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Logic as an Inherent Principle of International Law and its Consequences for International Adjudication

Judgments of international courts and tribunals are characterised by meticulous application of legal methodology, in particular the various forms of norm interpretation and analogy. Additionally however, it is also modes of logical inference which are at play and must be considered when law is applied in courts. These are being applied and handled so naturally by judges and analysts that their correct employment is not being reviewed with recourse to the strict rules of formal logic. The present paper demonstrates for the first time the importance, relevance and effects of logic in international law. It lays out the doctrinal grounds for its application in international law with a view to international jurisprudence and elaborates on the legal consequences of logical fallacies therein. It shall be argued here that logic is an inherent principle of public international law and that a breach of the rules of logical inference calls into question the very value, understanding, plausibility and acceptance of judicial reasoning. As a result, errors in logic may constitute a valid ground for the revision of a judgment pursuant to art. 61 of the ICJ Statute.

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1 Introduction

[Rz 1] Judgments of the numerous international courts and tribunals are characterised by meticulous application of legal methodology, in particular the various forms of norm interpretation and analogy. Additionally however, it is modes of logical inference which are at play and must be considered when law is applied in courts.[1]

[Rz 2] It is these modes of logical inference which are being applied and handled so naturally by judges that their correct employment is not being reviewed with recourse to the strict rules of formal logic. Since, at least implicitly, all reasoning in judicial decisions applies modes of logical inference,[2] considerations of formal logic merit a closer look.

[Rz 3] Indeed, the implicit and seemingly natural application of logic in judicial decisions brings with it the fact that most legal arguments found in judicial decisions do not strictly follow a formal logical structure. Rather, most legal reasoning is enthymematic. This means that its logical form is not explicitly clear from its original mode of presentation (e.g. reasoning in a judgment).[3] Such enthymematic reasoning obstructs the inherent logical structure of a given legal argument. Consequently, logical errors are easily made and retrospectively more difficult to reveal. This might be one reason why violations of formal logic (the strict laws of thought) are indeed often made in judicial as well as administrative practice,[4] at least as many times as errors in law (if not even more).[5]

[Rz 4] The great danger of errors in logic lies then in the fact that the violation of the laws of logic can have — especially if they relate to the evaluation of evidence — far more serious consequences than errors relating to legal interpretation or analogy.[6] As a result, it is forwarded here that a breach of the rules of logical inference calls into question the very value, understanding, plausibility and acceptance of judicial reasoning, even more so than errors in analogy or law. In

1 The language of judicial decision is mainly the language of logic, see O.W. Holmes, «The path of the law», 10 Harvard L Rev (1896—1897) 457, at 465; for an interesting account on the role of logic in the life of the law, see S. Brewer, «Traversing Holmes' Path toward a Jurisprudence of Logical Form», in St. J. Burton (ed.), The Path of the Law and its Influence: The Legacy of Oliver Wendell Holmes, Jr (2000) 94.

2 Indeed as S. Brewer demonstrates, deduction, induction and abduction play a vital role in legal reasoning, see S. Brewer, «Exemplary Reasoning: Semantics, Pragmatics, and the Rational Force of Legal Argument by Analogy», 109 Harvard L Rev (1995-1996) 923, at 926.

3 S. Brewer, «Logocratic Method and the Analysis of Arguments in Evidence», 10 Law, Probability and Risk (2011) 175, at 179.

4 For violations of the laws of thought see below.

5 D. Krimphove, «Grenzen der Logik», 44 Rechtstheorie (2013) 315 (with further references).

6 See K. Peters, Fehlerquellen im Strafprozeß (1970—1974) 346 (with further references).

particular, unlike the latter errors, cases of violations of the laws of thought in judgments raise the question of their legal consequences. The subsequent analysis thus presents normative arguments for the use of logic in international law.[7] It firstly lays out the doctrinal grounds for its application in international law with a view to international adjudication and then elaborates on the legal consequences of logical errors (fallacies) therein.

2 Definition of Logic

[Rz 5] For the purpose of the present paper «logic» refers to the formal science as understood particularly in its sub-disciplines such as the deontic or «*Imperativ*»- and «*Normenlogik*».[8] The words «laws of thought», «logic», «laws of logic» are used synonymously.

[Rz 6] This means that this study is concerned only with the «inferential correctness» of legal reasoning. As with all reasoning, legal reasoning begins from premises and draws a conclusion. Here, logic is concerned with answering the question whether — *given the premises* — the argument supports the conclusion.[9]

[Rz 7] This also demonstrates the limits of logic in legal reasoning. It does not answer the question whether the premises it assumes are true, but only establishes their inferential correctness. Indeed this is of fundamental importance, especially in law, where it is the courts that determine in their reasoning whether certain premises are true, and — based on these factual findings — render their decisions. Disagreements may be viewed as mere differences in opinions about the law or facts. On the other hand, logic as a discipline articulates universal «laws of thought», the rules of which are mathematically precise and are not a question of opinion. For exactly these reasons, logic's utility for law was exemplified by the young *Gottfried Wilhelm Leibniz*, who proposed the transposition of the axiomatic approach of Euclidean geometry to law.[10] In fact, «reducing

[7] While indeed, some have applied classical and deontic logic to the analysis of legal reasoning, see among the others C. E. Alchourrón and E. Bulygin, Normative Systems (1971); J. Horovitz, Law and Logic: A Critical Account of Legal Argument (1972); J. Rödig, «Axiomatisierbarkeit Juristischer Systeme», in E. Bund, B. Schmiedel and G. Thieler-Mevissen (eds.), Schriften zur Juristischen Logik (1980) 65—106; I. Tammelo, Modern Logic in the Service of Law (1978); U. Neumann, «Juristische Logik» (1984), in A. Kaufmann, U. Neumann and W. Hassemer (eds.), Einführung in Rechtsphilosophie und Rechtstheorie der Gegenwart, 237—261; M. Golding, Legal Reasoning (2001); A. Soeteman, Logic in Law: Remarks on Logic and Rationality in Normative Reasoning, Especially in Law (1988); O. Weinberger, Rechtslogik (1989); and there have also been attempts to provide analytical accounts of the structure of legal norms for the purpose of legislation, see e.g. J. Rödig, «Zum Begriff des Gesetzes in der Rechtswissenschaft», in J. Rödig (ed.), Theorie der Gesetzgebung (1976) 1—48; F. Lachmayer, Grundzüge einer Normentheorie (1977); this study is the first to (practically) apply logic to international law and international adjudication.

[8] See with further references, particularly K. Engisch, «Logische Strukturen zur Gesetzesanwendung» (3rd edn., 1963); K. Engisch, «Aufgaben einer Logik und Methodik des Juristischen Denkens», in P. Bockelmann, A. Kaufmann and U. Klug (eds.), Beiträge zur Rechtstheorie (1984); H. Fenge, «Über normlogische Zweifel an der gegenseitigen Ersetzbarkeit von Gebots- und Verbotsregelungen sowie einstelliger und zweistelliger Normen», 5 Rechtstheorie (1974) 94; W. Opfermann, «Zur Gehaltsbestimmung Normativer Sätze durch Matrizenkalküle», in H. Albert et al. (eds.), Jahrbuch für Rechtssoziologie und Rechtstheorie (1972), Vol. 2, 187; F. von Kutschera, Einführung in die Logik der Normen, Werte und Entscheidungen (1973); B. de Finetti, «La Prévention: ses Lois Logiques, ses Sources Subjectives», in T. Bodineau and L. Zambotti (eds.), Annales de l'Institute Henri Poincaré (1937), Vol. 7; J. Hruschka, «Zur Logik und Dogmatik von Verurteilungen aufgrund Mehrdeutiger Beweisergebnisse im Strafprozess», in E. Hilgendorf et al. (eds.), JuristenZeitung (1970) 637; U. Klug, Juristische Logik, (1951/1982); G. Kalinowski, Introduction à la Logique Juridique (1965); G. Kalinowski, Einführung in die Normenlogik. Studien und Texte zur Theorie und Methodologie des Rechts (1973); J. Rödig, Die Denkform der Alternative in der Jurisprudenz (1969); O. Weinberger, Rechtslogik (1970); J. C. Joerden, Logik im Recht, Grundlagen und Anwendungsbeispiele (2010).

[9] S. Brewer, «Logocratic Method and the Analysis of Arguments in Evidence», 10 Law, Probability and Risk (2011) 175, at 177—178.

[10] G. W. Leibniz, Nova Methodus Discendae Docendaeque Jurisprudentiae, ex Artis Didacticae Principiis in Parte Gene-

judicial reasoning to logical deduction would ensure certainty and testability and it would constrain the arbitrariness of human decision-making».[11] This is a huge advantage for international law. When dealing with international courts, the factual findings of the court must be considered true. However, when the conclusion is based on an incorrect application of the rules of logical inference, formal logic gives us the tools to reveal these errors. Another aim of this normative approach is to make explicit all the assumptions used in our natural way of arguing[12] and, as shall be demonstrated later in this article, errors in logic constitute grounds for revision of a judgment.

3 Logic as an inherent Principle of International Law

[Rz 8] International legal doctrine simply assumes the validity of logic in international law due to its self-evident character asserting that it is inherent to the functioning of any legal system, without having substantive contents of their own.[13] In the opinion of the authors logic and its application and validity in international law can be deduced from the concept of logic itself. First, it must be reiterated that as human beings we are able to think only logically,[14] and consequently the construction of a normative system such as international law, which is a metaphysical construction of thought, may only rest on the laws of thought which our mind cannot escape. *Ubi ius, ibi logicus*.

[Rz 9] In fact, one method of logical inference and its application is the most fundamental when applying law: the logical syllogism.[15] This illustrates the fact that the laws of logic, when they accompany legal syllogisms, follow the «axiomatic method». With this method, a result is deduced from given or non-given premises in application of modes of logical inference (in this case the syllogism).[16]

[Rz 10] The doctrine of the axiomatic method itself pre-supposes that the axioms themselves are consistent/unambiguous and complete.[17]Albeit logic — or more specifically logical axioms — may only be conceivable *a priori*,[18] this does not preclude the conclusion that logic is part of a general principle of international law pursuant to art. 38(1)(c) of the Statute of the International Court of Justice.[19]/[20]

rali Praemissis, Experientiae Luce (1st edn., 1748).

11 S. Brewer and G. Sartor, Law and Logic (unpublished draft, 2013) 2 (on file with the authors).

12 C.E. Alchourrón, «On Law and Logic» 9 Ratio juris (1996) 331, at 333.

13 H. Mosler, «General Principles of Law» in R Bernhardt (ed.) 7 Encyclopedia of Public International Law (1984) 89, at 95.

14 D. Krimphove, Logik / Einführung in das Denken (2012) 6.

15 See D. Krimphove, supra note 5, chapter 1 and 2, at 315—322 (with further references).

16 Also U. Klug, Juristische Lösung (4th edn., 1992) 160.

17 U. Klug, supra note 16, at 160; O. Weinberger, Rechtslogik, (2nd edn., 1989) 391 (with further references).

18 I. Kant, Kritik der reinen Vernunft, Ausgabe der Preußischen Akademie der Wissenschaften (1900), chapter AA III, 37—39, chapter B, 14—17 and 248—248.

19 In this sense apparently also J. Crawford, Brownlie's Principles of Public International Law (8th edn., 2012) 37.

20 Indeed, according to Kelsen's Pure Theory of Law, the Grundnorm (the initial presupposition of the validity of law) is a priori; see especially H. Kelsen, Causality and Imputation (1950), Vol. 61; H. Kelsen, General Theory of Law and State (1951), 116; F.S.C. Northrop, «Contemporary Jurisprudence and International Law», 61 Yale Law Journal (1952) 623, at 627.

4 (Selected) Legal Consequences of Logic in International Law

[Rz 11] It follows then that logic — as demonstrated above — is inherent in legal reasoning and therefore must be considered the structural foundation of any legal reasoning. Art. 56 of the Statute of the International Court of Justice (Statute) stipulates that judgments shall state the reasons on which they are based.[21] This requirement must be understood in relation to art. 38(1)(d) of the Statute which contemplates the use of judicial decisions as subsidiary means for the determination of rules of law. Here, the elaboration of reasons in a Court's judgments helps to build a coherent body of jurisprudence.[22] Furthermore, such duty to state reasons is recognized in other international courts and tribunals,[23] and it has been argued that sound reasoning constitutes a fundamental right (e.g. Art. 6 of the European Convention on Human Rights) which requires reasoned verdicts in criminal trials.[24] Indeed, as *J. Dewey* demonstrated (and what *Alchourron* calls the Principle of Justification),[25] the logical method in law serves an important purpose particularly in judicial decisions since «Courts not only reach decisions; they expound them, and the exposition must state justifying reasons. [. . .] Its purpose is to set forth grounds for the decision reached so that it will not appear as an arbitrary dictum, and so that it will indicate a rule for dealing with similar cases in the future».[26] Adding to that, *Lauterpacht* wrote in *The Development of International Law by the International Court* (1958) that the «[a]bsence of reasons—or of adequate reasons—unavoidably creates the impression of arbitrariness»[27] When the reasons

[21] This provision is concretized in Art. 95 (1) of the Rules of Court; for a commentary on Art. 56 ICJ Statute see e.g. A. Zimmermann et al., The Statute of the International Court of Justice: A Commentary, (2nd edn., 2012); This provision is concretized in Art. 95 (1) of the Rules of Court.

[22] L. Damrosch, «Article 56», in A. Zimmermann et al. (eds.), The Statute of the International Court of Justice: A Commentary (2nd edn., 2012) 1372; The ICJ recognized in the Nuclear Weapons Case that «in stating and applying the law, the court necessarily has to specify its scope and sometimes note its general trend.» Legality of the Threat or Use of Nuclear Weapons (Advisory Opinion) ICJ Reports (1996), at 226; The ICJ itself recognizes this in its self-portrayal noting: «[. . .] a judgment of the Court does not simply decide a particular dispute but inevitably also contributes to the development of international law. Fully aware of this, the Court takes account of these two objectives in the substance and wording of its judgments.» ICJ, «The International Court of Justice», (5th edn., 2004) 76, available at: www.icj-cij.org/information/en/ibleubook.pdf (accessed 21 April 2014).

[23] Art. 30 (1) and (2) ITLOS Statute; Art. 23 (2) ICTY-Statute and Art. 22 ICTR-Statute (Rule 98 ter of the ICTY Rules of Procedure and Evidence and the corresponding Rule 88 for the ICTR); Art. 74 (5) Rome Statute of the International Criminal Court; Art. 36 Statute of the Court of Justice of the European Union; see further e.g. L. Damrosch, supra note 22, at 1379—1381.

[24] P. Roberts, «Does Art. 6 of the European Convention on Human Rights Require Reasoned Verdicts in Criminal Trials?», 11 Human Rights L Rev (2011) 213; The importance of giving reasons is further illustrated by a dissenting opinion, in which Judge Koretsky wrote that «[t]hese are reasons which play a role as the grounds of a given decision of the Court—a role such that if these grounds were changed or altered in such a way that this decision in its operative part would be left without grounds on which it was based, the decision would fall to the ground like a building which has lost its foundation.» South West Africa Case (Ethiopia/South Africa; Liberia/South Africa), ICJ Reports (1966) 239, at 241, dissenting opinion Koretsky.

[25] GA judicial decision requires a ground or reason and the judges must state the reasons for their decisions. Not only is it the unavoidable duty of a judge to resolve all cases submitted to him within the limits of his competence; it is also required of him that his decision should not be arbitrary and that he should give reasons justifying the solution he adopts. the purpose of this principle is to eliminate one of the possible sources of the injustice which might infect judicial decisions without sufficient reasons. This requirement is also almost universally embodied in positive law in the form of obligations imposed upon judges by rules (or codes) of procedure.» C. E. Alchourrón, supra note 12.

[26] J. Dewey, «Logical Method and Law» 10 Cornell Law Quarterly (1914—1925) 17, at 24; indeed J. Dewey therein views it «highly probable that the need of justifying to others conclusions reached and decisions made has been the chief cause of the origin and development of logical operations in the precise sense; of abstraction, generalization, regard for consistency of implications.» Ibid.

[27] H. Lauterpacht, The Development of International Law by the International Court (1958) 39—40.

given for a judgment contain fundamental logical errors, they fail to fulfill this purpose.[28] As a consequence the very value, understanding, plausibility and acceptance of the decision is questionable.[29] Hence, art. 56 must be interpreted as requiring the ICJ to base its decisions on logically correct reasoning. Indeed this is also required by the principle of completeness (*Vollständigkeitsgrundsatz*) and the principle of non-contradiction (*Gebot der Widerspruchslosigkeit)* as well as the completeness of reasoning of the decision-making, which appear to be inherently part of international law.[30]

[Rz 12] It follows then from having established that logic is an inherent rule of international law and that art. 56 requires the correct application of logic, that the violation of the laws of thought in a judicial decision denies it to qualify as a subsidiary means for the determination of rules of international law pursuant to art. 38(1)(d) ICJ Statute.

[Rz 13] This brings us to the question of the legal consequences of errors in logic in judgments of the ICJ contains errors in logic.[31] It is controversial, whether judgments of international courts and tribunals are subject to revision. Most prominently, Georges Scelle considered revision, even in the absence of a provision to that effect, indispensable.[32] This view must be supported in light of the fact that revision had already been applied in ancient times[33] and the importance of the right of revision on the international level has been widely recognized.[34] This is convincing. In fact, while according to art. 60 ICJ Statute, the judgments of the court are final and not subject to review, art. 61 allows for «revision of a judgment may be made only when it is based upon the discovery of some fact of such a nature as to be a decisive factor, which fact was, when the judgment was given, unknown to the Court and also to the party claiming revision, always provided that such ignorance was not due to negligence».[35] While there is no practice of the Permanent Court of International Justice regarding revision, the ICJ has confronted requests for revision, but in all three cases found the applications to be inadmissible.[36]

[Rz 14] Nevertheless, it is interesting to note that the Inter-American Court of Human Rights

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[28] For a discussion of the duty to give reasons for administrative decisions in international law see e.g. Hepburn, «The Duty to Give Reasons for Administrative Decisions in International Law» 61 International and Comparative Law Quarterly (2012) 641.

[29] Indeed, as Frege put it «It cannot be demanded that we should prove everything, because this is impossible; but we can require that all propositions used without proof be expressly declared to be so.» G. Frege cited in D. Macbeth, Frege's Logic (2005) 9; Indeed, this serves also the purpose of stabilizing normative expectations; in this sense Northern Cameroons (Cameroon/United Kingdom) ICJ Reports (1963) 15, at 33; expressly recognized e.g. in art. 3(2) Understanding on Rules and Procedures Governing the Settlement of Disputes (DSU) stating «The dispute settlement system of the WTO is a central element in providing security and predictability to the multilateral trading system.»

[30] For the principle of non-contradiction see among many e.g. H. Kelsen, Reine Rechtslehre (2nd edn., 1960) 209.

[31] The following appears to be applicable to other international courts and tribunals mutatis mutandis as well, an elaborate study of which would be too lengthy for this paper.

[32] Scelle, in 1 Annuaire de la commission du droit international (1958) 75, at 229, cited in K. Oellers-Frahm, «Revision of Judgements of International Courts and Tribunals» in R. Wolfrum, Max Planck Encyclopedia of Public International Law (2011).

[33] Zimmermann and Geiss, «Article 61» in A. Zimmermann et al. (eds.), The Statute of the International Court of Justice: A commentary (2nd edn., 2012) 1499.

[34] Cf. ibid (with further references).

[35] For a commentary on Art. 61 see e.g. Zimmermann and Geiss, supra note 33.

[36] Application for Revision and Interpretation of the Judgement of 24 February 1982 in the Continental Shelf Case (Tunisia/Libyan Arab Jamahiriy); Application for Revision of the Judgement of 11 July 1996 in the Application of the Convention on the Prevention and Punishment of the Crime of Genocide Case (Bosnia and Herzegovina/Serbia and Montenegro) and Application for Revision of the Judgment of 11 September 1992 in the Land, Island and Maritime Frontier Dispute Case (El Salvador/Honduras: Nicaragua intervening).

(IACtHR), where neither the statute nor the rules of the court provide for revision, admitted a request for revision.[37] It did so by reference to art. 61 of the ICJ Statute and Rule 80 of the Rules of the Court of the European Court of Human Rights, and considered it a general principle of domestic and international law that «the decisive or unappealable character of a judgment is not incompatible with the existence of the remedy of revision in some special cases».[38] Additionally the content and language of art. 61 is found in statutes and rules of other international courts and tribunals as well.[39]

[Rz 15] It is therefore established that there are convincing arguments for concluding that the remedy of revision of judgments of international courts or tribunals is indispensable under special circumstances. Whether errors of logic fall under such «special circumstances» is questionable.

[Rz 16] To begin with, one must distinguish a mistake in a court's assessment of the material, be it legal or factual (before it at the time of its decision) and errors of logic. For the former, it is widely agreed that no mechanism exists for effecting their correction at the international level.[40] As regards errors in logic, it is interesting to note that it appears that all major jurisdictions of the world recognize mistakes in logic as a ground for appeal of a judgment.[41] In those jurisdictions errors in logic are either considered a crucial lack of or mistake in judicial reasoning and are therefore grounds for appeal. This further supports the above conclusion that the duty to give reasons in a judgement (e.g. art. 56 ICJ Statute) must be interpreted as requiring a logically correct reasoning. Not meeting this requirement, a judgment could be considered — in light of the absence of the possibility to appeal — to be subject to revision. Since all major jurisdictions of the world recognize this principle, it must be considered a general principle of international law (art. 38(1)(c) ICJ Statute).[42] Consequently, art. 61 ICJ Statute could be interpreted as recognizing errors of logic as a ground for a revision of a judgment if this mistake of logic is of such a nature as to be a decisive factor.[43]

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[37] Application for Judicial Review in the Genie Lacayo v Nicaragua Case (Order).

[38] Ibid, 9.

[39] Art. 44 Statute of the European Court of Justice (ECJ Statute) and Art. 51 Convention on the Settlement of Investment Disputes Between States and Nationals of Other States (ICSID-Convention); Art. 126—129 Rules of the ITLOS; cf. Zimmermann and Geiss, supra note 33, at 1503.

[40] H. Thirlway (ed.), The Law and Procedure of the International Court of Justice: Fifty Years of Jurisprudence (2013), Vol. 1, 1084; see particularly Continental Shelf Case (Tunisia/Libya), ICJ Reports (1985) 241, para. 10.

[41] Either directly or indirectly; for an express mention of logic in law see e.g. Poland: Art. 7 Polish Code of Criminal Procedure («proper reasoning»), which is understood as logical reasoning, see Supreme Court's judgement of 24 March 1975, II KR 355/74, OSNPG 1975/9/84; Bulgaria: Final Court of Appeal (Civil Law) 2 July 2004, 2/2004, NOR: 67703; Germany: BGH (St) 3, 213, at 215; BGH (St) 6, 70, at 72; already RG 61,154; U. Klug, Juristische Lösung (4th edn., 1992), 156 (with further references); France: Art. 614 du Code de Procédure Civile, Com., 10 February 2009, pourvoi No. 07-20.445¸ F. Regaux, le Droit International et le Droit Ètranger à la Cour de Cassation, 62 (with further references); Italy: Cass. 24 March 1979, No. 1704; Cass. 17 April 1998 No. 3913; 16 February 2000, No. 1747; see also G. A. Molfese, Ricorso e Controricorso per Cassazione in Materia Civile (3rd edn., 2013) 352, at 410 (with further references); G. Calogero, La Logica del Giudice e il Suo Controllo in Cassazione (2nd edn., 1964); Austria: Art. 281 (1) Z 5 4th case of the Austrian Criminal Procedural Act; Wiener Kommentar-StPO Art. 281 margin no. 444; most recently 11Os57/13m; Ecuador: Ley de Casación 24 March 2004, Art. 3 (5); South Korea: Art. 361—365 (11); Russia: Art. 389.16 (4) Criminal Procedural Code of the Russian Federation No. 174-FZ of 18 December 2001; W. B. Hallaq, Logic, Formal Arguments and Formalization of Arguments in Sunn Jurisprudence Arabica (1990) 315—358, T. 37, Fasc. 3; India: H. M. Seervai, Constitutional Law of India (3rd edn., 1983),Vol. 1.277; In the High Court of Delhi, IAs. 6940 and 7311/2001 in Suit No. 1551/2001 (11 October 2001) Sakalain Meghjee v BM House (India) Ltd., 2002 (24) PTC207 (Del); United Kingdom: Erven Warnink Besloten Vennootschap and Another Appellants v. J. Townend & Sons (Hull) Ltd. and Another Respondents Ltd. and Anr. 1979 AC 731, 742.

[42] J. Crawford, supra note 19, at 34; M. Rotter, «Die Allgemeinen Rechtsgrundsätze», in H. Neuhold, W. Hummer, C. Schreuer (eds.), Österreichisches Handbuch des Völkerrechts (4th edn., 2004), Vol. 1, 80.

[43] Within the meaning of Art. 61 ICJ Statute; A study of such logic errors of such a nature as to be a decisive factor is

[Rz 17] Additionally, promoting legal arguments in judgments of international courts and tribunals which strictly follow a formal logical structure may also contribute to elucidating complex and very technical legal questions. Indeed, the resulting norm clarity would then in turn, as *Chayes and Chayes* have demonstrated, enhance norm compliance,[44] and with that, generally contribute to a persuasive and value-neutral method of determining a rule of international law (art. 38(1)(d) ICJ Statute).

5 Selected Logical Fallacies in the Case Law of the ICJ

5.1 Fallacy of the Quaternio terminorum

[Rz 18] Quite frequently, international courts and tribunals commit the fallacy of the so-called» *quaternio terminorum*». While the logically correct inference uses *three* elements:

1. middle term «*Mittelbegriff*» (in the initial example (X) Territory, population and State Sovereignty;
2. sub-term «*Unterbegriff*» (in the initial example (A) Germany);
3. generic term «*Oberbegriff*» (in the initial example (St) State under international law)

the «*quaternio terminorum*» uses four terms instead, by using two distinct meanings of the same term (Homonymie).

[Rz 19] It appears that the «*quaternio terminorum*» fallacy is committed particularly in international decisions, due to the translation of certain terms into different languages without realizing that this adds a distinct meaning to the original meaning of the term.

[Rz 20] A prominent example of «quaternio terminorum» is the *LaGrand*[45] decision on jurisdiction before the International Court of Justice:

[Rz 21] Art. 36(1)(3) provided the basis of jurisdiction to the Court in connection with art. 1 of the Optional Protocol to the Vienna Convention on Consular Relations concerning the Compulsory Settlement of Disputes[46]. Art. 1 leg cit provides that «Disputes arising out of the interpretation or application of the Convention shall lie within the compulsory jurisdiction of the International Court of Justice». The US challenged the jurisdiction of the ICJ in particular — under very narrow and specified interpretation of the term «Dispute» — by pointing out that Germany did not sought damages, but the assurance of omission of future violations of the Vienna Convention. This would not fall within the term of «disputes» of art. 1 of the Optional Protocol.

[Rz 22] Having affirmed its jurisdiction because of other aspects, the ICJ also affirmed its jurisdiction based on this point. The court puts forward that a dispute could not be split up into its individual aspects. Therefore, the dispute as a whole must fall within the meaning of art. 1 of the Optional Protocol because the dispute may be settled only in this way.

[Rz 23] The ICJ at this point committed «*Quaternio terminorum*». Since — in particular by pointing out that the dispute can only be resolved by the holistic acceptance of its jurisdiction — the

the subject of further research of the authors.

[44] A. and A. H. Chayes, «On Compliance», 47 International Organization (1993) 175.

[45] LaGrand Case (Germany/United States of America) ICJ Reports (1999) 287.

[46] 8. Optional Protocol to the Vienna Convention on Consular Relations concerning the Compulsory Settlement of Disputes of 24 April 1963, 596 UNTS 487.

court adopts in its argument the homonymous Middle term «*Mittelbegriff*» «disputes» with two distinct meanings: while the jurisdictional rule of art. 1 refers to the procedural meaning of «disputes» as the subject matter of the dispute ($Disp^1$ in the middle term of the first premise), the court uses the term «disputes» as a political, societal concept ($Disp^2$ in the middle term of the minor premise). Only the latter may be settled according to the ICJ. By this homonymous, double use of the term «disputes», the conclusion no longer uses (as logically required) three but four terms.[47]

[Rz 24] On the merits, this inference error has no impact on the quality of the decision, as the ICJ had (logically conclusive) already established its jurisdiction by virtue of two other aspects.[48]

5.2 Logic in Argumentation

[Rz 25] In various cases in international jurisprudence, logic or «logical proof» is used to support the pervasiveness of an argument presented.[49] While strictly speaking such rhetorical uses of logic are not the concern of formal logic, the argument loses its appeal when the statement invoking logic is in fact wrong. This is illustrated by the well-known *Corfu-Channel* Case, in which the ICJ famously recognized indirect evidence to be admissible.[50]

[Rz 26] While it was criticized for not elaborating on how the court arrived at this conclusion, the question of admission of indirect evidence as such is essentially a legal question.[51] However, in supporting its argument, the court provides that «a State should be allowed a more liberal recourse to inferences of fact and circumstantial evidence. [...] It must be regarded as of special weight when it is based on a series of *facts linked together and leading logically to a single conclusion*.»[52] This is — logically speaking — not correct. Indeed, it is the distinct quality of indirect evidence that even if all facts are established to be true, this does not lead to only *one* possible conclusion. It might be leading to a conclusion which best explains the established facts, but logically this does not exclude the possibility that there might be another explanation for the facts. In logic, this mode of inference is called «inference to the best explanation» or «abduction». Abduction involves inference to an explanation of established facts. Viewed as an argument, «a statement of the phenomenon [...] to be explained and the putative explanation both appear as premises of the argument and the explanation itself is the argument's conclusion.»[53] However, this inference is not deductive but inductive. As an inductive argument, the truth of its premises does not gua-

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[47] $Disp^1$ = Dispute in the procedural sense → Jurisd = Jurisdiction of the court; Assur = assurance of omission of future violations of the Vienna Convention → $Disp^2$ = Dispute in the sense of conflict, confrontation.

[48] In the Nicaragua Case, J. Crawford apparently identifies a fallacy of quaternion terminorum writing (referring to Nicaragua Case, ICJ Reports (1986), at 14, 92—6, 152—4): «The Court avoided the effect of the jurisdictional reservation by holding that it was free to apply customary international law (the content of which was, it held, the same as the OAS Charter). But this was to confuse jurisdiction and applicable law: states do not cease to have disputes under a treaty merely because the Court has, in consequence, no jurisdiction over those disputes. The views of the dissenting judges on this point are to be preferred.» J. Crawford, supra note 40, at 33.

[49] See e.g. Prosecutor v Tadic, No. IT-91-1-AR72, Decision on the Defence Motion for Interlocutory Appeal on Jurisdiction, 140 (2 October 1995) arguing «there is no logical or legal basis for [a war nexus]» with respect to crimes against humanity.

[50] Corfu Channel Case, ICJ Reports (1949) 18.

[51] For the lack of space the issue of evidentiary questions and logic cannot be discussed further; on this see e.g. S. Brewer, supra note 3, at 175.

[52] Corfu Channel Case, ICJ Reports (1949) 18, emphasis added.

[53] S. Brewer, supra note 3, 175, at 178.

rantee the truth of the conclusion, but only makes it more or less probable. While not undisputed in philosophy,[54] this inferential process has a logical form, while not offering the same degree of rational force as deduction or induction.[55]

[Rz 27] The court then correctly points out in the following paragraph, that «[t]he proof may be drawn from inferences of fact, provided they leave *no room* for reasonable doubt.»[56] This statement is then correct, since the concept of reasonable doubt refers to the evaluation of the inference drawn and does not refer to logical proof.

6 Conclusion

[Rz 28] Already this brief discussion demonstrates the importance of logic in and for international law. In this article, we have established that logic is an inherent principle of public international law. Consequently, requirements in public international law to state the reasons on which a decision or judgment is based, such as art. 56 of the ICJ Statute, must be interpreted as including the requirement that this must be logically correct reasoning. International judicial decisions not meeting this standard cannot be regarded as a subsidiary means for the determination of rules of international law within the meaning of art. 38(1)(d) ICJ Statute. We have further established that to give logically sound reasoning is a general principle of law as «recognized by civilized nations» within the meaning of art. 38(1)(c) ICJ Statute and that errors of logic pertaining to the reasons for the decision reached could be grounds for revision of that judgment.

[Rz 29] It is conceded here however, that formal logic also has to recognise its limits.[57] Formal logic is concerned only with the inferential correctness of an argument and does not pronounce on the right or wrong of a decision. Nevertheless, logic is an important analytical tool to determine the coherence and correctness of legal reasoning adopted in decisions of international courts and tribunals. The utility of logic in international law then lies in promoting sensibility for precise and correct reasoning. Such sensitivity would makes judgments more comprehensible and arguably the resulting rule clarity could enhance norm compliance.[58] It follows then that the — at times extraordinarily — politicised matters at issue before international courts, call for a strict and correct application of the laws of logic in international judgments. Additionally, resorting to the universal and value-free language of formal logic — particularly in a fragmented, value-laden and politicised normative system such as international law — appears to be capable of having a stabilizing effect, contributing to the neutral settlement of arguments by virtue of neutral application of the laws of thought.

[Rz 30] Additionally, the adopted approach towards logic in international law may also provide for the developing doctrinal foundation for the use of logic in analysing international law rules

[54] In philosophy, opposing views of the structure and significance of abduction has developed, one of which does not recognize it as a valid mode of inference, see for a discussion S. Brewer, «Exemplary Reasoning: Semantics, Pragmatics, and the Rational Force of Legal Argument by Analogy», 109 Harvard L Rev (1996) 925, at 946—947; for an overview see Douven, supra note 9.

[55] Cf. S. Brewer, supra note 86, 925, at 946.

[56] Corfu Channel Case, ICJ Reports (1949) 18, emphasis in the original.

[57] For a discussion on the limits of logic for law see e.g. D. Krimphove, supra note 5.

[58] A. and A. H. Chayes, supra note 47.

as groundwork for computerised tools[59] supporting the application of international law rules.[60] This development can already be witnessed in the field of artificial intelligence and law,[61] with its influential contributions on logic programming and the law.[62] A remarkable paper by P.M. Dung and G. Sartor, for example, provides a fascinating account of the logical analysis of private international law.[63]

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[59] See e.g. S. Dayal and P. Johnson, «A Web-Based Revolution in Australian Public Administration», 1 Journal of Information, Law and Technology (2000).

[60] See S. Barker et al., «The Scientific Contribution of Marek Sergot», in A. Artikis et al. (eds.) Logic Programs, Norms and Action — Essays in Honor of Marek J. Sergot on the Occasion of His 60th Birthday (2012) 6 (with further references).

[61] For a brief history of formal and computational research on argumentation see e.g. H. Prakken, «Some Reflections on Two Current Trends in Formal Argumentation», in A. Artikis et al. (eds.), Logic Programs, Norms and Action — Essays in Honor of Marek J. Sergot on the Occasion of His 60th Birthday (2012) 250.

[62] R. Kowalski and M. Sergot, «The Use of Logical Models in Legal Problem Solving», 3 Ratio Juris (1990) 201—218; T. Bench-Capon and M. Sergot, «Towards a Rule-Based Representation of Open Texture in Law», in C. Walter (ed.), Computing Power and Legal Language (1988) 39—60; T. Bench-Capon et al., «Logic Programming for Large Scale Applications in Law: A Formalisation of Supplementary Benefit Legislation», in Proceedings of International Conference Artificial Intelligence of Law (1987) 190—198; M. Sergot, A.S. Kamble, and K.K. Bajaj, «Indian Central Civil Service Pension Rules: A Case Study in Logic Programming Applied to Regulations», in Proceedings of International Conference Artificial Intelligence of Law (1991) 118—127; A. Daskalopulu and M. Sergot, «A Constraint-Driven System for Contract Assembly», in Proceedings of International Conference Artificial Intelligence of Law (1995) 62—70.

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