

## Legal Families Without the Laws: The Fading of Colonial Law in French West Africa†

*Colonization has created a unique opportunity to test the endurance of legal transplants. Using a sample of seven former French colonies in West Africa, we examine how much of the colonial penal code has been retained by modern countries. This is done using a computer program that matches each article from the colonial code to the article most similar to it in each contemporary code. This novel algorithmic approach allows us to undertake millions of comparisons across the entirety of the penal codes in question. The results reveal large variation in the postcolonial era. While Senegal has retained almost half of the colonial penal code, Togo has kept less than one percent. These quantitative results are validated through a qualitative analysis of nine areas of the law, which shows that the algorithm is able to match articles about as well as a human. We are thus confident that the program is able to accurately measure which articles have changed and which have remained the same since 1955. Despite frequent claims that these legal systems should be grouped together, legislation in these countries seems to have diverged. This form of analysis yields a much more nuanced understanding of how laws change over time, while also challenging the idea that African legal systems are stagnant.*

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*Une bonne loi doit être bonne pour tous les hommes, comme  
une proposition vraie est vraie pour tous.  
[A good law must be good for all men, just as a true statement  
is true for all.]*

—*Marie-Jean-Antoine-Nicolas de Caritat,  
Marquis de Condorcet*<sup>1</sup>

#### INTRODUCTION

With the Constitution of the Fourth Republic in 1946, the French instituted a change that was to have longstanding effects not only on the citizens within its metropolitan borders, but also on the subjects throughout its slowly eroding Empire. While this change was ostensibly intended to make all French subjects and citizens equal before a shared set of laws, and indeed served as an olive branch to those outside the *métropole*, this unified set of laws would not cover such large swaths of land for much longer.

It was this effort by the French to unify vastly different cultures through a communal language, identity, and of course law that forms the basis for the claim that there is, or at least was, a French legal family. Many countries have endeavored to impose or share laws, prompting claims about the existence of legal families based on these inherited similarities. Much of the literature in comparative law builds on the assumptions inherent in these legal groupings. Beyond the implications for the theoretical groupings of comparative law, the idea of dividing legal systems into families also has important ramifications for the legal origins thesis and for those undertaking practical legal reforms in law and development. While the process of colonization involved the forceful and explicit transplantation of laws from France to her colonies (or equivalently from other colonizers to their colonies), we lack systematic evidence showing the extent to which—or even if—these historical similarities have persisted through the independence period and into the present.

In order to test whether these historical ties have endured, we examine the colonial penal code in seven countries that were once under French control and compare it to each country's contemporary penal code. We do this by measuring the "distance" between every article in the pre-independence colonial penal code of 1955 and its closest match in the contemporary code of each of these seven countries. Distance in this case is measured using techniques borrowed from computer science and, more specifically, the field of information retrieval. We believe that our use of this method is novel and that researchers who seek to make comparisons across large volumes of textual data will find it useful. Our method reveals that these laws do

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1. 1 OEUUVRES DE CONDORCET 378 (1849).

not have the family resemblances comparative lawyers might expect (or that the Marquis de Condorcet, quoted in the epigraph to this Article, may have desired).<sup>2</sup> Our results show that there is substantial heterogeneity across the penal codes of these countries today. While this study was only undertaken on the penal code, our finding that articles have changed substantially in this area of the law should encourage scholars to reconsider whether other areas of the law may be similarly fluid. This realization should make us more cautious about the theoretical value of creating groupings of countries based purely on their common legal origin.

In addition, there is much commentary decrying the stagnant and outdated nature of laws in Africa.<sup>3</sup> We find little support for the idea that current African laws are mere reflections of colonial legislation or that they are part of some coherent grouping of French or African or even French West African legal systems. Senegal, which has retained the most colonial legislation, has still dropped or substantially altered more than half of the colonial penal code that it inherited. Every other examined country has made even more dramatic changes. By and large, criminal law in French West Africa is dynamic, having changed from its colonial starting point while also diverging between countries.

This Article first outlines the basis on which there have been classifications of legal systems in the comparative law discourse (Part I), followed by an examination of why French West Africa is an ideal case to examine the extent to which legal families have changed over time (Part II). We then describe our data and unique methodology (Part III), which uses an algorithm to measure the distance between articles in the colonial penal code and their nearest matches in the contemporary penal codes of seven African countries. This is followed by our results (Part IV), which emphasize the divergence in law across countries that were French West African colonies. Our textual analysis (Part IV.A) finds that former French West African colonies have changed the majority of the articles in their penal codes extant in 1955, while our substantive analysis (Part IV.B) demonstrates the high accuracy of the algorithm in finding substantive matches between penal codes. We then present a discussion of our results (Part V), which explains how this information contributes to the literature classifying legal families. Our Conclusion details what these results might mean for how to classify laws moving forward, and more particularly, what they indicate about the evolution of laws in Africa.

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2. *Id.*

3. See sources cited *infra* note 38.

## I. CLASSIFICATIONS OF LEGAL SYSTEMS

The comparative law literature has long valued the enterprise of classifying legal systems. The purpose of classification, according to its proponents, is to highlight some shared aspects of legal families or cultures, as well as to allow lawyers to discuss problems that apply to entire legal groupings and propose common solutions.<sup>4</sup> Early on in particular, there was an emphasis on the “didactic”<sup>5</sup> or “taxonomic”<sup>6</sup> purpose of classification. René David was the first to develop the concept of legal families in his book *Les grands systèmes de droit contemporains*.<sup>7</sup> Here, by looking at the criteria of ideology and legal technique, he divides the world into legal families, the principal of which are the Romano-Germanic, common, and socialist families.<sup>8</sup> Like many of the other classification schemes that followed, this division is Eurocentric in character.<sup>9</sup> He arrived at these groupings by looking at two criteria: ideology and legal technique.<sup>10</sup> David, like some of his successors, felt that “the classification of laws into families should not be made on the basis of the similarity or dissimilarity of any particular legal rules.”<sup>11</sup> Instead, the primary idea was to differentiate legal systems based on their conceptions of justice. Other classification schemes have also avoided looking at the substance of laws, instead often focusing either on procedural differences, notably those existing between the common and civil law systems,<sup>12</sup> or on the culture, rather than the rules, of law.<sup>13</sup> However, this is not true of

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4. Anne Peters & Heiner Schwenke, *Comparative Law Beyond Post-Modernism*, 49 INT'L & COMP. L.Q. 800, 826 (2000); Ugo Mattei, *Three Patterns of Law: Taxonomy and Change in the World's Legal Systems*, 45 AM. J. COMP. L. 5 (1997).

5. RENÉ DAVID & JOHN E.C. BRIERLEY, MAJOR LEGAL SYSTEMS IN THE WORLD TODAY 21–29 (2d ed. 1978).

6. KONRAD ZWEIGERT & HEIN KÖTZ, AN INTRODUCTION TO COMPARATIVE LAW 57 (Tony Weir trans., 1977).

7. RENÉ DAVID, LES GRANDS SYSTÈMES DE DROIT CONTEMPORAINS (1964).

8. DAVID & BRIERLEY, *supra* note 5, at 21–29.

9. Mattei, *supra* note 4, at 5; H. Patrick Glenn, *Comparative Legal Families and Comparative Legal Traditions*, in THE OXFORD HANDBOOK OF COMPARATIVE LAW 421, 421 (Mathias Reimann & Reinhard Zimmermann eds., 2006).

10. DAVID & BRIERLEY, *supra* note 5, at 19–20.

11. *Id.* at 19.

12. Joseph Dainow, *The Civil Law and the Common Law: Some Points of Comparison*, 15 AM. J. COMP. L. 419 (1967) (looking at such differences as how decisions are written, legal education, and use of legislation).

13. Mark Van Hoecke & Mark Warrington, *Legal Cultures, Legal Paradigms and Legal Doctrine: Towards a New Model for Comparative Law*, 47 INT'L & COMP. L.Q. 495, 502 (1998) (dividing cultural families into African, Asian, Islamic, and Western cultures). Van Hoecke and Warrington argue that the most successful comparisons are those of an intra-cultural nature and that to compare beyond cultures can only have limited usefulness. Implicit here are the ideas that cultures change slowly, are internally consistent, and have fairly clear borders. See also John Bell, *Comparative Law & Legal Theory*, in PRESCRIPTIVE FORMALITY AND NORMATIVE RATIONALITY IN MODERN LEGAL SYSTEMS 19 (Werner Krawietz, Neil MacCormick & Georg Henrik von Wright eds., 1995) (defining legal culture as “a specific way in which values, practices, and concepts are integrated into operation of legal texts”).

all scholars, some of whom have focused heavily on substance as dividing legal families.<sup>14</sup> One of the main concerns with non-substantive classifications like David's is that they are so vaguely specified that they cannot be shown to be wrong. David admits that there is no "agreement as to which element should be considered in setting up these groups,"<sup>15</sup> and he himself never sets up a clear definition for the basis of distinguishing legal families. His justification is that one "cannot aspire to mathematical exactitude in the social sciences."<sup>16</sup>

Other early forays into classification schemes were similarly vague. Zweigert and Kötz, for example, arrived at a different model whereby they divide legal systems based on style.<sup>17</sup> They recognize that these classifications are ideal types, and that in reality not all laws in any country will necessarily fit within a single family.<sup>18</sup> They also suggest that national legal systems may belong to separate legal families in differing areas of the law. As an example, they mention that one country could belong to one family for private law purposes and another for constitutional purposes.<sup>19</sup> While the legal families literature has focused on private law in recent decades, these early divisions make clear that classifying legal systems was envisioned as relevant in different areas of the law as well. Nonetheless, classification schemes outside of private law are equally vague. For example, criminal law has been divided into the common law, civil law, socialist law, and Islamic law (although the collapse of most socialist states has mostly led to the removal of that category).<sup>20</sup>

Early classification schemes relied heavily on static representations of legal systems at one point in time, largely by relying on historical events to group legal systems. David's major groupings of Romano-Germanic, common, and socialist legal families are based almost exclusively on historical divisions and trajectories, but these trajectories are apt to change over time, as is shown by the fate of the socialist legal family. However, David does not provide a way to judge when one legal system has diverged sufficiently from a legal family to no longer be considered part of the fold or even to judge when a legal

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14. See, e.g., PIERRE ARMINJON, BARON BORIS NOLDE & MARTIN WOLFF, *TRAITÉ DE DROIT COMPARÉ* (1950) (basing taxonomy on the substance of laws, as opposed to legal history or formal characteristics).

15. DAVID & BRIERLEY, *supra* note 5, at 19.

16. *Id.* at 20.

17. ZWEIFERT & KÖTZ, *supra* note 6, at 62 (defining the style of a legal family as "(1) its historical background and development, (2) its predominant and characteristic mode of thought in legal matters, (3) especially distinctive institutions, (4) the kind of legal sources it acknowledges and the way it handles them, and (5) its ideology").

18. Mathias Reimann, *The Progress and Failure of Comparative Law in the Second Half of the Twentieth Century*, 50 AM. J. COMP. L. 671, 677 (2002).

19. ZWEIFERT & KÖTZ, *supra* note 6, at 59.

20. Thomas Weigend, *Criminal Law and Criminal Procedure*, in ELGAR ENCYCLOPEDIA OF COMPARATIVE LAW 214, 219 (J.M. Smits ed., 2006).

family has disappeared. Compared to the work of David, Zweigert and Kötz are more explicitly aware of the temporal limitations of classing legal families based on historical similarities. They mention that the “attribution of a system to a particular family . . . is susceptible to alteration as a result of legislation or other events, and can therefore be only temporary.”<sup>21</sup> Nonetheless, the transition point for shifting to a different or even new legal family is far from clear.

Instead of looking, as many legal families scholars have, at families at one point in time, Alan Watson has suggested that we focus on comparative law as being “especially about the nature of legal development.”<sup>22</sup> This legal change often happens through legal transplants, where laws have been copied from one place to another.<sup>23</sup> While laws were historically transplanted from colonizers to colonies, today, national legal systems often accumulate transplants from many different sources.<sup>24</sup> It is therefore unsurprising that the idea that legal transplants can provide a basis on which to group legal systems into families is widely accepted.<sup>25</sup>

Echoing Watson’s emphasis on the importance of legal change, some scholars have chosen to reconceptualize legal families in an attempt to avoid the static representations of earlier classification schemes. Glenn, for example, uses a division that does not serve a taxonomic objective, but instead relies exclusively on a normative historical overview to express the “degrees to which different traditions have been influential in the make-up of different national laws.”<sup>26</sup> It is difficult to criticize or test these claims both because this classification lacks exclusivity (all systems are essentially mixed) and because the boundary of each “tradition” is inherently blurry.<sup>27</sup> A variation of this is offered by Ugo Mattei, who divides legal systems into

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21. ZWEIGERT & KÖTZ, *supra* note 6, at 60 (giving as an example Japan, which may today belong more to a “European” than to an “Oriental” legal family).

22. ALAN WATSON, *LEGAL TRANSPLANTS* 7 (2d ed. 1993) (famously looking at transplants from Roman law into Scots law).

23. *See, e.g., id.*

24. Moreover, the legal transplants literature uses language that can help us understand the extent to which different parts of any national legal system fit within a particular legal family, as well as often analyzing the reasons for the acceptance or rejection of these transplants in domestic contexts. *See, e.g.,* D. Berkowitz et al., *Economic Development, Legality, and the Transplant Effect*, 47 *EUR. ECON. REV.* 165 (2003) (looking at how legal transplants adapt and change in new contexts, and can be rejected or fail to achieve their stated purpose when they clash with preexisting aspects of the law or culture); *see also* Maya Berinzon, *Copy and Paste: Transplanting International HIV/AIDS Model Laws into African Countries*, 23 *CARDOZO J. INT’L & COMP. L.* 295 (2015) (looking at how various African countries have modeled domestic HIV/AIDS laws on different international model laws).

25. Glenn, *supra* note 9, at 422 (mentioning the “irresistible process of aggregation or categorization”).

26. *Id.* at 425; *see also* H. PATRICK GLENN, *LEGAL TRADITIONS OF THE WORLD: SUSTAINABLE DIVERSITY IN LAW* (2010).

27. William Twining, *Glenn on Tradition: An Overview*, 1 *J. COMP. L.* 107, 112 (2006).

the three patterns of the rule of professional law, the rule of political law, and the rule of traditional law,<sup>28</sup> and suggests that the different areas of law of a single country (civil law, criminal law, etc.) can belong to different families.<sup>29</sup> Instead of seeing families as increasingly overlapping or shifting like Mattei or Glenn, some have also seen this increased mixing as devaluing the entire enterprise of classifying laws.<sup>30</sup> It is therefore unsurprising that there is no agreement amongst scholars about how to classify legal systems, especially given the temporary nature of any classification scheme.<sup>31</sup>

While the inability of the legal families literature to account for temporal change has led some scholars to see all legal systems as mixed, it has also led others to focus instead on trying to empirically measure the distinctions between and parameters of legal families. In attempting to classify legal systems or areas of legal systems, these scholars often focus more heavily on substance than on style or ideology, since the contents of the latter are ambiguous.<sup>32</sup>

Quantitative legal research takes one of two directions. First, there is a relatively recent body of literature that applies computational methods to legal texts. For example, many of the articles in this group use information such as the frequency of certain words to place text or actors along a spectrum.<sup>33</sup> By using a computer, instead of a human, they aim to produce measures of variables like political ideology based on an analysis of typically large volumes of text. The second approach relies on researchers to create hand-coded variables based on human analysis of legal texts, and then analyze the resulting quantitative data. For example, Elkins, Ginsburg, and Melton assessed whether different national constitutions cover various issues (such as tax bills), and then compared issue coverage between the American constitution and the constitutions of countries in Latin America in order to measure the degree to which the constitutions are similar.<sup>34</sup>

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28. Mattei, *supra* note 4, at 5.

29. *Id.* at 16 (giving the example case of Turkey, which uses Swiss-style civil law but uses the political rule of law in its penitentiary system).

30. Esin Örucü, *A General View of "Legal Families" and of "Mixing Systems"*, in *COMPARATIVE LAW: A HANDBOOK* 169, 177 (Esin Örucü & David Nelken eds., 2007); Jaakko Husa, *Classification of Legal Families Today: Is It Time for a Memorial Hymn?*, 2004 *REVUE INTERNATIONALE DE DROIT COMPARÉ* 11, 14–16 (2004).

31. Ronald J. Daniels et al., *The Legacy of Empire: The Common Law Inheritance and Commitments to Legality in Former British Colonies*, 59 *AM. J. COMP. L.* 111, 123 (2011) (discussing the undertheorized field of legal change and how this issue is fundamental to the issue of understanding colonial legal history).

32. Philip R. Wood, *How to Compare Regulatory Regimes*, 2 *CAP. MARKETS L.J.* 332 (2007).

33. *See, e.g.*, Michael Evans et al., *Recounting the Courts? Applying Automated Content Analysis to Enhance Empirical Legal Research*, *J. EMPIRICAL LEGAL STUD.* 1007 (2007) (applying this methodology to amicus curiae briefs).

34. ZACHARY ELKINS ET AL., *THE ENDURANCE OF NATIONAL CONSTITUTIONS* (2009).

Researchers have used this second method to examine how colonial legal transplants have impacted present economic and political outcomes.<sup>35</sup> While the legal origins literature uses quantitative methods to measure differences across countries, it has returned to the crisp classification schemes of early legal families proponents. More specifically, it uses the common–civil divide as a clear marker both of difference between countries and of substantive similarity between the countries within a category. Again, this builds on the premise that legal systems diverged in the seventeenth through nineteenth centuries, and thenceforth have remained constantly separate and internally consistent.<sup>36</sup> This has led to some questionable assertions, such as the claim that Mexico, Peru, Russia, Togo, and Turkey share the same legal origin.<sup>37</sup> The legal origins thesis also conceives of the institutions that accompanied colonial laws as durable. It is because of this durability that these historical institutions are able to impact economic outcomes today. This assumed durability of legal institutions reinforces related literature in comparative law that argues that legislation, and particularly legislation in Africa, has remained unchanged since the colonial era.<sup>38</sup> This is a common assumption, and no matter which type of legal classification one examines, French West African countries are always grouped together (whether as part of the civil law, an African legal family, the “rule of political law,” or as a part of some other taxonomy). Whether or not

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35. See, e.g., Rafael La Porta et al., *The Economic Consequences of Legal Origins*, 46 J. ECON. LITERATURE 285 (2008).

36. Ralf Michaels, *Comparative Law by Numbers? Legal Origins Thesis, Doing Business Reports, and the Silence of Traditional Comparative Law*, 57 AM. J. COMP. L. 765, 783 (2009).

37. La Porta et al., *supra* note 35, at 289. See also Michaels, *supra* note 36, at 783; Edward L. Glaeser & Andrei Shleifer, *Legal Origins*, Q.J. ECON. 1193 (2002) (relying on the colonial history of France and England to distinguish the legal systems which use the civil or common law); Rafael La Porta et al., *Law and Finance*, 106 J. POL. ECON. 1113, 1117–18 (1996) (broadly dividing forty-nine countries into a common or civil law tradition). For a critique, see John Armour et al., *How Do Legal Rules Evolve? Evidence from a Cross-Country Comparison of Shareholder, Creditor, and Worker Protection*, 57 AM. J. COMP. L. 579, 589 (2009).

38. See, e.g., James S. Read, *Criminal Law in the Africa of Today and Tomorrow*, 7 J. AFR. L. 5 (1963) (showing that in the immediate postcolonial period, the law in English-speaking areas of Africa was largely English in character); Robert Seidman, *Law and Stagnation in Africa*, 39 ZAMBIA L.J. 271 (1973) (blaming this persistence of colonial law on the endurance of neocolonial institutions and exploitation); Filip Reyntjens, *Authoritarianism in Francophone Africa from the Colonial to the Postcolonial State*, 1988 THIRD WORLD LEGAL STUD. 59, 59 (acknowledging “that independence in African countries has constituted much less a break with the past than was anticipated in the early 1960s”); Van Hoecke & Warrington, *supra* note 13, at 499 (claiming that most “African countries, after decolonization, have, to a large extent, kept the European law imported by their colonial rulers”); T.W. Bennett, *Comparative Law and African Customary Law*, in THE OXFORD HANDBOOK OF COMPARATIVE LAW, *supra* note 9, at 641, 645 (finding that European laws’ position as “the basic laws of the land” in Africa “still pertains”); Salvatore Mancuso, *The New African Law: Beyond the Difference Between Common Law and Civil Law*, 14 ANN. SURV. INT’L & COMP. L. 39, 39 (2010) (discussing the “antiquity” of African laws).

colonial laws have endured is an empirical question, and it is the question that is at the heart of our study. In order to answer this question, we now move to our case selection.

## II. FRENCH WEST AFRICA IS AN IDEAL CASE

In order for the concept of legal families to be coherent, analogous laws across countries in the same family should generally resemble one another. There is an assumption in the legal families literature that historical commonalities lead to continuing similarities. While much of the literature does point to the social elements that may constitute a legal family, rather than the black letter of the law, it often does so based on history rather than on a rigorous test of what links one legal system to another. The point is not to say that if the black letter of the law is different, then there is definitively no reason to group legal families based on perceived procedural or cultural similarities. Instead, we argue that if history does not explain current laws, we should be quite cautious in continuing to use it as a basis for assuming non-substantive similarities across families today.

We test this claim by examining how much French West African countries have retained the colonial legislation that is thought to unite them. Testing the endurance of colonial legislation is also valuable as it allows us to assess the extent to which African countries have moved beyond their colonial past and are charting new and independent legal courses. While there is a widely held sentiment that African laws are simply copies of old colonial legislation,<sup>39</sup> the degree of equivalence between colonial and existing legislation is an empirical question.

The experience of colonization also provides us with an ideal situation for testing the endurance of legal transplants. It is often quite difficult to determine both whether two compared laws arose independently of one another and the direction in which a shared law moved.<sup>40</sup> In the case of French West Africa, there is no ambiguity as to the direction of the flow of law between the *métropole* and colonies. The European powers agreed during the Berlin Conference to create spheres of influence throughout Africa, allowing them to spend the following decades conquering most of the continent.<sup>41</sup> Colonization in Africa was directly linked to the idea of effective occupation—the idea that the colonizers needed boots on the ground in order to effectively undertake the colonial mission. One of the tools used to solidify this control was what Rheinstein refers to as an “imposed reception of

39. See sources cited *supra* note 38.

40. See, e.g., WATSON, *supra* note 22, at 39 (finding what he considers the clearest indication that parts of the Roman system were transplanted into Scots law).

41. CRAWFORD YOUNG, *THE AFRICAN COLONIAL STATE IN COMPARATIVE PERSPECTIVE* 96 (1994).

law."<sup>42</sup> This one-way movement of law from colonial power to newly created colonies eliminates the possibility that colonial laws could have moved in the opposite direction or could have developed independently. When colonial-era laws are similar to one another, it is because the colonizer made them so. Our research design thus avoids the problems of ambiguity of direction of legal transplants and legal concepts occurring independently. Furthermore, these colonial laws were identical until independence.<sup>43</sup> By comparing present laws to colonial ones, we can see whether African countries have diverged from their common starting point. This lets us test the extent to which countries that are considered part of a common legal family have diverged over time and to what extent legal transplants have endured.

To determine which legal family to study, we primarily considered the British and the French, as they were the only two empires that maintained extensive control over territory in Africa, allowing for many points of comparison with former colonies. In contrast, Germany, Italy, Spain, Belgium, and Portugal only had a handful of colonies each, making it harder to determine whether changes since decolonization are indicative of any particular trend.

The British and the French legal systems typically use laws differently. While the French system relies heavily on codified rules, often not even mentioning details of cases in jurisprudence, the British rely almost exclusively on building jurisprudence that focuses on applying rules to a particular set of facts and giving these decisions binding force through *stare decisis*. In fact, in the United Kingdom, some core areas of the law are not even codified.<sup>44</sup> Furthermore, codification serves a fundamentally different purpose in the United Kingdom and its common law relatives. The role of a code in the British system is simply to consolidate or restate rules drawn from jurisprudence as opposed to making a set of rules on which to base a new and coherent system.<sup>45</sup> These differences make it incredibly dif-

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42. WATSON, *supra* note 22, at 30 (citing M. Rheinstein, *Types of Reception*, 6 ANNALES DE LA FACULTÉ DE DROIT D'ISTANBUL 31 (1956)).

43. The penal code was first promulgated in 1877, by the Décrets du 6 mars 1877 relatifs à la mise en vigueur dans différentes colonies, du code pénal métropolitain [Decrees of March 6, 1877 on the Implementation of the Metropolitan Penal Code in Various Colonies], JOURNAL OFFICIEL DE LA RÉPUBLIQUE FRANÇAISE [J.O.] [OFFICIAL GAZETTE OF FRANCE], Mar. 11, 1877, p. 1844, and eventually extended to all colonies under study. In French West Africa, the penal code was referred to colloquially as the *Code Bouvenet*, named after its editor. It is the 1955 edition of this code that we refer to when we mention the AOF code throughout this Article, i.e., GASTON-JEAN BOUVENET & PAUL HUTIN, RECUEIL ANNOTÉ DES TEXTES DE DROIT PÉNAL (CODE PÉNAL, LOIS, DÉCRETS, ARRÊTÉS GÉNÉRAUX) APPLICABLES EN AFRIQUE OCCIDENTALE FRANÇAISE (1955) [hereinafter CODE BOUVENET]. Note also that all countries gained independence in 1960, except Guinea, which gained independence in 1958.

44. Jean Louis Bergel, *Principal Features and Methods of Codification*, 48 LA. L. REV. 1073, 1076 (1988).

45. *Id.*

difficult to carry out the desired type of systematic analysis on former British colonies; as so much of the law is laid out in jurisprudence, the extent to which the individual articles in any code have been defined or modified would not be obvious by looking at the legislation on its own. The French, on the other hand, use a much more systematic legal rationalism based on natural law, which “excludes all units, relations, and processes not directly or indirectly represented in the statutory law.”<sup>46</sup> This, at least in *de jure* terms, is done in order to ensure the separation of powers between the legislator and the judge.<sup>47</sup> Furthermore, jurisprudence would not be an appropriate alternative way of comparing law within a common legal family. This is because jurisprudence is so heavily context-dependent that it could not itself be the point of comparison as the particular set of facts in one case in one country would be unlikely to be replicated in another.<sup>48</sup>

Former British colonies in Africa are also difficult to compare over time because they had heterogeneous legislation at independence. In order to compare forward through time, there needs to be a common or at least similar point of origin. In the years leading up to decolonization, there was no rule when it came to the codification of laws in British Africa. As one illustrative example, while the northern region of Nigeria, the Sudan, and the northern region of the Somali Republic all had penal codes derived from the British-developed Indian penal code of 1860, Sierra Leone had no penal code, Ghana had a criminal code based on the Saint Lucian code of 1889, and from 1930, East Africa used a code specifically drafted for the Colonial Office.<sup>49</sup> This makes British colonies a poor choice for an in-depth cross-country study.

After removing the British and their former colonies, the single largest grouping of legal systems in Africa is the French. It provides an excellent base from which to compare laws. The French legal system was applied remarkably evenly within France and across its colonies. As France expanded its borders during the colonial era, there was a keen desire within metropolitan France to maintain the nation’s identity as a unitary state, only conceding limited amounts

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46. M.G. Smith, *The Sociological Framework of Law*, in *AFRICAN LAW: ADAPTATION AND DEVELOPMENT* 24, 43 (Hilda Kuper & Leo Kuper eds., 1965).

47. John Henry Merryman, *The French Deviation*, 44 *AM. J. COMP. L.* 109, 112 (1996).

48. One worry may be that in drawing the distinction between British and French systems we are in fact reinforcing the notion of legal families. While this claim has some merit, the similarity that we note above is a weak similarity based largely on process. A legal family should share both process and content (at least according to René David), and in this Article we have chosen to examine content.

49. See, e.g., Read, *supra* note 38, at 5; Harvey M. Feinberg, *Africa*, in *LEGAL TRADITIONS AND SYSTEMS: AN INTERNATIONAL HANDBOOK* 7–8 (Alan N. Katz ed., 1986) (describing English colonies as more “complex”).

of authority to the colonies.<sup>50</sup> Furthermore, the French implemented codified laws in their African colonies and most colonies gained independence at the same time. This gives us a clean starting point for comparison.

In order to study the divergence of law in former French colonies, there are a large number of countries that can be examined. France's African colonies were reorganized a number of times, but most were eventually governed by one of two parallel administrative units: West African colonies were governed from 1904 to 1958 as units of the Federation of French West Africa (*l'Afrique occidentale française*, hereinafter the AOF),<sup>51</sup> and more centrally located territories fell under the provenance of the Federation of French Equatorial Africa (*l'Afrique équatoriale française*, the AEF).

The AOF was created earlier and came under more rigorous control by the French than the AEF, and so a stronger claim can be made about the likelihood of colonial law enduring in the AOF. The AOF altered its borders dramatically a number of times, but in its final configuration it encompassed the borders of ten current countries: Benin, Burkina Faso, Guinea, the Ivory Coast, Libya, Mali, Mauritania, Niger, Senegal, and Togo. Mauritania and Libya were excluded from our analysis in order to restrict the countries under study to only those from sub-Saharan Africa. If anything, this should tilt our analysis towards finding similarities across countries, as we dropped some of the least similar countries that received French legal transplants. Benin was also excluded, as there has been no re-publication

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50. Nicolas Bancel, *La voie étroite : la sélection des dirigeants africains lors de la transition vers la décolonisation*, 21–22 *MOUVEMENTS* 28, 29 (2002–2003); THOMAS HODGKIN & RUTH SCHACHTER, *FRENCH-SPEAKING WEST AFRICA IN TRANSITION (INT'L CONCILIATION*, no. 528) 389–92 (1960) (noting that despite this integrative approach characterized by the French policy of *assimilation*—built on the notion that all men were created equal—there was often an overhanging shadow cast by the competing French policy of *association*, which expounded the paternalist beliefs of the civilizing mission).

51. The AOF was initially created in 1895, uniting Senegal, French Sudan, Guinea, and the Ivory Coast. After a number of reorganizations, it finally reached its final size in 1919, although it was to have its internal borders altered one final time in 1932. For the reorganizations of the AOF, see Décret du 17 octobre 1899 portant réorganisation de l'Afrique occidentale française [Decree of October 17, 1899 on the Reorganization of French West Africa], *JOURNAL OFFICIEL DE LA RÉPUBLIQUE FRANÇAISE* [J.O.] [OFFICIAL GAZETTE OF FRANCE], Oct. 18, 1899, p. 6893 (reorganizing the French Sudan into three other territories); Décret du 1 octobre 1902 portant réorganisation du gouvernement général de l'Afrique occidentale française [Decree of October 1, 1902 on the Reorganization of the General Government of French West Africa], J.O., Oct. 4, 1902, p. 6549; Décret du 18 octobre 1904 portant réorganisation du gouvernement général de l'Afrique occidentale française [Decree of October 18, 1904 on the Reorganization of the General Government of French West Africa], J.O., Oct. 21, 1904, p. 6251 (greatly enlarging the territory); Décret du 1 mars 1919 portant division de la colonie du Haut-Sénégal-Niger et création de la colonie de la Haute-Volta [Decree of March 1, 1919 on the Division of the Colony of Upper Senegal-Niger and the Creation of the Colony of Upper Volta], J.O., May 20, 1919, p. 5200 (adding Upper Volta and Togo). See also HODGKIN & SCHACHTER, *supra* note 50, at iii.

of the criminal code since 1955, meaning that any subsequent changes are located only in the *Journal Officiel* (Gazette).<sup>52</sup> Guinea was included, even though it gained independence before the other countries of the AOF, in order to examine whether Guinea's different path towards independence led to fewer similar articles (as might be assumed).<sup>53</sup> Finally, Togo was something of an exception because, while it was run very similarly to France's other colonies, it was technically not a colony, but a League of Nations mandate, formerly under German control.<sup>54</sup> If the results show that Togo stands apart from other French West African countries, it could be the result of this more complicated colonial history.

In determining which laws to compare over time, the natural grouping was of course a legal code, as such a code "gathers together written rules of law and it regulates different fields of law."<sup>55</sup> This does, however, become difficult when we turn to the colonial era. This is because, despite the rigid hierarchy of unitarism with power emanating from Paris, one of the defining features of French colonization in Africa was the hybrid legal system, which separately governed Europeans and Africans.<sup>56</sup> Much of this stemmed from the sentiment that African customs should be tolerated only until Africans had developed sufficiently to be ruled by French law.<sup>57</sup> In fact, the French had three separate but overlapping sets of rules applying to the inhabitants of their colonies: the *Indigénat*, customary law, and a formalized French legal system. This last system applied to Frenchmen and Africans holding French citizenship, which in practice meant Africans living within the borders of the Four Communes of Senegal.<sup>58</sup> This legislation paralleled the laws contained in the va-

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52. The fact that Benin has never recompiled its code suggests that it is most likely to demonstrate colonial endurance, as many colonial laws remain on the books. However, we are unable to test this claim since the data are not available.

53. Georges Fischer, *L'indépendance de la Guinée et les accords franco-guinéens*, 4 ANNUAIRE FRANÇAIS DE DROIT INTERNATIONAL 711 (1958).

54. P.F. Gonidec, *De la dépendance à l'autonomie*, 3 ANNUAIRE FRANÇAIS DE DROIT INTERNATIONAL 597 (1957); Avis du Conseil d'état [Opinion of the Conseil d'État], Mar. 25, 1954, and Avis du 13 avril 1948 du comité juridique de l'Union française relatif à la situation du Togo et du Cameroun par rapport à l'Union française [Opinion of April 13, 1948 of the Legal Committee of the French Union Concerning the Situation of Togo and Cameroon with Respect to the French Union], reprinted in *Chronique juridique*, 2 REVUE JURIDIQUE ET POLITIQUE DE L'UNION FRANÇAISE 237, 242-47 (1948) (allowing the French to treat their mandates according to French legislation and as an integral part of French territory); Claude-Albert Colliard, *L'évolution du statut des territoires du Togo*, 2 ANNUAIRE FRANÇAIS DE DROIT INTERNATIONAL 222 (1956).

55. Bergel, *supra* note 44, at 1073.

56. Crawford Young, *The Colonial State and Post-Colonial Crisis*, in DECOLONIZATION AND AFRICAN INDEPENDENCE: THE TRANSFERS OF POWER, 1960-1980, at 1, 7 (Prosser Gifford & Wm. Roger Louis eds., 1988).

57. RICHARD ADLOFF & VIRGINIA THOMPSON, FRENCH WEST AFRICA 214 (1969).

58. With the exception of Muslims, who had access to Islamic courts, the four communes of Senegal were legally treated as metropolitan France. *See, e.g.*, Sandra

rious legal codes of the *métropole*,<sup>59</sup> and justice for these inhabitants was accessed through courts located in the various capitals across the controlled territory.<sup>60</sup> This, however, only applied to a tiny fraction of those living in French African colonies.<sup>61</sup> Running parallel to French law were customary law and the *Indigénat*. In practice, this meant that while French citizens had equal rights under a single code of law, those in the territories were subjects of an empire without giving any consent to be governed and lived under different laws from those of their colonizers.<sup>62</sup>

Customary law was meant to resolve disputes between Africans by maintaining the already existing jurisdictions covering them.<sup>63</sup> Over time, however, it evolved to a point where colonial administrators were positioned as the adjudicators of these disputes (despite their having no clear sense of what “African law” was).<sup>64</sup> The only restriction as to which local customs could be applied was based on the decree of November 10, 1903, which prevented customs from contradicting the “principles of French civilization” (“*principes de la civilisation française*”).<sup>65</sup> There was some effort made to codify customary law, but this undertaking was never completed.<sup>66</sup> In many

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Fullerton Joireman, *Inherited Legal Systems and Effective Rule of Law: Africa and the Colonial Legacy*, 39 J. MOD. AFR. STUD. 571, 579 (2001).

59. Ruth Ginio, *Negotiating Legal Authority in French West Africa: The Colonial Administration and African Assessors, 1903–1918*, in INTERMEDIARIES, INTERPRETERS, AND CLERKS: AFRICAN EMPLOYEES IN THE MAKING OF COLONIAL AFRICA 115, 118 (Benjamin N. Lawrance et al. eds., 2006).

60. PATRICK MANNING, FRANCOPHONE SUB-SAHARAN AFRICA: 1880–1995, at 69 (1998); see also Joireman, *supra* note 58, at 579 (discussing the distinctions between the *statut civil français*, which applied to French citizens, and the *statut personnel*, which applied to French “subjects”).

61. See Reyntjens, *supra* note 38, at 61 (reporting that in practice this meant that in Senegal, 5% of the population enjoyed political rights, while for the entirety of the AOF, the percentage was 0.5%).

62. MANNING, *supra* note 60.

63. Laurent Manière, *Deux conceptions de l'action judiciaire aux colonies. Magistrats et administrateurs en Afrique occidentale française (1887–1912)*, 4 CLIO@THÉMIS (2011), [http://www.cliothemis.com/IMG/pdf/Laurent\\_Maniere.pdf](http://www.cliothemis.com/IMG/pdf/Laurent_Maniere.pdf). See, e.g., Décret du 26 juillet 1894 portant organisation de la justice dans la colonie du Dahomey et dépendances [Decree of July 26, 1894 on the Organization of Justice in the Colony of Dahomey and its Dependencies] art. 27, JOURNAL OFFICIEL DE LA RÉPUBLIQUE FRANÇAISE [J.O.] [OFFICIAL GAZETTE OF FRANCE], Aug. 1, 1894, p. 3750 at 3751.

64. Ginio, *supra* note 59, at 115; Manière, *supra* note 63, at 15 (noting additionally that of the twelve African “assessors,” eight were in Senegal, making the Senegalese the de facto assessors of African customs throughout the entirety of the AOF).

65. Décret du 10 novembre 1903 portant réorganisation du service de la justice dans les colonies relevant du gouvernement général de l'Afrique occidentale [Decree of November 10, 1903 on the Reorganization of the Justice System in the Colonies Under the General Government of West Africa] art. 75, J.O., Nov. 24, 1903, p. 7094 at 7096. See Ginio, *supra* note 59, at 117; ADLOFF & THOMPSON, *supra* note 57, at 215.

66. Jean-Hervé Jézéquel, “Collecting Customary Law”: *Educated Africans, Ethnographic Writings, and Colonial Justice in French West Africa*, in INTERMEDIARIES, INTERPRETERS, AND CLERKS: AFRICAN EMPLOYEES IN THE MAKING OF COLONIAL AFRICA, *supra* note 59, at 139.

ways, customary law was replaced by the civil code in 1946, when everyone in the French Union came to be considered equal before the law, under the new Constitution. The civil code governed interactions between people (marriage, adoption, inheritance, etc.), the treatment of property (both movable and immovable), and contracts, much of which had previously been under the purview of customary law when governing interactions between Africans.<sup>67</sup>

Any interaction between Africans and the state was governed by the third system, the much more punitive *Indigénat*. The *Indigénat* was a particularly harsh code of laws that was implemented to subjugate the African population.<sup>68</sup> Using the *Indigénat* implemented in Algeria as a model, the Third French Republic instituted it in sub-Saharan Africa, beginning with Senegal in 1887.<sup>69</sup> It was then extended to the AOF as a whole in 1904.<sup>70</sup> The *Indigénat* included several severe punishments, such as forced labor,<sup>71</sup> a head tax, and expropriation.<sup>72</sup> What was more, colonial functionaries had free reign to decide what did or did not constitute an infraction (for example,

67. Although, to complicate matters, under Article 82 of the 1946 Constitution, Africans were still able to turn to customary law instead of the civil code, creating substantial legal uncertainty as to whether customary or civil law governed. See Inez Virginia Smith, *The Evolution of a New Nation: Problems of Judicial Reorganization*, 37 S. CAL. L. REV 21, 26 (1964).

68. For the first iteration of the *Indigénat* that applied in sub-Saharan Africa, see Décret du 30 septembre 1887 concernant la répression au Sénégal des infractions commises par les indigènes non citoyens français [Decree of September 30, 1887 Concerning the Suppression in Senegal of Offenses Committed by Indigenous Non-French Citizens], J.O., Oct. 8, 1887, p. 4453; see also Isabelle Merle, *De la "légalisation" de la violence en contexte colonial. Le régime de l'indigénat en question*, 17 POLITIX 137, 143–44 (2004) (noting that the *Indigénat* provided for the following types of punishments without appeal or defense: internment, fine, or sequestration).

69. Gregory Mann, *What Was the Indigénat? The "Empire of Law" in French West Africa*, 50 J. AFR. HIST. 331, 333 (2009).

70. See Décret du 21 novembre 1904 portant règlement sur l'indigénat en Afrique occidentale française [Decree of November 21, 1904 on the Regulation of the *Indigénat* in French West Africa], J.O., Nov. 30, 1904, p. 7059. See also Mann, *supra* note 69, at 333; 3 RENÉ PIERRE ANOUMA, *AUX ORIGINES DE LA NATION IVOIRIENNE 1893–1960: NATIONALISME AFRICAIN ET DÉCOLONISATION FRANÇAISE 1945–1960*, at 15 (2009).

71. This was finally overturned only in 1946 by the so-called Houphouët-Boigny Law, Loi 46-645 du 11 avril 1946 tendant à la suppression du travail forcé dans les territoires d'outre-mer [Law 46-645 of April 11, 1946 on the Suppression of Forced Labor in the Overseas Territories], J.O., Apr. 12, 1946, p. 3063. Forced labor was formalized by a 1912 order. Gouvernement general de l'Afrique occidentale française [General Government of French West Africa], Arrêté n°1930 du 25 novembre 1912 portant réglementation de la prestation des indigènes dans les Colonies et Territoires du Gouvernement général de l'Afrique occidentale française [Order No. 1930 of November 25, 1912 on the Regulation of Services of Indigenous People in the Colonies and Territories of the General Government of French West Africa]. It was then outlawed by the Convention Concerning Forced or Compulsory Labour, June 28, 1930 (I.L.O. Convention No. 29), 39 U.N.T.S. 612, but France substituted a work tax in an administrative memorandum (*circulaire générale*) of September 12, 1930.

72. A.I. Asiwaju, *Control Through Coercion; A Study of the Indigénat Regime in French West African Administration, 1887–1946*, 9 J. HIST. SOC'Y NIGERIA, no. 3, at 91, 100 (1978).

anything that constituted a peril to “public safety”) and could assign punishments with complete discretion and without appeal.<sup>73</sup> There were not very many articles (twelve enumerated offenses in 1924), and these were not very precise.<sup>74</sup> In 1946, the *Indigénat* was finally abolished,<sup>75</sup> and the new Constitution of the French Republic mandated equality before the law for all under French control.<sup>76</sup> Thus, in 1946, under the Fourth Republic, a set of mostly homogeneous criminal laws became applicable across the AOF,<sup>77</sup> and Africans were finally governed by the same codified laws as citizens in the *métropole*.

In determining what set of codified laws to compare against present laws, there are two natural choices: the penal code and the civil code.<sup>78</sup> While it may seem as though the civil code, originating with the Napoleonic Code, would be most likely to stay consistent over time, it should be kept in mind that for an approximately sixty-year period under French colonial administration, there was a huge divergence in practice, with some effort (albeit somewhat limited) to incorporate local customs into interpretations. In contrast, the penal

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73. PIERRE KAMÉ BOUOPDA, *LES HANDICAPS COLONIAUX DE L'AFRIQUE NOIRE* 69–70 (2010); Reyntjens, *supra* note 38, at 68 (listing examples of infractions such as refusal to perform forced labor or to provide information); Merle, *supra* note 68, at 147.

74. Mann, *supra* note 69, at 336.

75. Loi 46-860 du 30 avril 1946 tendant à l'établissement, au financement et à l'exécution de plans d'équipement et de développement des territoires relevant du ministère de la France d'outre-mer [Law 46-860 of April 30, 1946 on the Establishment, Financing, and Execution of Plans to Equip and Develop the Territories Under the French Ministry of Overseas Territories], *J.O.*, May 1, 1946, p. 3655.

76. This equality before the law is enumerated in the preamble of the October 1946 Constitution and Article 1 of the Declaration of the Rights of Man and Citizen of 1789, and applied to the French Union through Article 81 of the 1946 Constitution. ADLOFF & THOMPSON, *supra* note 57, at 216; MAMADOU DIAN CHERIF DIALLO, *RÉPRESSION ET ENFERMEMENT EN GUINÉE : LE PÉNITENCIER DE FOTOPA ET LA PRISON CENTRALE DE CONAKRY DE 1900 À 1958*, at 18 (2005); GWENDOLYN M. CARTER, *FIVE AFRICAN STATES: RESPONSES TO DIVERSITY* 238 (1963); Reyntjens, *supra* note 38, at 72 (1988). An alternative understanding is that this equality applied to the overseas territories through Article 60 of the 1946 Constitution, which listed overseas territories as part of the French Republic, and through Article 1 of the Constitution, which declared the Republic indivisible. HODGKIN & SCHACHTER, *supra* note 50, at 394.

77. French criminal law had applied to French citizens (as opposed to subjects) residing within the AOF since 1877 (with the promulgation of the Décrets du 6 mars 1877 relatifs à la mise en vigueur dans différentes colonies, du code pénal métropolitain [Decrees of March 6, 1877 on the Implementation of the Metropolitan Penal Code in Various Colonies], *J.O.*, Mar. 11, 1877, p. 1844, which applied the metropolitan penal code in the colonies). Nonetheless, it is worth noting that the code in the colonies (the *Code Bouvenet* referred to *supra* note 43) was not identical to the metropolitan code. Instead, slight variations existed given the smaller administrative apparatus outside of metropolitan France. For example, the *Code Bouvenet* allowed alternatives to the guillotine in contexts where a guillotine was not available.

78. There are other laws that applied to the AOF in this period as well. For example, in 1952, a labor code (*code de travail*) was introduced for French Africa, but the enactment of both the penal code and the civil code long before the establishment of the Fourth Republic make their contents more likely to have persisted to the present day.

code was a relatively forward-moving step for Africans in terms of their rights and freedoms against the state.<sup>79</sup> As compared to its authority under the *Indigénat*, the state was now much more limited in how it could exert power over Africans, and these increased rights have made it much more likely that governments in the postcolonial period would want to keep and build on this area of the law, rather than scrap it altogether. Additionally, many African countries split the colonial civil code into multiple codes in the independence period, which complicates the task of matching colonial legislation to present codes.<sup>80</sup> The penal code was not split in this way. There is some tendency to want to compare the codes of criminal procedure, since criminal procedure is often linked to what is seen as the heart of the common law–civil law divide. However, the first code of criminal procedure was only promulgated in 1957 and came into effect in metropolitan France in 1959 (less than a year before decolonization).<sup>81</sup>

By contrast, the substantive criminal law strikes us as an ideal area in which to compare change over time. The division of criminal law into legal families is open to much of the same criticism as can be leveled at the legal families literature in other areas of the law, including both the grouping of rather different legal systems and the fact that differences between legal families may have more to do with the usage of different languages than with substantive disparities.<sup>82</sup> Beyond its relevance to the legal families literature, criminal law is also interesting because it is uniquely tied to the concept of sovereignty.<sup>83</sup> Moreover, criminal law may in some ways be considered the area of the law slowest to change as it is considered much more deeply rooted in “social mores and cultural preferences, defying transnational assimilation and harmonization.”<sup>84</sup> This perceived slowness to change makes it of particular interest. If the content has changed in this area of the law, we believe it likely that it has changed even more in other areas.

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79. Merle, *supra* note 68, at 147 (especially since the *Indigénat* “was but the residue of military powers granted out of the necessity of conquest” (“*n’est que le résidu des pouvoirs militaires dus aux nécessités de conquêtes*”).

80. The most convoluted of these is likely Mali, where even the civil code’s historical inclusion of a book of persons has been partly supplanted through the creation of a Code of Marriage and Guardianship and a separate Code of Paternity and Filiation.

81. Loi 57-1426 du 31 décembre 1957 portant institution d’un code de procédure pénale [Law 57-1426 of December 31, 1957 on the Adoption of a Code of Criminal Procedure], J.O., Jan. 8, 1958, p. 258. It was not even applied to overseas territories until 1962 (after decolonization).

82. See, e.g., HARRY R. DAMMER & ERIKA FAIRCHILD, *COMPARATIVE CRIMINAL JUSTICE SYSTEMS* (2001); George P. Fletcher, *Comparative Law as a Subversive Discipline*, 46 AM. J. COMP. L. 683, 697 (1998).

83. Markus Dirk Dubber, *Comparative Criminal Law*, in THE OXFORD HANDBOOK OF COMPARATIVE LAW, *supra* note 9, at 1287, 1288 (comparing the discipline to a “householder’s virtually unlimited discretion to discipline members of his household”).

84. Weigend, *supra* note 20.

The years following World War II proved politically turbulent as the French tried to adjust a system built for occupation to an increase in the number of citizens.<sup>85</sup> On June 23, 1956, the *Loi-cadre Defferre* (the Defferre Framework Act), which gave autonomy to the overseas territories, was adopted.<sup>86</sup> This made the indivisible nature of the Fourth Republic Constitution, which had up to then guaranteed more rights and protections to Africans, untenable.<sup>87</sup> In 1958, when the Fourth Republic transitioned to the Fifth, AOF territories were given the opportunity to vote for or against the new constitution.<sup>88</sup> A “no” vote would mean independence and the removal of all aid from France, while a vote of “yes” would give the territory the new status of “autonomous republic.”<sup>89</sup> Togo did not have a choice because of its international status, Guinea voted for immediate independence, and all other territories voted to become autonomous republics.<sup>90</sup> The territories of the AOF (excepting Guinea) now developed their own constitutions and national assemblies in this new period of autonomy.<sup>91</sup> In 1960, the French government amended the 1958 Constitution to allow for a state to gain sovereignty but remain part of the French Community.<sup>92</sup> This was done by all the autonomous republics, and in 1960, all of the AOF now constituted newly independent states.<sup>93</sup>

As the countries of French West Africa moved towards independence in the moments leading up to 1960, there were many questions as to what kind of legal institutions would exist in these new states. On the one hand, the elites picking up the reins had already learned how to maneuver within the existing French legal structures, and therefore had little interest in transforming the state into something very different.<sup>94</sup> In addition, the view from the largely racist and declining colonialists was that the use of France’s legal system after

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85. Citizenship was extended through Article 81 of the 1946 Constitution of the Fourth Republic.

86. Loi 56-619 du 23 juin 1956 autorisant le gouvernement à mettre en oeuvre les réformes et à prendre les mesures propres à assurer l'évolution des territoires relevant du ministère de la France d'outre-mer [Law 56-619 of June 23, 1956 Authorizing the Government to Implement Reforms and Take Measures Required to Ensure the Evolution of the Territories Under the French Ministry of Overseas Territories], J.O., June 23, 1956, p. 5782.

87. HODGKIN & SCHACHTER, *supra* note 50, at 401.

88. A referendum was held on September 28, 1958.

89. HODGKIN & SCHACHTER, *supra* note 50, at 402.

90. *Id.*

91. *Id.*

92. Loi constitutionnelle 60-525 du 4 juin 1960 tendant à compléter les dispositions du titre XII de la Constitution [Constitutional Law 60-525 of June 4, 1960 Supplementing the Provisions of Title XII of the Constitution], J.O., June 8, 1960, p. 5103 (amending articles 85–86 of the 1958 Constitution); HODGKIN & SCHACHTER, *supra* note 50, at 402.

93. HODGKIN & SCHACHTER, *supra* note 50, at 402.

94. Joireman, *supra* note 58, at 577.

independence was a natural choice.<sup>95</sup> There were, however, scattered efforts towards establishing new laws and legal institutions post-independence. Guinea, for example, began to reorganize its judicial system without relying on French precedent.<sup>96</sup>

Over fifty years have now passed since decolonization, and we are left without a clear sense of which statement is more true: did the former colonies remain more or less static in the postcolonial period, or did they successfully move away from their colonial heritage? Because their penal codes remained tied to the French code until decolonization, they create an ideal starting point from which to look forward. It is for this reason that we use the penal code of the AOF<sup>97</sup> as a point of comparison to determine the extent to which seven French West African countries maintained their colonial laws and therefore remained part of the same legal family.

### III. METHODOLOGY

Comparative law has historically been lacking in empirical data.<sup>98</sup> This has partially been caused by the discipline's distancing itself from the functionalist comparison of law and the fact that it is more difficult to develop empirical data outside of functionalist analysis. Rather than the functionalist idea of "laws as rules," the trend has been moving increasingly towards understanding the legal style and culture of legal systems.<sup>99</sup> This literature has emphasized the importance of context in understanding laws, which is especially critical when comparing laws across very different countries (for example, while Haiti, Vietnam, Louisiana, and Senegal were all colonized by the French, they all have very different cultures and legal contexts). Moreover, comparing legal rules in any kind of systematic and extensive way has been rather difficult because of both the sheer number of rules and their intricacy.<sup>100</sup> By selecting countries that have "broad historical, socio-economic, psychological and ideological" similarities,<sup>101</sup> we are able to minimize the concerns that our analysis is biased by country-specific factors. Thus, we incorporate both

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95. Gertie Hesseling, *La reception du droit constitutionnel en Afrique trente ans après : quoi de neuf?*, in CONSTITUTIONALISM IN AFRICA: A QUEST FOR AUTOCHTHONOUS PRINCIPLES 33, 35 (Carla M. Zoéthout et al. eds., 1996).

96. HODGKIN & SCHACHTER, *supra* note 50, at 377.

97. As noted above, by "AOF code" we refer to the 1955 edition of the *Code Bouvenet*. See discussion *supra* notes 43, 77.

98. See, e.g., Reimann, *supra* note 18, at 676 (finding that two of the largest gaps in the comparative law literature are the dearth of scholarship on the developing world and the lack of "solid empirical data and reliable statistics"); Glenn, *supra* note 9, at 430 (mentioning the rather "little categorization actually undertaken" by proponents of the legal families thesis).

99. Van Hoecke & Warrington, *supra* note 13, at 496.

100. Wood, *supra* note 32.

101. Van Hoecke & Warrington, *supra* note 13, at 496.

methodologies of comparison by applying a functionalist analysis to cases that are contextually similar.

In order to analyze the impact of colonial legislation on contemporary criminal law, we compare the AOF penal code against the current penal codes of seven French West African countries (plus those of France in 1955 and 2013). Historically, comparisons between civil law countries have pointed to many commonalities, such as the fact that many French offshoots divide their civil codes into books on persons, things, and actions,<sup>102</sup> or the fact that the logic used in case law employs more abstract reasoning in the civil as opposed to the common law system.<sup>103</sup> While this information is useful in understanding which legal institutions endured (or did not), it does not examine the underlying question of the durability of colonial law or the durability of legal families overall. Nonetheless, it can be rather difficult to comprehensively, or at least more thoroughly, examine this endurance by focusing on the black letter of the law. Much of the legal families literature (discussed in the previous Part) focuses on intangible or non-exclusive attributes to determine whether a country belongs to one or another legal family. It could be argued that instead of dealing with this literature head-on, by focusing on the black letter of the law, we are critiquing oranges by examining apples. However, it seems to us very unlikely for the black letter of the law to have no bearing on membership in a legal family. Instead, changes to legal texts likely correlate with changes in the other attributes that make up a legal family.

Imagine, for example, that France and China were to completely swap all the laws in their respective countries so that France was now governed by Chinese law and China was governed by French law. Imagine too that all the other institutions and people in those respective countries nonetheless remained the same: the judges remained the same, the courts remained the same, and concepts of justice remained the same. If we were able to carry out such an experiment, it seems highly unlikely that we would consider France and China to not have altered their degree of membership in their respective legal families. Could France really be considered to be part of a Romanistic or Continental legal system if all of the laws to be applied were literally taken from such a different legal context? We are hard pressed to imagine anyone answering yes to such a question. If indeed this shift in laws would by its nature mean a change to the classification of these two legal systems, then the black letter of the law should not be seen as irrelevant to the issue of classifying coun-

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102. Bergel, *supra* note 44, at 1085 (looking at the Civil Code of Louisiana, the Civil Code of Lower Canada, and the Civil Code of the Principality of Monaco).

103. Jan M. Smits, *The Europeanisation of National Legal Systems*, in *EPISTEMOLOGY AND METHODOLOGY OF COMPARATIVE LAW* 229, 232 (Mark Van Hoecke ed., 2004) (observing that these courts often reason through syllogism).

tries within legal families. Instead, the laws themselves can be considered both an independent force influencing membership in a legal family and a manifestation of the legal culture or ideology of a legal family. Textual analysis of the law therefore allows us to rigorously analyze a portion of the material that influences membership within a legal family.

In order to undertake this textual analysis, we sought to compare every article of the AOF penal code against the entire penal codes of seven successor countries to the AOF: Burkina Faso, Guinea, the Ivory Coast, Mali, Niger, Senegal, and Togo.<sup>104</sup> Additionally, as a point of comparison, we examined the 1955 penal code in place in metropolitan France (which was the basis for the AOF code)<sup>105</sup> as well as the 2013 version of the French penal code to see how much French law has changed over time.

We wrote a computer program to complete the analysis. Measuring the distance between laws using an automated system is important for three reasons. First, and most simply, by its nature, a computer is less prone to small, technical errors than a human. A human coding penal code articles for similarity is bound to make some mistakes, while a computer is not.<sup>106</sup> Second, using a computer program forced us to be very clear about every step in the process, increasing the transparency of our method. Because the computer's logic is explicit, this makes the main portion of the study entirely replicable and leaves no room for differences of opinion or differences of judgment. There is, of course, judgment embedded in the program, but this is clearly stated in a way that human judgment is not. Lastly, using a program allowed us to examine far more articles than would have been possible with even a large team of human coders. Comparing every article of the AOF against every article in every successor penal code involved making over a million comparisons. Doing this algorithmically allowed us to compare many articles across many countries in very little time.<sup>107</sup>

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104. There is an insufficient number of printed versions of these countries' penal codes to be able to select codes from the same year for each country. We therefore selected the most recent available penal code from each African country: Burkina Faso (2004), Guinea (1998), Ivory Coast (2012), Mali (2009), Niger (2011), Senegal (2007), and Togo (2008). Some analyses also include France's code from 1955 and 2013. The AOF code—i.e., the *Code Bouvenet*, *supra* note 43—is from 1955.

105. *See supra* note 77.

106. For a particularly cogent example of why this is of serious concern, see, e.g., Holger Spamann, *The "Antidirector Rights Index" Revisited*, 23 *REV. FIN. STUD.* 467 (2010) (discussing the ambiguity of the claims in the original legal origins thesis, based on both a lack of reliability of the analysis of shareholder laws and unstandardized data).

107. Again, to see why this matters, see, e.g., Armour et al., *supra* note 37, at 586 (noting that selectively choosing variables that may not be similarly expressed across different legal systems can create bias by undervaluing diverse functionalist approaches).

To gather all the material to undertake this type of comparison, we had to create digital versions of all of the penal codes. This required manually typing every article of each code and then verifying them by hand. Most of the countries in our study publish all articles of their codes in the national gazette first, but these are typically not electronically available or word searchable. Instead, for each country, we copied the most recent available version of a complete and published penal code. While it would have been ideal to compare across the same year for all countries, this was not possible due to a lack of published penal codes. However, there are rarely more than two or three articles changed per year per code, and so, by and large, small differences in publication dates should not account for large changes between codes.

Our unit of comparison for all codes was the article. Each AOF article was compared to see how close or distant it is from all articles in each French West African country's current penal code. There would, of course, have been some logic in using a section rather than an article as the unit of analysis, as "each code article has a meaning only because of its relationship to a cluster of articles to which it is linked."<sup>108</sup> For example, if the material has remained unchanged but was split up into two articles, or if two articles were combined, then this would appear as a change according to the computer program, but would not constitute change in the actual substance. However, sections are divided in even less systematic ways than articles, and using sections would often have created alternative and larger problems. For example, penal codes are subdivided into sections and subsections to a variety of degrees, and it is not clear what is the most obvious tier of subsection to compare. Additionally, the way that sections are tiered is not the same across penal codes, which would have further complicated comparison across sections. We thus chose to work with the atomic unit of the code, the article. Comparing across articles also had the added benefit of allowing for more nuanced comparisons. This is because some articles in the same section may be similar to colonial legislation, while others are different. In a section-level analysis, the section would have had a middling level of similarity. In our article-level analysis, by contrast, we can differentiate between a section in which all articles have middling similarity and a section in which half of the articles are very similar and half are very different.

In order to ensure standardization of the text across articles in the codes, we made several decisions that were applied evenly across all codes. First, all paragraph breaks were removed. The program then removed all punctuation and all instances of multiple spaces. The computer also transformed all uppercase letters into lowercase.

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108. Bergel, *supra* note 44, at 1083.

This was so that it would not find a difference between, for example, “Code Pénal” in one code and “code pénal” in another. It then changed all written numbers into their Arabic numeral equivalent,<sup>109</sup> with the exception of the number “one” (*une, un*) because it has the same meaning as the indefinite article “a.” The concern was that if one country used the written numbers and another used Arabic numerals, then we would find differences where no real difference existed. For similar reasons, the program removed all numbers or letters that signified subpoints.<sup>110</sup> We decided to leave all misspellings intact so long as they were in the original penal codes and not due to transcription errors on our part. Finally, we ensured that the character encoding was the same across all of the texts.

To measure the distance between articles, the computer program measured the cosine distance between  $n$ -grams drawn from each article.<sup>111</sup>  $N$ -grams are  $n$ -character sections of strings (or sentences) of text, including spaces. For example, the sentence “Run spot” can be divided into the following 4-grams: “Run,” “un s,” “n sp,” “spo,” and “spot.” Such 4-grams were calculated for all articles, and our basic method was to compare the frequency of these 4-grams between the articles of the AOF and the current penal codes.<sup>112</sup> To do this, we calculated the complement of the cosine of the angle created by two vectors formed from the 4-gram counts.

The following example shows the trivial case of calculating the 1-gram distance between sentences with only two possible characters: “a” and “b.” The first sentence (s1) reads “aaaab” and the second (s2) reads “aaabbb.” We count the frequency of 1-grams in each sentence and plot them to produce Figure 1. The graph reveals that the angle between the two vectors will always be in the range between 0 and 90°, as the number of instances of “a” and “b” will never be negative. This implies that the cosine of  $\theta$  will range from 0 to 1. We take the complement of the cosine so that 1 implies that the two vectors share no 1-grams and 0 implies completely similarity. The intuition, but

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109. *E.g.*, “*dix*” (ten) was transformed into “10.”

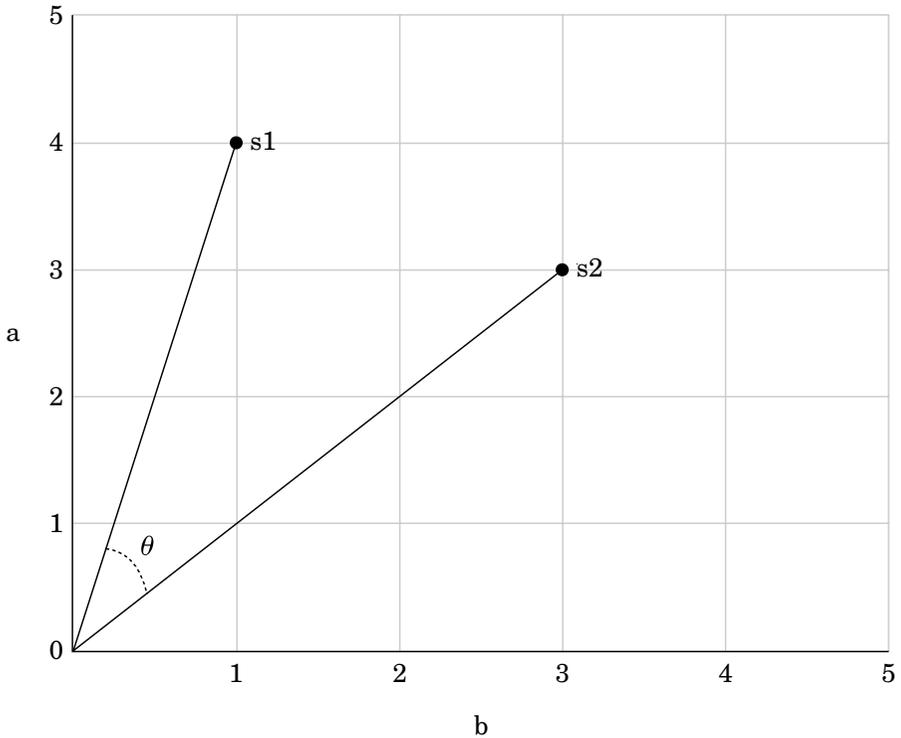
110. *E.g.*, “a” or “(1).”

111. Originally, we also completed the analysis using Levenshtein distance. The Levenshtein distance measure was highly correlated with cosine distance and produced broadly the same results, but it was a noisier measure so we dropped it.

112. We chose to analyze 4-grams because they struck a good balance between capturing a good deal of the structure of a sentence while being small enough to be computationally tractable. For example, consider that a 2-gram cannot span words because all words are separated by a space. A 3-gram can just span words, by capturing the last letter of one word, a space, and the first letter of a second word. A 4-gram allows us to consider one additional character and so allows for more nuanced cross-word comparisons within articles. The results were generally quite similar with 3-grams and we did not try  $n$ -grams larger than 4 or smaller than 3.

not the formula, is the same for  $n$ -grams larger than 1 and larger alphabets.<sup>113</sup>

FIGURE 1. 1-GRAM DISTANCE BETWEEN S1 AND S2.



The program measured the distance from each article in the AOF code to every article in the current penal code of each country (as well as the French codes from 1955 and 2013). This resulted in a list of numbers ranging between 0 and 1, where 0 means that the AOF article and its closest match in the contemporary code were identical and 1 means they were totally distinct. The program then selected the article from each current penal code that had the smallest number, and so was the closest match to the AOF article.

113. For larger alphabets, one first creates a vector of  $n$ -gram occurrences for each sentence and labels these  $x$  and  $y$ , respectively. The cosine distance between these vectors is calculated as:

$$1 - \frac{x \cdot y}{\|x\| \|y\|}$$

The calculations were completed with the use of the stringdist package. Mark P.J. Van der Loo, *The Stringdist Package for Approximate String Matching*, 6 R J. 111 (2014). For more technical information on cosine distance and other information retrieval techniques, see Amit Singhal, *Modern Information Retrieval: A Brief Overview*, 24 IEEE DATA ENGINEERING BULL. 35 (2001).

To recap, the program first computed the distance from article 1 of the AOF penal code to every other article in every other code. It then selected the article in each country's code with the minimum cosine distance and recorded that distance and the article number. This procedure was repeated for every AOF article and resulted in a list of minimum distances from each AOF article to the articles of each former colony (and France). From this list, we can understand how much each country has altered or retained the AOF penal code that was its starting point at independence. A list consisting of small numbers shows that the language of the colonial code still exists in the current penal code, while a list of large numbers shows that the country has moved away from its colonial legislation. We now move to a discussion of the results.

#### IV. RESULTS

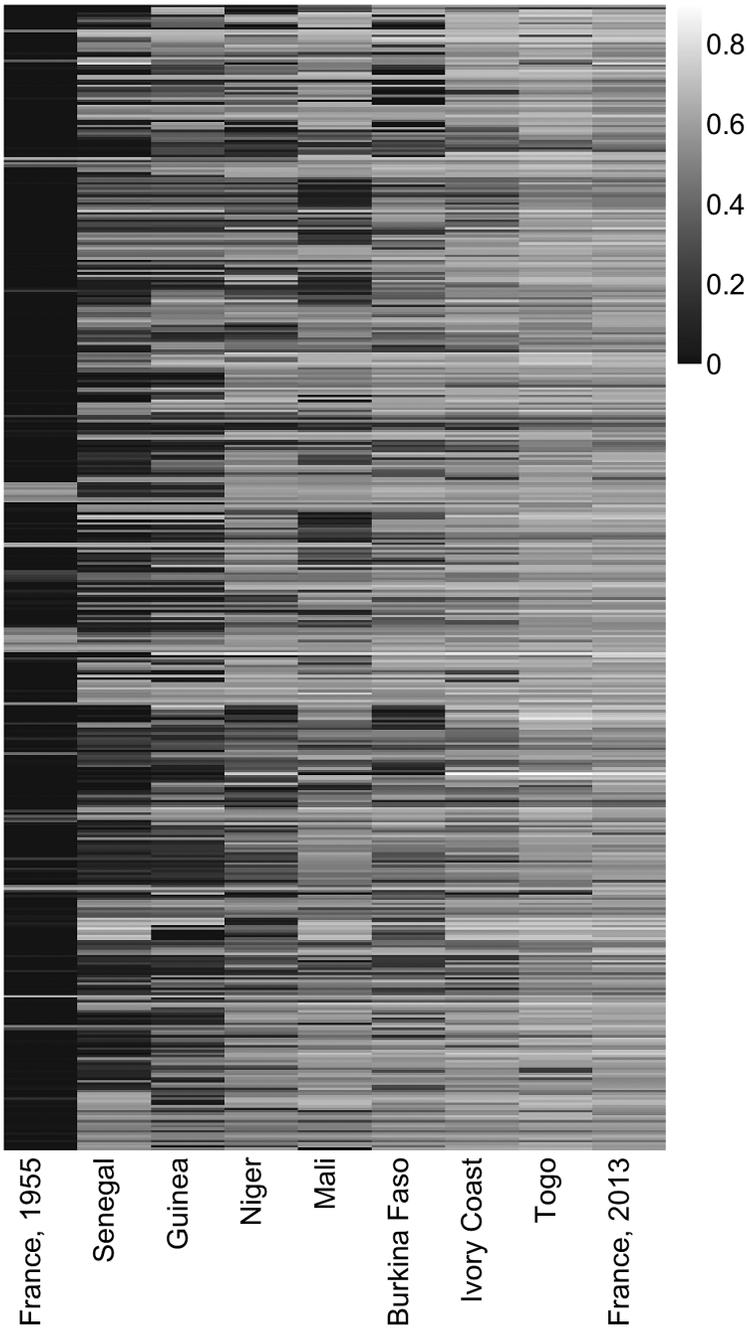
The program reported the minimum distance from each AOF article to each article in every current West African penal code. The complete results are presented in the form of a heat map in Figure 2,<sup>114</sup> which shows that most West African countries have changed the majority of their laws since independence. Moreover, there is great divergence between the countries themselves, as different countries have retained or changed different colonial laws. This is discussed below in our textual analysis

Since it is not obvious that an article that scores 0.4 will be further in meaning as well as in language from its matching AOF article than an article that scores 0.2, we follow the textual analysis with a substantive analysis of a wide range of laws. This Part uses a human's legal judgment to find similar laws across the various countries under study. We relate this analysis back to the textual results, both as a check on the results and as a way of better understanding the program's output. In general, the program did a very good job of selecting the same laws as a human. This leads us to conclude that both the substance and language of the articles in West African penal codes have changed dramatically over time. We first turn to the textual results.

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114. We chose a heat map to express the information because it allows one to interpret the entirety of the data using a single image. With one image, we are also able to quickly discern patterns that are not identifiable in tables or separate country-specific images. For more information on the many uses of heat maps, see, e.g., Leland Wilkinson & Michael Friendly, *The History of the Cluster Heat Map*, 63 AM. STATISTICIAN 179 (2009).

FIGURE 2. COSINE DISTANCE FROM AOF PENAL CODE.<sup>115</sup>



115. For a high-resolution, color version of this image, see *Research*, RYAN C. BRIGGS, <http://www.ryancbriggs.net/research>.

### A. *Textual Analysis*

The program calculated the cosine distance between each article of the AOF code from 1955 and each article of each contemporary penal code, and then selected the article from each contemporary code that had the smallest distance measure. The outcome of this process is summarized in Figure 2. Each column is a country and every horizontal line represents one AOF article. The color of each cell represents the cosine distance from the AOF article to the closest matching article in each country's contemporary penal code. White (1) represents complete dissimilarity while black (0) shows that the articles have identical ratios of 4-grams. As an example, the top row in the heat map is article 1 of the AOF penal code and the shades across that row represent the degree to which the most closely matched article in each current West African penal code has the same language as the AOF code's article 1. The countries are ordered left to right based on their mean cosine distance across all articles.

One of the more intriguing results is that French West African countries display a great deal of variation in the extent to which they retained colonial laws. Senegal has retained the largest number of the 1955 articles: 48% of the AOF articles match to articles in the current Senegalese penal code with a distance of 0.2 or less. The fraction of AOF articles that match under or equal to 0.2 in each country is shown in Table 1. What is clear is that every country under study has changed the majority of its penal code over time. The vast majority of articles have been changed in all countries but Senegal.

TABLE 1. HOW MUCH COLONIAL LAW WAS RETAINED?

Country	% of AOF articles with Cosine Distance $\leq 0.2$
Senegal	48
Guinea	35
Niger	16
Mali	15
Burkina Faso	13
Ivory Coast	3
Togo	1
France, 1955	91
France, 2013	0

By looking at Figure 2, it also becomes clear that changes did not happen in one area of the penal code, but instead are interspersed across the entirety of each penal code. Moreover, the areas of the AOF penal code that have changed are rarely the same across countries. This is important, as it would have been reasonable to think that similar articles would change across countries because change

was being driven by distinctive, regional concerns or the internationalization of certain legal principles. Instead, it seems that changes to the law have been driven by country-specific factors.

One of the most pronounced patterns in Figure 2 and Table 1 is the nearly total modification of France's penal code between 1955 and 2013. This may be surprising, as France made the 1955 penal code in response to its own needs and then transplanted it to her colonies. Despite this history, France did not keep any 1955 laws unchanged. In fact, France was the country that saw the most change over time. The French results might lead one to suggest that our approach must not be able to get to the heart of what defines legal families, since France must obviously be part of the French legal family. However, if we want a legal classification to have any use, then it has to be based on observable and measurable features of a legal system. It seems reasonable to think that the evidence of belonging (or not) to a particular legal family should be discoverable by examining the text of legislation. When read this way, our finding that France has changed so dramatically bolsters the idea that the concept of legal families needs to take change over time seriously. What matters is not necessarily whether or not legal schemes resemble each other at a single point in time, but whether or not they are diverging or converging (or stay equidistant) over time.

Additionally, the extent to which African countries have retained colonial legislation presents a mixture of both expected and surprising results. It was expected that Senegal would retain the most colonial legislation, as Senegal had a close relationship with France, was the most formally integrated into the French political system, and was France's oldest African colony. We had expected Togo to retain relatively little French-colonial legislation because it was formerly a German colony and spent only a short amount of time under French rule. Togo did indeed retain very little colonial legislation, while Senegal retained the most. On the other hand, it is quite surprising that Guinea retained the second-largest share of colonial legislation because Guinea had a dramatic diplomatic break with France when it became the only colony to vote "no" on France's proposal to join a new French Community, an arrangement that granted colonies more autonomy but not full independence. In response to Guinea's choice, all French aid was terminated and departing French officials took with them all of the French property they could carry—famously including the light bulbs in government buildings.<sup>116</sup> We had also incorrectly expected Ivory Coast to retain a large share of the AOF penal code as it also had a close political and economic relationship with France. Our results thus both support and challenge

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116. For a colorful account of this history, see MARTIN MEREDITH, *THE FATE OF AFRICA: A HISTORY OF THE CONTINENT SINCE INDEPENDENCE* 58–74 (2d ed. 2011).

some of the predictions drawn from standard accounts of the history of French colonization and decolonization of Africa. Future work could more closely examine the factors that account for the variation in the retention of colonial legislation across countries.

Overall, the textual analysis section demonstrates that penal law in French West African countries has changed dramatically since independence. Even more importantly, laws in these countries are diverging. This strongly contradicts assertions that law in Africa is stagnant. It is also problematic for the conception of a legal family, as it suggests that legislation within presupposed legal families is far from stable over time. In order to better understand the meaning of the cosine measure, we now turn to an analysis examining the ability of the computer program to identify substantive changes.

### *B. Substantive Analysis*

The cosine distance measured in the previous section tells us that the penal codes in French West Africa have changed over time. However, a cosine measure of 0.48, for example, does not have a clear substantive interpretation. Furthermore, it does not tell us if the meaning of these penal codes has shifted alongside the shift in the characters that make up the articles. Therefore, we now turn to a substantive analysis where we examine nine areas of the law to help us answer two questions. First, we test the validity of the program by examining how accurate the program is at selecting the correct article *in terms of content* between the AOF and contemporary codes. Secondly, we check if higher cosine measures correlate with greater substantive changes in the articles according to human analysis, which in turn helps us to understand the substantive meaning behind the cosine measure.

To complete the substantive analysis, we selected nine AOF codal articles that cover a wide variety of subject areas. Additionally, we only selected articles that were substantive in nature. So, for example, we did not select articles such as AOF penal code article 455, which says that in the cases listed from articles 444 through 454 there will be a fine and describes how that fine will be applied. We selected articles from across the spatial range of the AOF penal code, and across a wide range of topics. Our nine articles cover being an accomplice, the death penalty, counterfeiting, rebellion, vagabondage, pimping, theft, gambling houses, and illegal burials.

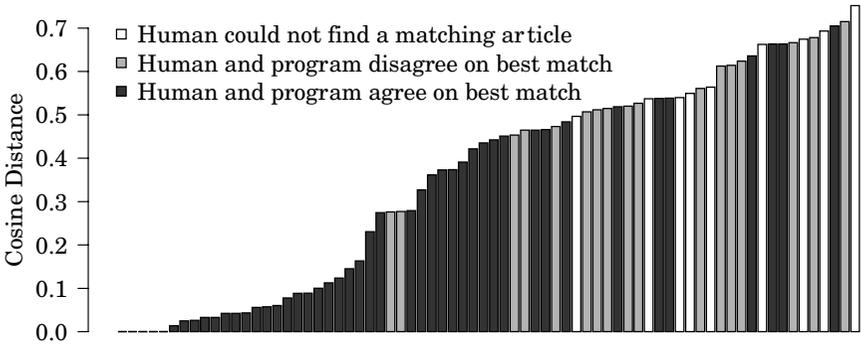
To test the validity of the program, we first used our judgment to select the article from each country's contemporary penal code that was most similar to the AOF code's articles in each of our nine areas of the law. So, for example, article 410 of the AOF penal code covers illegal gambling houses. The most substantively similar article in Burkina Faso's penal code is article 203—also on illegal gambling

houses. The most similar article in Niger's penal code is article 356. This matching was done while blind to the output from the program. After finding these substantive matches for each country, or after ascertaining that the law had been struck down (as in the case of the death penalty in a number of countries) and that therefore there was no possible match, we checked our matches against the closest matches as selected by the program. In the case of illegal gambling houses, for example, the computer found the article with the smallest cosine distance from the AOF code's article 410 was Burkina Faso's article 203, meaning the computer selected the same article as the human. However, the program found the closest match in Niger to be article 363, which covers the confiscation of funds related to illegal gambling, rather than article 356, listing the elements required to be found guilty of having maintained a gambling house. We completed this procedure for the nine AOF articles and used the output to produce Figure 3, which shows the relationship between increasing sizes of cosine distance and whether or not the program and human analyst selected the same laws in the contemporary penal codes as matches.

Figure 3 further shows that when the cosine distance is less than 0.25, the program and the human always agree. In other words, when the program finds a small distance measure, it is always able to match to the substantively correct article. With a cosine of up to 0.45, the computer is able to match to the same article as a human in the vast majority of cases (95%). When the cosine distance measure is above 0.45, the agreement between the computer and human breaks down. This is simply due to the fact that the program is designed to always select a matching article from any given AOF codal article to an article in each contemporary penal code. Unlike a human, the computer cannot declare that "there is no match." Based on Figure 3, we can see that when the computer finds a distance of under 0.25, there is a very good chance that the article is largely unchanged and that the computer is matching to the most substantively similar article. This helps give additional meaning to the heat map in Figure 2. Any bar that is black has a very good chance of having been matched to the substantively right article. This also helps aid in the interpretation of Table 1, which shows the fraction of AOF articles that matched to under 0.2 for each country. We can now see that these modern articles with low cosine distances are very likely to be correctly matched to their substantively most similar AOF code article.

The second question we addressed with our substantive analysis was what kind of information we could extract about the similarity of the content of articles based on their cosine distances. To do this, we again used the same nine AOF code articles. Once we had selected a substantive match for each article (or no match in the case where an

FIGURE 3. MATCHING AGREEMENT AND COSINE DISTANCE.



article had no counterpart in a contemporary code), we examined each article to determine how the substance had changed from the AOF version to the contemporary articles. We examined the actual language in every article and broke each one down into constituent elements.<sup>117</sup> In so doing, we generally disregarded the amounts for any fines, as calculating the change in amounts between 1955 currency and modern currency was beyond the scope of this Article. We also disregarded any mention of additional articles.

We then assigned a score to each matching contemporary West African codal article based on how many elements it shared with its corresponding AOF code article. This took the form of a fraction where the numerator was the subset of shared elements across the two articles (the intersection of the two sets of elements) and the denominator was the union of all elements across the two articles.<sup>118</sup> This created fractions from 0 to 1 where 1 represented the total similarity of elements across the two articles. We took the complement of these fractions to create a human-coded distance score, in order to make this measure similar to the cosine distance measure introduced earlier.<sup>119</sup> To make the calculations behind this variable more intuitive, Figure 4 introduces a Venn diagram with two circles where each circle represents the set of elements from one article. Our variable is computed as one minus the light grey area of the diagram divided by the total area (i.e., white + grey + black). As the articles share more

117. These elements are the distinct parts that make up any given article, and are inherently subjective. Specific examples of how we broke articles up into elements are discussed in more detail *infra* at the text accompanying notes 120 et seq.

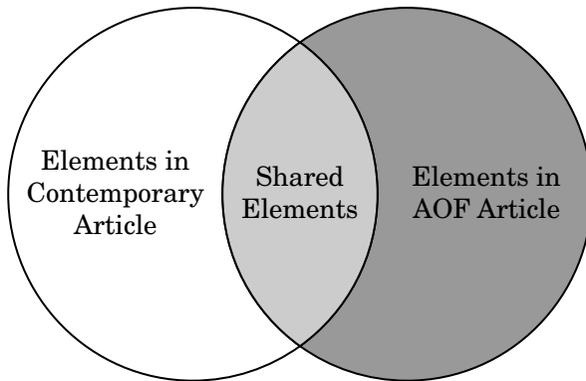
118. This method for calculating the similarity of elements across two articles has the same form as the Jaccard index. See Paul Jaccard, *Étude comparative de la distribution florale dans une portion des Alpes et du Jura*, 37 BULLETIN DE LA SOCIÉTÉ VAUDOISE DES SCIENCES NATURELLES 547 (1901).

119. More formally, if the sets of elements of two articles are represented as  $S1$  and  $S2$ , then the formula for the human-coded distance measure is:

$$1 - \frac{|S1 \cap S2|}{|S1 \cup S2|}$$

elements, the grey area grows relative to the white and black areas, and so the distance score shrinks until it reaches zero. As before, the person coding the articles used for this distance score was blind to the program's output. We used these human-coded scores to divide the contemporary articles into three categories: "similar," "some changes," and "dissimilar." We included a final category of "no possible match," which was used when the current penal codes had no match in the AOF code (as is the case when an article—such as one prescribing the use of the death penalty—is dropped completely). Our strategy in constructing the three categories was to try and create categories that divided the articles in three groups of approximately equal size. We first removed the nine articles that had "no possible match," leaving behind sixty-three articles. We then found the cut-points in the scoring scheme described above that produced the most equal grouping of articles.

FIGURE 4. RELATIONSHIP OF CONTEMPORARY CODAL ARTICLE TO AOF CODAL ARTICLE.



The category of "similar" included any contemporary article that had a human-coded substantive distance score of 0.14 or below. There were twenty such articles. These articles had identical or nearly identical meaning to their corresponding AOF penal code articles. For example, the AOF penal code in its article qualifying rebellion includes what we see as three elements: (1) any attack, any resistance with violence or assault, (2) towards government officials who are (3) acting in their legal capacity.<sup>120</sup> Guinea's article qualifying what is

120. CODE BOUVENET, *supra* note 43, art. 209:

*Toute attaque, toute résistance avec violences et voies de fait envers les officiers ministériels, les gardes champêtres ou forestiers, la force publique, les préposés à la perception des taxe[s] et des contribution[s], les porteurs de contraintes, les préposés des douanes, les séquestres, les officiers ou agents de la police administrative ou judiciaire, agissant pour l'exécution des lois, des or-*

included in rebellion<sup>121</sup> is not identical in language, but still has the same three elements. The only difference is that Guinea's article additionally adds that the threat of violence is equivalent to violence itself. Other, equally similar articles were placed in the category of "similar."

The category of "some changes" had human-coded distance scores greater than 0.14 and less than or equal to 0.45. This category had twenty-two articles. In substantive terms, these articles had entire elements that were missing or different, rather than smaller modifications within an element. So, for example, the AOF defines a vagabond or a dishonorable person as one who: (1) doesn't have a fixed address, (2) doesn't have a means of subsistence, and (3) doesn't practice a regular trade or profession.<sup>122</sup> While Togo still requires these same three elements, it also requires a fourth, which is that the person must devote himself to vagrancy.<sup>123</sup> This addition of an element places Togo's article on vagrancy into our category of "some changes" with a human-coded distance score of 0.25.

Articles with a substantive distance score above 0.45 were dubbed "dissimilar." There were twenty-one dissimilar articles. In these articles, a large fraction of the material had changed between the AOF code's version and the contemporary version. One example is the definition of an accomplice. The AOF code lists only three types of accomplice: (1) those who induced or gave instructions for the act, (2) those who knowingly procured instruments to be used in performance of the act, and (3) those who knowingly helped in preparing or committing the act—even if it was never committed.<sup>124</sup> Burkina

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*dres ou ordonnances de l'autorité publique, des mandats de justice ou jugements, est qualifiée, selon les circonstances, crime ou délit de rébellion.*

121. CODE PÉNAL art. 222 (1998) (Guinea):

*Toute attaque, toute résistance avec violence et voie de fait ou menaces envers les Officiers ministériels, les gardes forestiers, la force publique, les préposés à la perception des taxes et des contributions, les porteurs de contraintes, les préposés des douanes, les séquestres, les Officiers ou agents de la Police administrative ou judiciaire, agissant pour l'exécution des lois, des ordres ou ordonnances de l'Autorité publique, des mandats de Justice ou jugements est qualifiée crime ou délit de rébellion.*

122. CODE BOUVENET, *supra* note 43, art. 270:

*Les vagabonds ou gens sans aveu sont ceux qui n'ont ni domicile certain, ni moyens de subsistance, et qui n'exercent habituellement ni métier ni profession.*

123. CODE PÉNAL art. 185 (2008) (Togo):

*Ceux qui n'ont ni domicile certain, ni moyens de subsistance et qui n'exercent habituellement ni métier ni profession et s'adonnent au vagabondage seront puni d'une à vingt journées de travail pénal. Le tribunal pourra en outre ordonner leur placement dans un établissement d'accueil, d'orientation ou de soins pendant une durée de trois mois, qui pourra être prorogée dans le but de faciliter leur réinsertion socio-professionnelle.*

124. CODE BOUVENET, *supra* note 43, art. 60 (1955):

Faso, in its definition of an accomplice, includes the second and third definition, but not the first.<sup>125</sup> In addition, it includes three further categories of accomplice: (1) those who knowingly harbor brigands or malfactors who have committed violent acts (2) those who knowingly harbor a person they know to have committed a crime and know to be sought by authorities, and (3) those who, knowing of a crime already committed or attempted, did not, when possible, prevent or limit its effects or notify authorities if they thought another crime was to be committed. This does not apply to relations up to the fourth degree.<sup>126</sup> The removal of one of the three definitions and addition of three extra definitions changes the majority of the article, and therefore it gets qualified as a “dissimilar” match in its substantive difference score.

We assigned an article to the category of “no possible match” when an article had been taken out of the penal code and not replaced. So, for example, Mali was assigned this category for the

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*Seront punis comme complices d'une action qualifiée crime ou délit ceux qui, par dons, promesses, menaces, abus d'autorité ou de pouvoir, machinations ou artifices coupables, auront provoqué à cette action ou donné des instructions pour la commettre;*

*Ceux qui auront procuré des armes, des instruments, ou tout autre moyen qui aura servi à l'action, sachant qu'ils devaient y servir;*

*Ceux qui auront, avec connaissance, aidé ou assisté l'auteur ou les auteurs de l'action, dans les faits qui l'auront préparée ou facilitée, ou dans ceux qui l'auront consommée, sans préjudice des peines qui seront spécialement portées par le présent Code contre les auteurs de complots ou de provocations attentatoires à la sûreté intérieure ou extérieure de l'Etat, même dans le cas où le crime qui était l'objet des conspirateurs ou des provocateurs n'aurait pas été commis.*

125. CODE PÉNAL art. 65 (2005) (Burk. Faso):

*Sont complices d'une action qualifiée crime ou délit :*

- *ceux qui auront procuré des armes, des instruments ou tous autres moyens qui auront servi à l'action sachant qu'ils devaient y servir ;*
- *ceux qui auront avec connaissance, aidé ou assisté l'auteur ou les auteurs de l'action dans les faits, qui l'auront préparée, facilitée ou consommée ;*
- *ceux qui, connaissant la conduite criminelle de malfaiteurs exerçant les actes de brigandage ou des violences contre la sûreté de l'Etat, la paix publique, les personnes ou les propriétés, leur fournissent habituellement logement, lieu de retraite ou de réunion ;*
- *ceux qui, en dehors des cas prévus ci-dessus, auront sciemment recelé une personne qu'ils savaient avoir commis un crime ou un délit et qu'ils savaient de ce fait recherchée par la justice, ou qui auront soustrait ou tenté de soustraire cette personne aux recherches ou à l'arrestation, ou l'auront aidée à se cacher ou à prendre la fuite ;*
- *ceux qui, ayant connaissance d'un crime ou d'un délit déjà tenté ou consommé n'auront pas, alors qu'il était encore possible d'en prévenir ou limiter les effets ou qu'on pouvait penser que les coupables ou l'un d'eux commettraient de nouveaux crimes qu'une dénonciation pourrait prévenir, averti aussitôt les autorités administratives ou judiciaires.*

*Sont exclus de ces deux derniers cas le conjoint, les parents ou alliés du criminel ou de l'auteur du délit jusqu'au quatrième degré inclus.*

126. *Id.*

subject area of pimping, since it has no article in its penal code that covers this topic. Nine articles had no possible match.

Once we determined how close the substance was between the AOF penal code and the code of each of these countries for these nine areas of the law, we then calculated (1) the fraction of articles in each category for which the human coder and program agreed on the best match, and (2) the mean cosine distance for the articles in each category. The results are presented in Table 2. The difference in the mean cosine distance across each contiguous category is statistically significant, implying that the human-coded and cosine distance measures grouped the articles in similar ways.<sup>127</sup>

TABLE 2. SUBSTANTIVE MEANING AND COSINE DISTANCE.

Proximity by Substance	Computer and Human Select Same Article	Mean Cosine Distance
Similar (20)	95.0%	0.13
Some Changes (22)	81.8%	0.33
Dissimilar (21)	42.9%	0.50
No Possible Match (9)	—	0.61

Note: Calculations in this table exclude France (1955). Number of articles is in brackets.

Finally, we regressed the human-coded distance measure on cosine distance. There is a strong, positive relationship between cosine distance and the human-coded distance measure (as shown in the Appendix).<sup>128</sup> On average, articles with higher cosine distances are also more different according to the human-coded measure and the relationship is substantively large, statistically significant, and quite robust. The cumulative results of this section suggest that we can extrapolate from the cosine distance measures to identify the existence of difference in the substantive meaning of laws. Articles represented by black cells in the heat map in Figure 2 are much more likely to be substantively similar to the corresponding AOF penal code article than those represented by white or grey cells. White cells denote articles that have not only changed their wording from the AOF, but are likely to be substantively different as well. This helps us verify both that the computer program is accurately able to measure how laws have changed over time and also that these changes

127. The difference between the mean cosine distance of each category and each contiguous category was tested with two-tailed, unequal variance t-tests. The difference in means between “Similar” and “Some Changes” and between “Some Changes” and “Dissimilar” is significant at  $p < 0.01$ . The difference in means between “Dissimilar” and “No Possible Match” is significant at  $p < 0.05$ .

128. See the Appendix for a scatter plot of the relationship and the full regression results. The strong relationship holds after adding dummy variables marking the areas of the law under study and the countries under study.

are not purely linguistic. There are major substantive changes between the colonial laws of French West Africa in 1955 and the present penal codes in these countries.

## V. DISCUSSION

In the same way that French colonial assimilationist policy was seen as a way for colonized peoples "to absorb French culture so that they might become Frenchmen and French citizens,"<sup>129</sup> so too did it intend for French law to be similarly absorbed. However, the laws of the successor states appear to have diverged greatly from the laws under French colonialism. This has important ramifications for work on legal origins and legal families.

The legal origins literature has found that a country's legal origin influences a variety of economic outcomes. The contributors to this literature propose several mechanisms that could link legal origin to these outcomes, the most common of which is the durability of laws implanted in colonies.<sup>130</sup> On this account, civil law countries would thus have generally worse economic outcomes because they were given, and retained, bad laws from their French colonizers while countries that were colonized by, for example, the British retained more growth-friendly laws. While we have only focused on penal law, our research casts doubt on the generalizability of a mechanism that hinges on the durability of colonial legislation. Rather, the large shift in penal codes away from colonial-era legislation suggests the relative dynamism of law in former colonies. If this dynamism extends more broadly to the civil codes as well, then the relationship between legal origin and economic outcomes must occur through a mechanism other than the persistence of the laws themselves.

The second body of literature our study addresses is the debate around the existence and parameters of legal families. In order for legal families to be a useful concept, different legal families must be classed according to features that they share with each other but not with other legal families. These features are often assumed to result from imposed legal transplants during the colonial era.<sup>131</sup> While this is a compelling and internally consistent explanation, our research shows that countries within a single legal family simply have not retained the transplanted laws that are thought to unite them. The countries that we studied, which were colonized by the French, gained independence at very similar times, and have relatively simi-

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129. K.E. Robinson, *The Public Law of Overseas France Since the War*, 32 J. COMP. LEGIS. & INT'L L., pt. 3, at 37, 37 (1950) (citing E. WALKER, COLONIES 101 (1944)).

130. For a good, sympathetic summary of this research, see La Porta et al., *supra* note 35.

131. Mattei, *supra* note 4, at 15 (referring to colonization in Africa as a moment of macro-comparative revolution which should force us to revise existing classification schemes).

lar cultural contexts, now have penal codes that are rather different. While Senegal has retained approximately half of the penal code articles from the colonial era, Guinea, Mali, and Burkina Faso have kept 10–25% of their articles from 1955, and Togo and the Ivory Coast have retained fewer than 10% of their pre-independence articles. Further, the same articles were not retained across countries. The present laws of these countries are different from both the past and from each other in both language and in substance.

Moreover, divergence from colonial law does not seem to have happened in obvious ways. One might guess that Guinea and Togo are the countries that have changed the most since decolonization. While this is true of Togo, Guinea has kept more of its penal code articles than any country except for Senegal. This is particularly surprising given the incredibly negative experience Guinea had during decolonization. We have examined and disproved some other preliminary hypotheses. For example, how recently a country rewrote its entire code does not relate to its degree of change from colonial legislation. Moreover, stronger linkages to France do not provide a compelling explanation either.<sup>132</sup> Future research could aim to understand why some countries, such as Senegal, have retained a fairly large degree of colonial legislation while other countries have abandoned it almost entirely. Additionally, future research could extend this work to study additional areas of the law, such as the civil code, and thus could have a more direct impact on the legal origins thesis. Lastly, further research could be undertaken to better understand the new, alternative forces that are influencing the laws in these seven countries.

While our empirical evidence is drawn only from penal codes in French West Africa, we believe that our results speak to issues that apply to the legal families literature as a whole. This is primarily due to the fact that French West Africa should have been an easy case for the legal families literature. If French West African countries show large differences between the colonial law and present law, then we would expect to see larger differences elsewhere. One reason for this is because decolonization in Africa is a recent phenomenon. If laws are expected to change over time, then African laws should be quite similar. Despite this, we found a great deal of divergence from colonial law. The countries of Latin America are often also grouped into a similar legal family, however their laws split off from each other and from European influence much earlier than the countries in Africa. For this reason alone, we expect laws outside of these countries to have seen even greater divergence than the countries under study.

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132. For example, note that despite the Ivory Coast and Senegal having the closest relationships to France, they are at opposite ends of our heat map.

There are other reasons to expect our results to be indicative of even larger changes amongst countries within a single legal family. For example, one characteristic we do not take into consideration is the divergence of linguistic meaning amongst countries. While some of the language employed in the penal codes stayed the same, the meanings of the words themselves may have evolved distinct meanings in different national legal systems.<sup>133</sup> If this has in fact occurred, then the true divergence amongst these countries is even larger than we report, pushing our bias towards underestimating the actual substantive change over time.

It seems reasonable to believe that legal families should share legislation, particularly given our hypothetical example earlier that suggests a transfer of law between France and China. One common approach is to claim that legal families share a long and often unarticulated list of unmeasured and potentially unobservable attributes relating to culture, ways of thinking, ideology, or intangible institutions around the law. We believe that this is a dangerous and fundamentally mistaken approach, as it assumes precisely what we should be testing. Instead of these theoretical claims, alternative hypotheses about classification must be based on clearly measurable features of each legal system. Without these measures, we risk devolving into simple assertions. It may well be the case that French West Africa is part of a single legal family because, while its laws are different, its ideology is the same. However, it is just as likely that its ideology is actually *more different* than its laws. The existence of a legal family is thus fundamentally an empirical question, and so the proper way to adjudicate the veracity of these claims is with empirical evidence. To do otherwise risks turning the enterprise into “an idle exercise in pseudo-comparative sociology.”<sup>134</sup>

We find that the majority of laws have changed in most countries, supporting Young’s contention that “the explanatory power of colonial legacy, initially compelling, becomes less central as time goes by.”<sup>135</sup> Table 1, in our textual section, shows that fewer than half of the penal code articles in all of the countries studied match to the AOF penal code with a cosine distance of less than 0.2. Combined with our substantive analysis, this leads us to claim that most countries have incorporated at least some substantive changes in the majority of the articles of the penal codes that they inherited at independence. While it might seem obvious to claim that different countries write different laws, this simple claim is at odds with the

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133. For more on the importance of language in comparative law, see, e.g., Barbara Pozzo, *Comparative Law and Language*, in *THE CAMBRIDGE COMPANION TO COMPARATIVE LAW* 88 (Mauro Bussani & Ugo Mattei eds., 2012).

134. Mattei, *supra* note 4, at 18.

135. CRAWFORD YOUNG, *THE POSTCOLONIAL STATE IN AFRICA: FIFTY YEARS OF INDEPENDENCE, 1960–2010*, at 339 (2012).

existing literature. Our evidence strongly suggests that we cannot rely on definitionally vague concepts to tie together legal systems.

#### CONCLUSION

This Article introduced cosine distance as a new way of measuring legal change over time, and this innovation may be of value and interest in a number of legal fields. For example, measures like cosine distance could be used in the analysis of constitutions to trace the countries from which others have borrowed constitutional ideas, or how constitutions have evolved over time. Our results, which show that string distance measures correlate closely with actual changes in the substantive meaning of articles, should encourage other legal scholars to test the robustness of these methods in other contexts. The use of these measures holds the promise of enabling lawyers to use quantitative analysis to supplement what is often a very qualitative field.

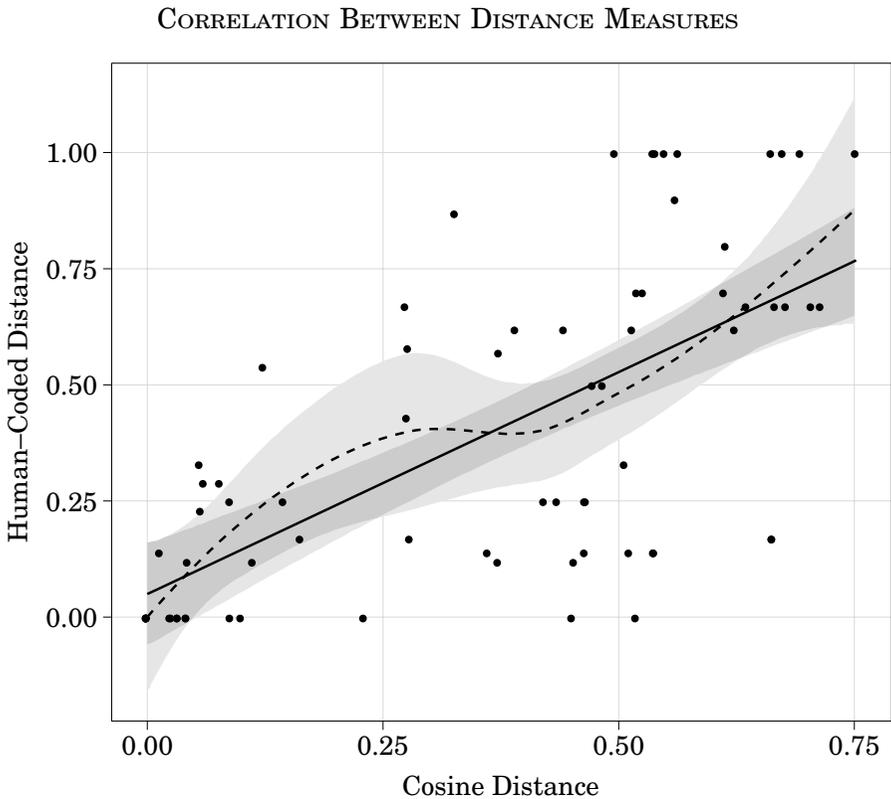
In this particular instance, cosine distance was used to compare every article of the colonial French penal code against the articles of the penal codes of seven successor countries in Africa. The results challenge the presumption that legal systems in countries that shared a common colonizer must be similar. We have shown that, at least in terms of penal law, former French colonies have in fact moved on and diverged from their colonial legal inheritance.

These results are of importance to the legal origins and legal families literatures, both of which use the persistence of laws as a bridge from historical events to contemporary economic or legal outcomes. We challenge this mechanism by showing that, even in a most likely case of the penal codes in French West Africa, there has been a large degree of legislative development and divergence. While this study focuses only on penal codes, it seems unlikely that penal law is changing while other portions of the law are conveniently frozen. African countries are not static and identical containers for customary and colonial laws, and so assumptions of African homogeneity are untenable.

## APPENDIX: VALIDATING COSINE DISTANCE

The goal of this Appendix is to test the ability of the cosine distance measure to explain substantive changes in the law. To do this, it examines the ability of the cosine distance measure to explain article-level variation in the human-coded distance score of the seventy-two articles (nine articles from eight countries' penal codes) examined in Part IV.B above.

The figure below shows the correlation between human-coded distance and cosine distance for the seventy-two articles. A value of zero on the human-coded distance score denotes articles with exactly the same elements. A value of zero on the cosine distance measure denotes articles with identical ratios of 4-grams, and so high similarity. The solid line is an OLS best-fit line, the dashed line is a loess fit, and both lines are shown with 95% confidence intervals. Both lines are quite similar and the two variables are highly correlated in the expected direction. The strong linear relationship between cosine distance and the human-coded score is similar across the full range of both variables.



The table below shows the results of four OLS regressions where the unit of analysis is the article, the dependent variable is the human-coded distance score, and the key independent variable is the cosine distance. Both variables range from 0 to 1, where 1 indicates AOF articles that are totally distinct from any article in a present African penal code and zero is reserved for AOF articles that are completely similar to their closest-matching current article. Model 1 is the regression model represented by the solid line in the scatter plot above. The constant in Model 1 shows that when the cosine distance is 0, the estimated human-coded distance score is 0.05. Increasing the cosine distance from its minimum (0) to its maximum (1) increases the expected value of the human-coded score by 0.96. The effect is statistically significant and shows that articles that are more similar when measured by cosine distance are also more similar in the human-coded scheme. To reiterate, the seventy-two articles under study were coded in two completely distinct ways and the human coder did not have access to the cosine distance scores when the articles were coded. The linear relationship between the two variables is quite strong, and moving from the minimum to the maximum cosine distance has the predicted effect of shifting the human-coded variable from roughly its minimum to its maximum.

Models 2–4 probe the robustness of the results by adding fixed effects. Model 2 adds country fixed effects, and so the coefficient for cosine distance in Model 2 shows the effect of cosine distance on the human-coded score within countries but across areas of the law. Model 3 adds area-of-law fixed effects, and so it explains variation within areas of the law across countries. Model 4 adds both country and area-of-law fixed effects, and so controls for all factors that are constant within either countries or areas of the law. Across all models, the coefficient for cosine distance is statistically significant and substantively important.

INFLUENCE OF COSINE DISTANCE ON HUMAN-CODED DISTANCE SCORE

	Model 1	Model 2	Model 3	Model 4
Cosine Distance	0.96*** (0.105) [0.110]	0.91*** (0.124) [0.151]	0.84*** (0.165) [0.222]	0.67*** (0.171) [0.233]
Constant	0.05 (0.032) [0.043]	0.03 (0.102) [0.078]	0.08 (0.094) [0.065]	0.10 (0.141) [0.088]
Country Fixed Effects	No	Yes	No	Yes
Area of Law Fixed Effects	No	No	Yes	Yes
Observations	72	72	72	72
R-squared (overall)	0.45	0.47	0.70	0.74

Robust standard errors in parentheses.  
Standard errors clustered on both countries and areas of law in square brackets.  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

It is likely that the errors from the model are correlated across observations and this correlation likely exists within countries and within areas of the law. As such, all models in the regression table report both robust but unclustered standard errors and standard errors that are clustered on both the country and the area of law. Similar results are obtained when clustering on only countries or areas of the law. It should be noted that with small numbers of clusters, clustering is not always optimal. In our case, we do not need to defend any particular approach, as the results are similar and significant across the clustering schemes.

Finally, the dependent variable is censored at 0 and 1 and so a tobit model may be more appropriate than the OLS models above. When the models above are estimated with a tobit model, the results are similar in terms of substantive and statistical significance (the *p*-value for cosine distance is always less than 0.01).

The strong relationship between cosine distance, which measures changes in the black letter of the law, and the human-coded scheme, which measures substantive changes in the law, leads us to believe that we can make strong statements about the degree of substantive changes in colonial law based on cosine distance.