, albeit not always plain to see. The case of *Krstic* is also indicative, since the ICTY recognized the concretizing function of CIL, which had delimited the *actus reus* of the crime of genocide so as to include only acts of physical destruction, a limitation accepted both by the ICTY and the ICTR in their respective statutes.[62]

Most significantly, the Appeals Chamber of the International Criminal Court followed the same path in one of its most recent judgments in the *Ntaganda* case,[63] although not in order to directly downsize the CIL rule;

[although] it will not silence the raging academic and political debate'. See A Mudukuti, 'Prosecutor v. Omar Hassan Ahmad Al-Bashir, Judgment in the Jordan Referral re Al-Bashir Appeal' (2020) 114 AJIL 103. See also *Prosecutor v Uhuru Muigai Kenyatta* (n 40) [7], [12].

[59] *Prosecutor v Ongwen* (n 31) [2741].

[60] *Prosecutor v Kupreskic* (Judgment) ICTY-95-16-T (14 January 2000) [562]–[566].

[61] ibid [566]. See also *Prosecutor v Kordic and Cerkez* (Judgment) ICTY-95-14/2-T (26 February 2001) [269]–[270]; *Prosecutor v Kordic and Cerkez* (Judgment) ICTY-95-14/2-A (17 December 2004). In the *Ongwen* case, the ICC followed the same interpretive approach when it had to decide if the act of forced marriage could be qualified as another inhumane act, and subsequently as a crime against humanity, according to Article 7(1)(k) of the Rome Statute (Statute of the International Criminal Court (adopted 17 July 1998, entered into force 1 July 2002) 2187 UNTS 3). See *Prosecutor v Ongwen* (n 31) [2741], [2747].

[62] *Prosecutor v Krstic* (Judgment) ICTY-98-33-T (2 August 2001) [580].

[63] *Prosecutor v Ntaganda*, ICC-01/04-02/06 OA5 (15 June 2017).

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instead, the its aim was to ensure consistency with international humanitarian law (IHL), in both its customary and its treaty forms. Such an outcome can be achieved either by interpretation of its terms or by identifying additional elements to the crime in question. In particular, the Appeals Chamber came to an 'unprecedented' conclusion when it accepted that additional elements originating from CIL can be included as an element of the war crimes listed in Article 8(2)(b) or (e) of the Rome Statute as part of examining the 'established framework of international law'.[64] Although not openly stated, it is clear from the Court's analysis that if an element external to the Rome Statute is added to the war crimes enumerated as other serious violations of the law of war, such an element can and will be interpreted, irrespective of whether it derives from customary or treaty IHL. Besides, the Court explicitly ruled that 'the "established framework of international law" within article 8 (2) (b) and (e) of the Statute permits recourse to customary and conventional international law regardless of whether any lacuna exists.'[65] In short, the ICC recognized the interpretability of CIL and rejected allegations of possible violation of the legality principle.[66] This is a novel approach, not only for ICL but for the function of the judiciary in general. As successfully argued by Scelle back in 1948, jurisprudence '*assouplit et adapte*' (softens and adjusts) legal rules in accordance with evolving social needs. Since the judicial function grows out of the social environment through natural evolution, its technique has a dynamic character. In this respect, jurisprudence, fulfilling the law, is part of the judicial order.[67] The interpretation process as just described allows CIL, thanks to its equally dynamic character, to adjust to changes in its social environment. The reactions of the acting agents in the CIL system (i.e. states, non-state actors and international criminal courts) provide feedback into the system, driving it to change and evolve.

[64] ibid [52]–[55]. See also F Pocar, 'Symposium on the Rome Statute at Twenty: Transformation of Customary Law through ICC Practice' (2018) 112 AJIL Unbound 182.

[65] *Prosecutor v Ntaganda* (n 63) [53].

[66] ibid [54]. On the interpretability of CIL, see P Merkouris, 'Interpreting the Customary Rules on Interpretation' (2017) 19 ICLR 139. For an early, yet meaningful, discussion regarding the contribution of international case law to the interpretation of CIL, see KS Gallant, 'International Criminal Courts and the Making of Public International Law: New Roles for International Organizations and Individuals' (2010) 43 J Marshall L Rev. 607.

[67] Scelle (n 15) 16–17, 662–64, 676–78. According to the French jurist, the judicial function aims towards establishing a legal order ('*ordonnancement juridique*') that describes the legal relations/connections between public and private persons. Scelle's systemic approach to international law dates back to 1948.

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Entropy is thus at a low level, since uncertainty over the content of the CIL rule has been reduced.

This dynamic process was analysed by Judge Antonio Cassese when, as president of the Special Tribunal for Lebanon (STL), he delivered an interlocutory decision on the applicable law in the *Ayyash* case.[68] In explaining the role of the interpreting judge, Cassese recalled the constructive function of interpretation as being 'to give consistency, homogeneity and due weighting to the different elements of a diverging or heterogeneous set of provisions'.[69] This approach to interpretation is founded upon the context of the rule, both internal and external. In particular, it was stressed that 'the rules of interpretation that evolved in international custom and were codified or developed in the 1969 Vienna Convention on the Law of Treaties . . . must . . . be held to be applicable to *any internationally binding instrument, whatever its normative source*'.[70]

As CIL is unwritten law, it falls upon the courts to elucidate relevant rules in their context – in other words, to contextualize the CIL rules.[71] Thereby, CIL can be interpreted according to the general principles of judicial interpretation with a view to 'apply[ing] legal norms consistently'.[72] The constructive approach, adopted by the STL, is inextricably linked to teleological interpretation. Taking the form of the effectiveness principle, contextual interpretation aims to 'harmonise the various provisions in light of the goal pursued by the legislature'.[73] In giving concrete meaning to a CIL rule, it reconciles the various meanings of the CIL rule. Subsequently, entropy is reduced, as harmonization counteracts uncertainty by revealing the most probable meaning of a CIL rule. In this respect, a CIL rule will consequently reflect the shared understanding of international actors regarding the content of the rule.

For the STL, such an interpretive approach corresponds to the reality of a dynamic society that changes over time, thus leading to the progressive development of the law. Recalling Jeremy Bentham, the presiding judge,

[68] *Interlocutory Decision on the Applicable Law: Terrorism, Conspiracy, Homicide, Perpetration, Cumulative Charging* STL-11-01/I (16 February 2011).

[69] ibid [23]–[24]. On Judge Cassese's contribution regarding the construction of international criminal law through custom, see M Fan, 'Custom, General Principles and the Great Architect Cassese' (2012) 10 JICJ 1063.

[70] *Interlocutory Decision* (n 68) [26] (emphasis added).

[71] ibid [19]–[20]. For present purposes, 'contextualize' means 'to provide information about the situation in which something happens'. See 'contextualize' (*The Britannica Dictionary*) <www.britannica.com/dictionary/contextualize> accessed 30 May 2022.

[72] *Interlocutory Decision* (n 68) [26].

[73] ibid [30].

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the late Antonio Cassese, clarified that CIL also develops through a 'continuing and prospective evolution' in order 'to adjust [the Court's] decision to the special circumstances [of a particular case]'.[74] Progressive development does not preclude the application of the legality principle, 'as long as this application was foreseeable'.[75] To the extent that international actors – state and non-state – are affected by that interpretation, they will react by providing feedback to the Court's interpretative approach.[76]

At this point, some clarification is needed: obtaining feedback from states in ICL cases is not of the same nature as in other international law interstate cases such as those before the ICJ. Feedback from states in ICL cases involving CIL interpretation can assume different shapes and forms. Take, for example, Articles 86–87 and 97 of the Rome State on the obligation of state parties to cooperate and consult with the ICC during the investigation, prosecution and enforcement stages. Here, the triggering of a mechanism of non-compliance with the Court's judgments constitutes proof of feedback by a member state. Let us elaborate on the facts and the Court's reasoning to comprehend how entropy changes in this case.

The judgments against South Africa and Jordan, parties to the Rome Statute, concerning non-execution of the arrest warrant against Omar al-Bashir, are examples of such a complex case. The ICC ruled that both states had violated their obligations deriving from the Rome Statute, since they had not arrested and surrendered Sudan's head of state al-Bashir to the Court for having committed war crimes, crimes against humanity and genocide.[77] Pursuant to a UN Security Council referral of the situation in

[74] ibid [106], [135].

[75] ibid. The ICC has equally ruled in the *Ongwen* case and in relation to Article 7(1)(k) of the Rome Statute that judicial interpretation 'must be consistent with the essence of the offence and *in a manner which could have been reasonably foreseen*'. *Prosecutor v Ongwen* (n 31) [2741] (emphasis added). Yet debate over the strict application of the legality principle remains intense, with those opposed arguing in favour of flexibility of the rules in order to fight impunity. See JL Corsi, 'An Argument for Strict Legality in International Criminal Law' (2018) 49(4) GJIL 1321.

[76] According to Sur, the subjects of international law provide feedback when they accept a judicial interpretation; in so doing, they lend authenticity to this interpretation. S Sur, 'La créativité du droit international' (2012) 363 RdC 9. Such was the interpretative stance of the ICC in the *Ntaganda* case when the Court rejected the defence submissions on introducing status requirements as additional elements to the war crimes of Article 8(2)(b)(xxii) and (e)(vi) of the Rome Statute. The Court thereby transmitted information on the customary law context of war crimes based on the intention of the drafters of the Rome Statute; such intention demonstrated the drafters' shared understanding of the provisions. *Prosecutor v Ntaganda* (n 63) [47]–[48].

[77] *Prosecutor v Al-Bashir*, Decision under Article 87(7) of the Rome Statute on the Non-compliance by South Africa with the Request by the Court for the Arrest and Surrender of

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Darfur to the ICC, the latter issued two arrest warrants for al-Bashir in 2009 and 2010 calling upon all state parties to cooperate with the Court in accordance with their obligations under the Rome Statute.[78] After rejecting the objections of South Africa and Jordan invoking the immunity rule for heads of state, the Court explained that there was no CIL norm on immunity that shielded active heads of state accused of having committed core international crimes.[79] The most interesting conclusion of the ICC Pre-Trial Chamber was its decision to refer the non-compliance issue to the Assembly of States Parties and the UN Security Council. However, it did so only for Jordan, not for South Africa, reasoning that the former was aware of its obligations but 'chose not to execute [them]',[80] whereas the latter was not. The second Pre-Trial Chamber (PTC II) maintained a different approach towards South Africa based on two main reasons: firstly, there was genuine interaction with South African authorities regarding the state's obligation to co-operate with the Court and, secondly, South Africa's violation of its obligations had also been recognized by the country's domestic courts.[81] The Appeals Chamber overturned the decision for Jordan and decided not to refer the situation to the Assembly of States Parties and the UN Security Council. It held that Jordan had not refused to consult with the court in defiance of its obligation deriving from Article 97 of the Rome Statute. On the contrary, its *note verbale* qualified as a request for consultations with the Court and was proof of good faith with regard to the problem of the execution of the arrest warrant.[82]

We draw particular attention to the feedback of the Court based on the different legal reasoning of the PTC II and the Appeals Chamber. Although not directly connected to interpreting CIL, each legal reasoning is important insofar as it portrays how interpretation works as a means of keeping the entropy of the CIL system at a low level. Further evidence of that is the Appeal Chamber judgment concluding that the different treatment of

Omar Al-Bashir, ICC-02/05-01/09-302 (6 July 2017); *Prosecutor v al-Bashir*, Decision under Article 87(7) of the Rome Statute on the Con-compliance by Jordan with the Request by the Court for the Arrest and Surrender or Omar Al-Bashir, ICC-02/05-01/09-309 (11 December 2017).

[78] Rome Statute (n 61) arts 86ff.

[79] Although strongly criticized for these judgments by part of academia, the ICJ had already been receptive to the idea that the immunity rule cannot justify impunity when the accused is a head of state. *Case Concerning the Arrest Warrant of 11 April 2000 (Democratic Republic of Congo v Belgium)* [2002] ICJ Rep 3.

[80] *Prosecutor v Al-Bashir* (n 77) (11 December 2017) [53].

[81] *Prosecutor v Al-Bashir* (n 77) (6 July 2017) [136].

[82] *Prosecutor v Al-Bashir*, ICC-02/05-01/09 OA2 (6 May 2019) [204].

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Jordan and South Africa was due to abuse by PTC II of its discretionary power. When state parties rejected the Court's interpretation regarding their obligations under the customary rule of immunity, the entropy of the system increased, as there were many possible interpretive (and conflicting) outcomes. When the Appeals Chamber overturned the PTC II's judgment, the CIL entropy had been reduced to a minimum as there was only one possible interpretive outcome for the CIL rule on immunity. This shows that the process of ICC feedback to states proves to be particularly influential for complex systems, since it keeps the entropy at a low level.

International case law can also affect state behaviour by triggering a change in state practice.[83] The feedback process leads the CIL system to adapt through a learning process that relies on information from its own agents as well as its environment. In other words, the topology of the CIL system (i.e. the structure of the CIL network and the frequency and intensity of interactions between its agents) is indicative of its inherently dynamic character and its ability to evolve as a real social phenomenon.

6 Concluding Remarks: A 'Low Entropy' Mode of Interpretation for CIL

The present chapter has attempted to show how the interpretation of CIL operates in accordance with the fundamental rules of nature. Since human systems are affected by various kinds of complexity, we turned to the findings of complexity science to describe CIL as a complex adaptive system forming societal bonds between the various state and non-state agents involved in international criminal justice.

In modelling CIL as an epistemic tool, we have sought to explain the mechanical behaviour of CIL when international criminal tribunals and, in

[83] A characteristic example is the European Court of Human Rights and the profound influence of its judgments upon the shaping of state policies, through the adoption of national legislation and/or administrative practice. See Verdier, and Voeten (n 10) 420; L Helfer and E Voeten, 'International Courts as Agents of Legal Change: Evidence from LGBT Rights in Europe' (2014) 68 IO 77. In the area of international criminal law, the notion of positive complementarity as a state policy to address core crimes through the adoption of domestic measures and the initiation of national proceedings, is of particular importance with respect to the feedback provided by member states to the Rome Statute. See Annual Report of the Office of the Prosecutor (2022) <www.icc-cpi.int/sites/default/files/2022-12/2022-12-05-annual-report-of-the-office-of-the-prosecutor.pdf> accessed 1 June 2022; Final Report of the ILA Committee on positive complementarity in international criminal law (2022) <www.ila-hq.org/en/committees/complementarity-in-international-criminal-law> accessed 1 June 2022.

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particular, the ICC interpret its rules. To this end, we introduced entropy, as the internal property of a complex system that stimulates changes according to the flow of information transmitted both between its component elements and between the latter and the system's environment.

For the CIL complex system, legal interpretation is the source of information provided by the international courts when they concretize abstract CIL rules by attributing the most probable meaning to those rules. Such an entropic mode of interpretation reduces uncertainties over the content of the rules, triggers changes in the CIL system and, thus, encourages the system to develop further and thereby evolve. The extent of the changes that will occur depends on the feedback such interpretation draws from the agents of the CIL system.

Adopting such an approach to the interpretation of CIL helps us redefine our perceptions as lawyers regarding the quest for certainty and predictability in international law. Thus, we have argued that chance does not correspond to the unknown and the uncertain that Czech choreographer J. Kylian considered to be epitomized in the tossing of the dice; rather, throwing a dice is all about probabilities.

In the field of international criminal justice, reducing uncertainties is especially vital to the unity and progressive development of international criminal law. Recent interpretation by the ICC has displayed low entropy. Were the Court to follow such an entropic interpretation in the future, this could lead to the transformation of CIL and in turn to a unified approach in ICL. It remains to be seen whether the international judiciary will seize the opportunity to 'activate' entropic interpretation to stimulate changes in the complex CIL system.

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