



International Journal of Migration and Border Studies

ISSN online: 1755-2427 - ISSN print: 1755-2419

<https://www.inderscience.com/ijmbs>

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William Hamilton Byrne, Thomas Gammeltoft-Hansen, Henrik Palmer Olsen

DOI: [10.1504/IJMBS.2022.10049309](https://doi.org/10.1504/IJMBS.2022.10049309)

Article History:

Received: 14 October 2021

Accepted: 02 March 2022

Published online: 27 January 2023

Network analysis and comparative migration law: examples from the European Court of Human Rights

William Hamilton Byrne*,
Thomas Gammeltoft-Hansen and
Henrik Palmer Olsen

Faculty of Law,
The University of Copenhagen,
Karen Blixens Pl. 16, 2300 København, Denmark
Email: william.hamilton.byrne@jur.ku.dk
Email: tgh@jur.ku.dk
Email: henrik@jur.ku.dk

*Corresponding author

Abstract: International migration law (IML) is famously fragmented, which provides fertile ground for comparative inquiry. However, this task is inhibited the heterodox nature of IML as it draws on a composite body of law that is expressed in different concepts, interpretations and languages. This paper presents network analysis as one useful methodology for navigating IML's normative architecture and empirically mapping case law and its interrelations. Part I introduces network analysis as a data driven method for representing the relationship between variables in a legal network. Part II exemplifies its empirical purchase in the European Court of Human Rights' migration case law. Part III suggests the further added value that arises for a comparative migration law by bringing into scope authoritative judicial practice across wider data sets. Part IV concludes reflexively by asking what unravelling the web of IML might reveal for a field always caught between universalist and relativist theoretical narratives.

Keywords: migration; non-refoulement; European court of human rights; international migration law; network analysis.

Reference to this paper should be made as follows: Byrne, W.H., Gammeltoft-Hansen, T. and Olsen, H.P. (2023) 'Network analysis and comparative migration law: examples from the European Court of Human Rights', *Int. J. Migration and Border Studies*, Vol. 7, No. 2, pp.197–213.

Biographical notes: William Hamilton Byrne is a postdoctoral researcher, iCourts (Danish National Research Foundation Center of Excellence for International Courts). He is a team member of the projects Data Science for Asylum Legal Landscaping (DATA4ALL), Algorithmic Fairness for Asylum Seekers and Refugees (AFAR) and Advancing Data Science in Migration Law (NordASIL), Faculty of Law, University of Copenhagen

Thomas Gammeltoft-Hansen is a Professor WSR in Migration and Refugee Law, iCourts (Danish National Research Foundation Center of Excellence for International Courts). He is the Director of the Nordic Asylum Law and Data Lab. He is a leading scholar in international refugee law and leads several interdisciplinary research projects advancing data analysis and machine learning in relation to asylum and migration law (including NordASIL, AFAR and DATA4ALL). He has previously served as member of the Danish Refugee Appeals Board.

Henrik Palmer Olsen is a Professor of Jurisprudence, iCourts (Danish National Research Foundation Center of Excellence for International Courts). He is a PI of research project Public Administration and Computational Transparency in Algorithms (PACTA) and LEGALESE (natural language processing for legal information retrieval). Overall, he has a track-record of academic excellence in his field including 125+ publications, many of which is published by leading international journals and publishers. He currently also serves as an Associate Dean for Research and Head of the PhD school.

1 Introduction

International migration law (IML) is the quintessential example of a fragmented body of international law (Chetail, 2017). Lacking in terms of a central treaty system, IML remains bound to draw on peripheral norms, including (but not limited to) refugee law, diplomatic protection, and labour law. During past decades, however, different international legal regimes and adjudicatory bodies have added substantive new layers for the rights of migrants under international law. This includes first and foremost international and regional human rights courts and bodies, where today migrant and refugee cases have come to form a significant part of their jurisprudence (Chetail, 2021; Ford, 2022). In addition, denser regulation of migrant and refugee rights has arisen within regional legal orders, most notably the European Union (Costello, 2015). Indeed, accountability for migrant and refugee right violations is increasingly being sought from within a widening body of transnational legal regimes, including administrative, constitutional, criminal and tort law, to name but a few (Gammeltoft-Hansen and Tan, 2020). Hence, as Aleinikoff (2007) has presciently pointed out, IML may well be conceived of as a body of legal norms of substance, but not one of architecture.

Comparative migration law shows critical promise for navigating IML through not only horizontal (national) but also vertical (international) spheres of legal analysis. At the same time, however, the fragmentation of IML across multiple legal orders presents obvious challenges to both scholars and practitioners in terms of finding relevant law across specialised fields and also constructing authority across heterodox legal regimes. Chetail (2017) has suggested that IML is ‘based on dissonance and asymmetry’ as its constituent parts sometimes seem almost irreconcilable in structure, content, and *telos*. Spiro (2017) goes even further and suggests that migration lawyers ‘no longer really speak the same language’ as its ‘component parts require an understanding of the field’ that ‘no one can master’ across national legal orders. In short, IML is facing the ‘clash of different idioms’ of the kind that Koskenniemi famously forewarned (2009, p.12) as a collection of “competing descriptions [that] work to push forward some actors or interests while leaving others in the shadows”. In that sense, traditional comparative law approaches not only reach practical limits based on research expertise and resources, but in its process might ultimately side-line important values.

In this paper, we put forward network analysis as a both practice-oriented and scientifically relevant method for exploring the increasingly complex web of IML. More specifically, we argue that computational case citation analysis is a useful tool for representing the connections in the jurisprudence of courts as a network that enhances our ability to identify the weaves and threads through which the fragmented field of IML is

nonetheless connected. Network analysis builds from legal doctrinal methods but enables researchers to navigate normative complexity on a scale that is ordinarily not possible through human reading of legal texts. In this sense, network analysis can help to address what Twining (2005) has called ‘the Achilles heel’ of comparative law: a selective approach which generates a partial view and thus always runs the risk of accentuating the epistemic divide between the comparison and the comparator.

In that sense, the approach we want to advance in this article promotes a different type of comparative migration law to that of some other contributions in this special issue. Whilst we echo the editors’ call for greater engagement with the ‘autonomy and interdependence’ of migration law, we seek to extend it to its practical limits by showing how formally separate legal fields are nonetheless linked and inter-related. From an academic perspective, more in-depth empirical analysis of these links and relationships is essential for establishing IML as a distinct and common field of research. From a practical perspective, such analysis represents one way we can come to terms with conflicting legal interpretations amongst national and international courts. From a more general perspective, our argument is in line with recent calls for a stronger tethering of IML to theoretical and methodological developments within international law more generally (Byrne and Gammeltoft-Hansen, 2020), but further reveals what becomes empirically possible through the power of computation.

More concretely, this contribution seeks to showcase what network analysis offers as a method for IML, which places emphasis on empirical analysis as opposed to imposing a particular *a priori* construction of IML’s teleology. To this end, we focus on the ‘human rights turn’ in IML (Rubio-Marin, 2014; Gammeltoft-Hansen, 2018) and seek to exemplify what network analysis offers migration lawyers and scholars by helping to identify authoritative judicial practice in the jurisprudence of the European Court of Human Rights (‘ECtHR’). We depart from the received knowledge by showing how network analysis uncovers a more systemic point in revealing the centrality of migration to the normative architecture of European human rights law. Nonetheless, this iterative and dialectical process of network analysis – of speaking law to data, and data to law in the reciprocal – also underscores that data cannot ‘speak for itself’ and therefore demands a degree of reflexivity on the part of the researcher.

The analysis proceeds as follows. Section 1 introduces network analysis and traces its recent application in legal studies through computational methods. Section 2 moves to demonstrate the empirical purchase through an analysis of the case citation networks of migration related case law of the ECtHR. Section 3 outlines further benefit of network analysis for a comparative migration law by outlining some potential future applications across comparative international and national data sets of case law on the basis of our presentation.

2 Network analysis as a tool for mapping the web of IML

Understanding the scope and origins of network analysis is an essential starting point for assessing what it can contribute to comparative migration law scholarship. At its basics, network theory focuses on a set of items (‘nodes’) and connections between them (‘links’) and seeks to map their inter-relations (Whalen, 2016). Network analysis seeks to visualise these bits of information by reducing but also scaling information on a level that would ordinarily escape the gaze of the viewer of the network (Christensen, 2021). Since

the 1930s, sociologists have used network analysis to map the relations between social groups, and this continues to be a prominent application also in the legal field (for a recent example, see Langford et al., 2017). More recently, researchers in both the natural and social scientific disciplines have come to appreciate how networks are in fact everywhere and the theory is now finding more widespread and cross-disciplinary purchase.

For legal scholars, the ‘web of Law’ may itself be represented as a network, where legal materials such as case law connect to other materials through citations or references (Smith, 2007). Network analysis applied to law thus tend to focus on finding the hidden patterns that would be difficult to discover through legal doctrinal methods. Whereas doctrinal analysis typically focuses on ‘leading cases’ or a selection of cases in a line of case law, legal network analysis enables researchers to reveal less obvious links between cases, examine their significance, as well as the network’s overall characteristics. For instance, Smith’s (2007) analysis of 400,000 US Supreme Court decisions revealed that its web was not ‘seamless’ but ‘uneven (and) clumpy,’ as authority is highly concentrated, and the vast majority of cases are never cited. This enabled the author to outline previously unknown normative potentials in the law, including mapping its semantic topology to determine whether legal categories were adequate or required reform.

As the Smith’s example makes evident, the scale of legal network analysis has greatly expanded through the power of computation. Case citation network analysis thus forms part of a broader computational turn in legal research, which aims to identify recursive patterns in legal materials by coding large *corpa* with computers (Ashley, 2017). Case citation networks zoom in on the networks made between cases through their citations and use computation to map the full scope of textual connections (Alschner, 2021). Network analysis can thus enable legal researchers to examine case law with less selection bias or path dependency than doctrinal legal methods, which traditionally rely on legal scholars’ individual or collectivised opinion (or ‘doctrine’) of what is an important case or link in a network (Olsen and Sadl, 2017). It promises to sort large bodies of legal information with a data driven empirical method that can both “validate hunches and prove legal intuitions correct” [Olsen and Sadl, (2017), p.330] and “ask new and more ambitious questions about how international law works” (Alschner, 2021).

For migration lawyers network analysis is of particular value when engaging new bodies of jurisprudence or trying to gauge the relative attention to migration issues within or across legal regimes not exclusively dealing with migration issues. For example, Frese and Olsen (2019) have used citation network analysis to show how cross-citations between the Court of Justice of the European Union (CJEU) and the ECtHR is generally rare, but much more prevalent in regard to their respective migration case law. Network analysis can further represent all explicit and implicit linkages in case law as well as subgroups in a network (Lupu and Voeten, 2012). For instance, does an Australian court cite jurisprudence from the UK, which in turn links to jurisprudence arising under EU asylum law? These methods can be used to identify *de facto* legal precedent of rule following without binding rules (Pauwelyn, 2016) or on the basis of semantic similarity between legal texts (Panagis et al., 2016). Citation networks can further analyse case clusters where interpretation is split across areas (Sادل and Panagis, 2015) and map the evolution of legal principles across factual issues such as specially protected classes of persons (Olsen and Küçüküsu, 2017). Network analysis can thus extend to find ‘coherence out of chaos’ in seemingly unrelated legal texts (Derlén, 2012).

As a method legal network analysis similarly has important limitations. There is a growing consensus in this line of research that network analysis is “no substitute for careful thought ...and problem-specific validation” (Grimmer and Stewart, 2017), as computers cannot differentiate between legally significant and insignificant text (Alschner, 2020; Altwicker, 2019). Network links are not the same as causation – i.e. citation does not equate with legal precedent – and cannot exclude other, alternative connections associated with the processes of decision-makers (Alschner, 2017). While network analysis is becoming increasingly sophisticated through techniques that identify the normative force of precedents within a network (Sadl and Panagis, 2015), it often works best with close collaboration between data scientists and legal researchers (Whalen, 2016).

In sum, network analysis can bring comparative migration law research into greater empirical relief than traditional methods with less resources, effort, and time invested. Yet, computational approaches do not displace the need for more qualitative forms of analysis in comparative migration law research, but can rather help enhance the validity, reliability, and transparency of established methods (Olsen and Sadl, 2017). More stable and complete data sets can provide a foundation for comparing the jurisprudence of courts and in turn comparatively evaluate their functions within a wider normative framework. As we will attempt to demonstrate in the following section, network analysis shows strong promise for enhancing comparative migration law research in this regard.

3 Unravelling migration in the European Court of Human Rights’ Case Law

The ECtHR has long drawn the attention of network analysis scholars due to the dense and heavily integrated structures in its body of case law (Lupu and Voeten, 2012; Olsen and Küçüksu, 2016). This further provides good opportunity to assess its role in the ‘human rights turn’, which has been argued to reshape the way that migration is understood under international law. On the one hand, the focus on migrant rights has gradually shifted from special regimes of, e.g., labour rights and diplomatic protection to the more general human rights treaty architecture (Chetail, 2013; Lambert, 2009). On the other hand, specialised treaties related to migration, such as the 1951 Convention Relating to the Status of Refugees, has increasingly come to be interpreted and framed in light of broader human rights developments (Hathaway, 2017; Gammeltoft-Hansen 2011).

The ECtHR has been at the juridical centre of this phenomenon, emerging as ‘a key court’ for the protection of the rights of migrants under international law (Çalı et al., 2021) and issues associated with migration have become a large part of its docket (Dembour, 2015). This was hardly *a fait accompli*, as at the time of its founding ‘migrants were hardly a consideration in the newly created human rights scheme (Dembour, 2015). Yet, the ECHR has always had had a cosmopolitan ethos to ensure the jurisdiction *ratione personae* of the Convention extends to *everyone* within the member states (Article 1). The first migration cases began to enter the ECtHR case law in the 1980s, by which point the Court had established itself as a *de facto* supreme court of human rights in Europe through legal development in other areas (Gammeltoft-Hansen and Madsen, 2021). The ECtHR has since built a sophisticated jurisprudence that extends from a core focus on protecting migrants and refugees against expulsion and extradition

based on *non-refoulement* and to a range of migrant rights based on non-discrimination, privacy, family unity and protection against arbitrary arrest and detention.

In this context, it is often neglected that the expansion of migration case law within the ECtHR jurisprudence has equally been a catalyst for the normative development of international human rights law (Gammeltoft-Hansen and Madsen, 2021). Understanding the rights of migrants in the ECtHR legal space implicates a range of more general and themselves often complex, human rights case law areas. This puts migration lawyers at the crux of sitting on the fence and looking below – how can we leverage this deep case law whilst maintaining focus on the subject of migration law? On the one hand, we are beholden to law textbooks which mostly offer a one-sided picture of the law – for instance, a focus on ‘European Human Rights Law’ or ‘International Refugee Law.’ On the other, we are forced to rely on legal databases that are either selective in their approach (e.g., ‘asylumlawdatabase’) or insufficiently discriminate in their search results (e.g., HUDOC). An addition, how do we avoid the risk of overlooking cases, which do not neatly fit with accepted doctrinal categories or are otherwise neglected in a doctrinal research process?

In order to show a possible solution to this problem and get a broader view of how the ECtHR case law on migration issues has developed we conducted an exemplary network analysis. The first network we present is the internal relations in migration case law of the ECtHR using a set of defined keyword criteria.¹ Using keywords as a method to define the network is easy, but risks leading to an over-inclusive dataset, where cases not related to migration are equally captured. One example is *Guzzardi* (app. 7367/76), which cites art. 5-1 in extenso, and therefore contains the word ‘deportation’ (litra f). The case itself has nothing to do with deportation however. In order to overcome the issue of irrelevance that is a consequence of the simple keyword extraction method applied, we have noted the number of times keywords appear in the text. This functions as a proxy for relevance and we can subsequently use this information when analysing and further delineating the network.

Some cases further contain more than one decision, so we adjust the dataset so as to only keep the final decision/judgment for each case (thus, there is only one decision/judgment per case). This gives us a set of 3,273 cases or *nodes* in our network. The cases are connected through case-to-case citations (*edges*), but many of these are never cited and are therefore peripheral to the network, unless they are very recent cases. The main body of cases that make up the citation network thus consist of 1,174 cases. The network has a total of 4,613 edges. We can start calculating the most basic and, for our purposes, relevant network features of each node in the network: in-degree and centrality.

In-degree is a measure of how many times a case is cited by another case. The higher the in-degree, the more the case is cited by other cases. Network centrality is a measure of the influence of a node in a network: Each node is assigned a score which indicates its centrality in the overall network. We calculate two different centrality measures: Betweenness and Eigenvector, both of which are commonly used for directed graphs. Because of the difference in the way they are calculated they yield different results, but both indicators provide clues as to which cases are the most important in the network in terms of influence on other cases.

By observing those nodes that have the highest scores in the network based on these parameters, we get a sense of which cases are more important in the network we have

build from our dataset. The table of cases below is not ranked by degree of importance as the different classes of measurement do not produce equivalent systems of measurement, but represents the cases that are most cited – between cases – in the ECtHR’s migration law case law network.

Table 1 Most cited cases in the ECtHR’s migration case law network

Saadi V. Italy (2008)	Jabari V. Turkey (2000)	Auad V. Bulgaria (2011)
Labita V. Italy (2000)	N. V. Finland (2005)	Magyar Helsinki Bizottság V. Hungary (2016)
A. And Others V. The United Kingdom (2009)	D.H. And Others V. The Czech Republic (2007)	Hilal V. The United Kingdom (2001)
Üner V. The Netherlands (2006)	Shamayev And Others V. Georgia And Russia (2005)	Gebremedhin [Gaberamadhien] V. France (2007)
Čonka V. Belgium (2002)	El-Masri V. “The Former Yugoslav Republic Of Macedonia” (2012)	Al-Adsani V. The United Kingdom (2001)
Saadi V. The United Kingdom (2008)	Merabishvili V. Georgia (2017)	Said V. The Netherlands (2005)
Salah Sheekh V. The Netherlands (2009)	Al-Moayad V. Germany (2007)	Maouia V. France (2000)
Cyprus V. Turkey (2001)	Othman (Abu Qatada) V. The United Kingdom (2012)	Ilaşcu And Others V. Moldova And Russia (2004)
Na. V. The United Kingdom (2008)	M.A. V. Cyprus (2013)	Nasrulloev V. Russia (2007)
Maaouia V. France (2000)	Aoulmi V. France (2006)	Orhan V. Turkey (2002)
Hilal V. The United Kingdom (2001)	A. And Others V. The United Kingdom (2011)	Bensaid V. The United Kingdom (2001)
Slivenko V. Latvia (2003)	Maslov V. Austria (2008)	Azimov V. Russia (2013)
M.S.S. V. Belgium And Greece (2001)	Ilias And Ahmed V. Hungary (2019)	Shamayev And Others V. Georgia And Russia (2005)
Öcalan V. Turkey (2005)	Nada V. Switzerland (2012)	Boultif V. Switzerland (2001)

It is important to note, however, that a high network score is not necessarily the same as legal or political importance, which is a more qualitative feature. Still, the network scores should give some indications in this regard too: high network scores are driven by the frequency of court citations. It is the active use of these cases as a basis for new judgments that drive their citation scores, and this is an indication that these are the ones that the ECtHR attribute importance throughout – they show the bigger picture. Moreover, it is possible to break down the network to get more detailed information: Is there a relationship between keyword occurrence and network score? Are there clusters in the network? What is the distribution across various human rights articles? These questions can all be answered through network analysis and can enrich our understanding of how migration issues are dealt with at the ECtHR.

In addition to the use of various network scores, a network analysis approach has the advantage that the network can be visualised. For this article we used the open source and free software Gephi (<https://gephi.org/>). Gephi allows for visualisation and exploration of the network, enabling creative approaches to explore the case law and link the

precedent [see e.g. Costello, (2015), pp.192–193] which may suggest that *Saadi* has displaced *Chalal* for its unequivocal position on *non-refoulement* in this respect.

A similar dynamic can be observed in regard to ECtHR case law concerning effective remedies and suspensive effect in regard to *refoulement* or deportation. *Čonka v Belgium* is often cited by migration law scholars for this purpose [see e.g. Goodwin-Gill and McAdam, (2007), p.403, p.538], but it is also the first case where the ECtHR found a violation of the prohibition of the collective expulsion of aliens. *Hirsi Jamaa v. Italy* did not make the top list of cases by only one ranking in our network but appears to be gaining ground as the most cited precedent in regard to extraterritorial migration control.

This effect, where newer case law displaces older precedent in terms of citations, is not automatic, however. For example, *M.S.S. v Belgium and Greece*, which examined the compatibility of transfers under the Dublin Regulation with the Convention, so far remains the Court's leading precedent on this issue. *Salah Sheekh v Netherlands* might be recalled as a precedent on internal protection alternatives, whilst *Üner v Netherlands* affirmed principles on the expulsion of long-term immigrants convicted of criminal offences, and both cases have not been displaced by more recent cases in these subject areas. This could be explained by the continuing weight afforded to more general precedents *vis-à-vis* those that tailor legal principles to specific areas. Moreover, there is a bias in network analysis towards older cases as most cited despite not necessarily being the most relevant precedents (on this issue see, Leitão et al., 2019). However, there are also exceptions. For example, *Ilias Ahmed v. Hungary* (2019), which examined immigration detention in a transit zone, is quickly emerging as a highly cited ECtHR precedent.

Secondly, our network reveals cases central to ECtHR jurisprudence but that might be less well known to migration lawyers. For instance, *El-Masri v. The Former Yugoslav Republic of Macedonia* affirmed ground-breaking principles on *non-refoulement* but did not involve a situation of migration *stricto sensu* and rarely receives mention in IML textbooks. *Cyprus v. Turkey* affirmed significant principles on Article 1 of the *Convention* but is less known for the *dicta* expressed on the rights to health and family unity. A third case rarely mentioned within the migration literature is *NADA v Switzerland*; an important case on the compatibility of UN Security Council Resolutions with the Convention, it also affirmed principles on freedom of movement. Network analysis, in other words, can help to reveal a broader scope of IML scope with less influence of the pre-defined conceptual categories of doctrinal legal research.

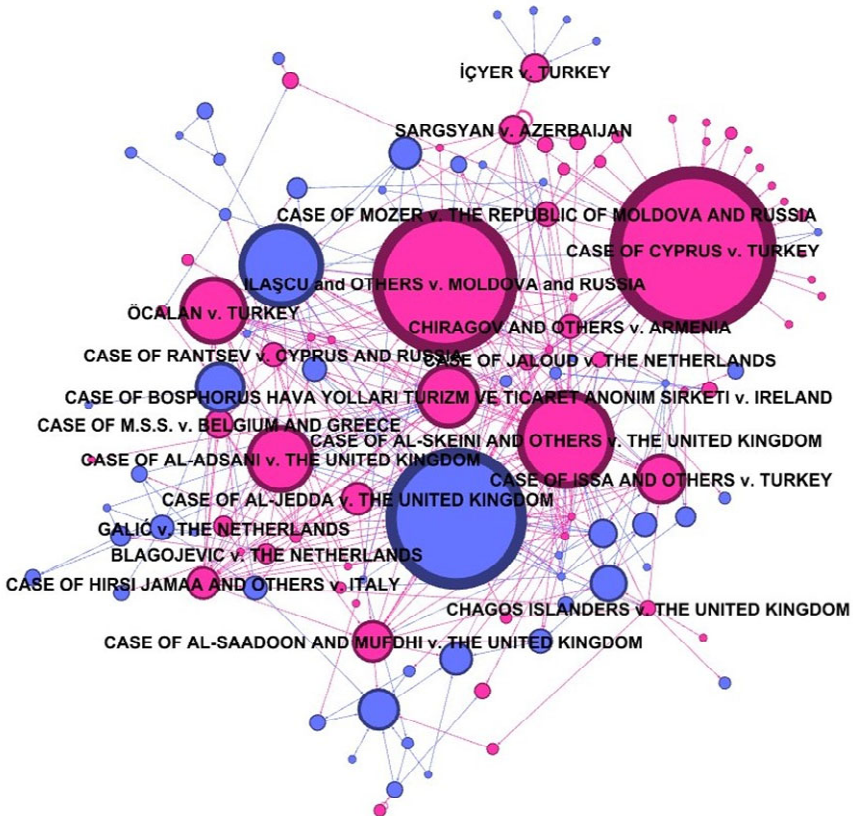
To recapitulate at this point, we have shown some of the applications of network analysis in enabling migration scholars and lawyers to identify the relative importance of legal precedents and new sources of legal authority in the ECtHR's migration case law network. Yet, the analysis has also had the incidental effect of revealing a number of highly cited cases in this network which are generally not considered central cases of migration law.

As a second step in our analysis, we might ask how important the identified migration case law is within the wider ECtHR jurisprudence. Answering this question may serve both practical and theoretical aims. It aids migration lawyers gauge how much weight the court ascribes to a migration-specific case but also enables them to identify a broader set of general case law, which might be relevant to a given argument. From a scholarly perspective, this exercise may further be useful for empirically investigating broader claims about the centrality of migration issues within the ECtHR's jurisprudence. To this end, we identified three further networks to test the relative prominence of migration case

law in respect to three set of convention rights, where ECtHR law is regularly cited within the migration literature. These include article 1 cases as related to extraterritorial jurisdiction in migration control, article 2 cases related to *non-refoulement*, and article 8 cases related to cases concerning expulsion or family reunification. Using the totality of case law under each of these articles as a baseline, we applied the in-degree test to rank the already identified migration cases by order of rate of citation in the network.

The Article 1 network appears as follows:

Figure 2 Case citation network of the ECtHR's Article 1 Jurisprudence (see online version for colours)

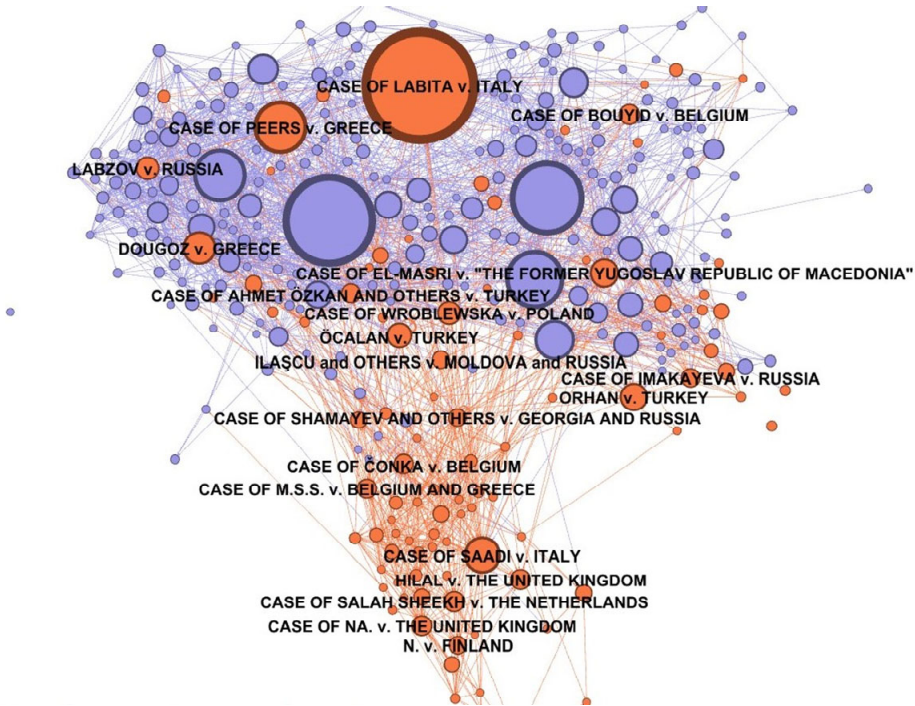


In this network red represents cases identified as migration cases in our initial network, whilst blue represents cases not in that data but forming part of the wider Article 1 network. The size of the node equates to the in-degree score and therefore the rate of citation in the network – i.e. the higher the rate of citation, the larger the size of the bubble ('node') in the network. The overall results might come as no surprise to legal scholars versed in court's jurisdiction case law as the top cited cases – *Cyprus v. Turkey*, *Bankovic* and *Ilascu* – are generally considered leading cases. What is more surprising is the evident centrality of migration law cases in this network – 12 of the top 20 most cited cases also arose in our initial search. The cases dealing with the externalisation of migration control are a key driver in this respect (*Hirsi*, *MSS*) but many of their precursors – *Matthews* (voting rights for migrants), *X. v. Germany* (expulsion of aliens),

and *M v. Denmark* (asylum-seeking at embassies) also play a central role in the Article 1 network.

The Article 3 network presents a similar image, appearing as follows:

Figure 3 Case citation network of the ECtHR's Article 3 Jurisprudence (see online version for colours)



In this network, orange represents cases identified as migration cases in our search for migration case law, whilst purple is cases not in that data but part of the wider Article 3 network. This time, however, only 6 of the top 20 cited cases are migration law cases within our initial search. The most highly cited cases in this network concern principles which affirm the scope of torture and inhuman and degrading treatment, for instance, *Labita*, *Kudla*, and *Selmouni*. *Labita* is an outlier here as it mentions the word ‘deport’ from the text of Article 5, but in fact does not concern an issue of deportation. However, two of the most cited cases - *Saadi* and *El-Masri* - are key precedents on *non-refoulement*. The data contains a large number of smaller orange nodes which indicates that migration issues – mainly *non-refoulement* cases - take up a significant proportion of ECtHR's Article 3 jurisprudence. This is legally intuitive, indicating that certain precedents form the legal core, which in turn provides the basis for application of Article 3 to the facts in the instant case by the Court. The data analysis, however, confirms the incredible significance of *non-refoulement* to Strasbourg case law.

The Article 8 network is more nuanced largely due to the larger size of the network:

Figure 4 Case citation network of the ECtHR's Article 8 Jurisprudence (see online version for colours)



In this network, green represents cases identified as migration cases in our initial search, whilst red nodes represent cases not in that data but which form part of the wider Article 8 network. This network suggests that issues of migration have been less prominent in the overall body of Article 8 law. For European human rights scholars this may be unsurprising, given that this is one of the most dynamic articles within the court's jurisprudence (see for example Marshall, 2008). Nevertheless, migration cases again emerge among the central nodes – 9 of the top 20 cited cases are migration cases within our initial results – and several are likely to be familiar to migration lawyers, including *Neulinger and Shuruk* (parental custody) and *Boutlif v. Switzerland* (deportation). A notable absence from the top cited cases is *non-refoulement* arising under the right to privacy. This reflects, as our analysis elsewhere suggests, that the cases that are considered important in legal doctrine might not actually be central cases in the migration case law network.

In sum, this brief analysis has attempted to show how network analysis can be used to gauge the relative prominence of migration case law in the ECtHR Article 1, 3 and 8 networks. The methods we have used are only a relatively simple starting point – further research could show sources proliferation (e.g. what cases use *Hirsi Jamaa* as a precedent), or the importance of migration law precedents for judicial dialogue amongst different international courts. Such work would enable deeper theorisation on the *nature* of IML, and the different entanglements of migration law and European human rights law (Gammeltoft-Hansen and Madsen, 2021). What is clear even from our exemplary

analysis, however, is the centrality of migration cases within different parts of the ECtHR's general jurisprudence. Many of the nodes identified are considered landmark cases in international human rights law – further indicating the agency of migration as a subject that transforms international law.

4 Comparative networks for IML

We can now address some possible future applications of network analysis in a shorter form. Firstly, network analysis brings into full scope the normative possibilities of a comparative migration law by mapping all explicit and implicit links across bodies of migration case law. Network analysis can enhance our ability to systematize the case law of national courts, which has traditionally been a problematic task for doctrinal legal research in comparative law. Despite decades of efforts to promote judicial cooperation (Storey, 2003) and regional harmonization (Trauner, 2016), Goodwin-Gill and Lambert (2010) point to a continued lack of an explicit judicial dialogue between national courts in Europe – in marked contrast to expectations among some theorists (Slaughter, 2003). Promoting coherence between comparative migration laws through network analysis could be one way to address these problems. For instance, Frese and Olsen (2019) have used network analysis to trace cross-citations between the ECtHR and the Court of Justice of the European Union ('CJEU') and found that whilst they cite each other surprisingly little, they display a higher degree of convergence on some legal issues, among them migration. Further research could employ these methods to analyse cross-citations between national courts to identify room for normative development and the legal impediments to judicial dialogue.

Network analysis may secondly be useful in addressing another key challenge in comparative migration law – identifying authoritative judicial practice across different judicial bodies at either the national or international level. Network analysis can be used to unravel the relative importance of precedent by identifying the centrality of branches in a network (Olsen and Sadl, 2017) or its density across similar issue areas (Ridi, 2019). This permits greater ability to deride outlier precedents – for instance, is *N.D. and N.T. v. Spain* now a strong precedent in the ECtHR network? Network analysis can identify *de facto* systems of precedent in the case of rule following without *stare decisis* (Pauwelyn, 2016) or implicit precedent arising in semantic similarity of texts. For instance, does an Australian court rely on a case from European courts, which in turn is embedded in CJEU asylum law? This could help to address a shortfall in existing studies on judicial dialogue in IML, largely focusing on explicit cross-citations. National courts may be seen to align on the substantive interpretation of specific case types, e.g. LGBT or *sur place* claims based on religious conversion, even if not explicitly citing the jurisprudence of other courts. For instance, Denmark has in several instances adjusted its practice based on CJEU judgments, despite having a formal opt-out and thus not being bound by the Court's jurisdiction in this area (Gammeltoft-Hansen et al., 2021). Network analysis can also be used to identify implicit citation through repetition of legal arguments without explicit reference (Panagis et al., 2016). Combined with methods from data science, such as topic modelling (Panagis et al., 2016) and natural language processing (Sadl and Panagis, 2015), network analysis can therefore be used to gauge shifts over time in the content of cases and how the legal relevance of a case can become embedded through a process of re-interpretation across different legal institutions.

Thirdly, network analysis could potentially enable scholars to analyse law across multiple perspectives. As indicated above, citation analysis can also unveil temporal dynamics, e.g. identifying ‘tipping points’ where precedent becomes ‘good law’ in a network (Derlén and Lindholm, 2017). It can further be used to analyse the legal and social factors that seem to constrain a court when it decides to follow a legal precedent (Sadl and Panagis, 2015). By including both ‘legal’ and ‘non-legal’ elements, legal network analysis may thus potentially overcome a limitation of traditional comparative law focusing on doctrinal or sociological approaches. Network analysis thus shows promise to answer calls for interdisciplinarity with a more rigorous empirical approach, but one which also maintains the integrity of law within legal research (Klabbers, 2009).

Finally, and as we have attempted to demonstrate, network analysis can help reveal the normative layering of comparative migration law and as such redress some of its more harmful blind spots. As is well known, there is no dedicated international court for migration law (Noll, 2022) and in the absence of centralised authority the legal interpretative framework has proliferated across national cultures. International lawyers (Roberts, 2017) and refugee law scholars (Chimni, 1988) have proposed that international law privileges certain discourses that reflect asymmetries and power structures. For example, refugee law doctrine has been argued to reproduce a Western or Anglophone bias in that both scholarship and key soft law documents are skewed toward certain national jurisdictions (Bailliet, 2016; Byrne and Gammeltoft-Hansen 2020). Previous studies have used network analysis to crack open similar problems by revealing how cases cited in textbooks do not reflect their importance in case law networks (Frese and Olsen, 2019). A broader and more inclusive platform for comparative migration law may thus offer both a more global picture of IML and bring to the fore hitherto marginalised case law. In that perspective, network analysis may thus also form part of wider initiatives to more systematically engage case law and scholarly voices in the Global South (Spijkerboer, 2021; Chimni, 1988).

5 Conclusions

In this paper, we have sought to show some of the promises and pitfalls of case citation network analysis for a comparative migration law. We have introduced network analysis as a method in within the wider computational turn in legal scholarship, which has dramatically expanded the capacity for representing the relationship between variables in a legal corpus. We have constructed a basic dataset to analyse the impact of IML on ECtHR case law, which helps to show both how migration cases feature within the wider ECtHR jurisprudence and how migration has transformed international human rights law more generally. As indicated in the final section, further research applying such methods not only holds potential in terms of exploring the normative possibilities of IML from a more empirical perspective, it may also help overcome existing legal-epistemic blind spots. In short, bringing into scope the spider’s web of IML not only offers a practical tool set for migration lawyers, but also represents one possible inroad to address some of its inherent challenges.

In many respects comparative migration law is facing the classic legal problem: what is the relevant law? For some time legal fragmentation has generated anxiety amongst international legal scholars, but is also coming to be regarded as an opportunity for hope in legal normative restructuring and concrete action (Tan and Gammeltoft-Hansen, 2020).

Competing conceptual constitutional and pluralist paradigms continue to dominate this dialogue, and often seem to talk past each other despite shared values and common points. The benefit of network analysis lies in its ability to resist *a priori* theories. It puts the connectivity of law at the forefront – the comparatist question becomes the globalist question with law as the central nodal point.

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Notes

- 1 We first scrape HUDOC for all cases that contain one or more of the following keywords: Refugee, Asylum, Refouler, [^~n]refoulement, Non-refoulement, Nonrefoulement, Immigration, Deport, Migrant.