Political Cultures: Exploring the
Long-Run Determinants of Values Transmission

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Abstract

Most previous studies of political culture have assumed the existence of a single, national culture within each country studied. This paper analyzes the extent to which value consensus exists across countries. Using data from the World Values Survey, we introduce a statistical model to measure country-level heterogeneity in stated beliefs. Rather than assume consensus, our statistical approach models each country as mixture of *subcultures* that are shared across the world. Our preliminary results demonstrate that value consensus varies substantially across countries. We offer some initial thoughts on the origins of this consensus drawing on existing theories about the impact of geography, migratory patterns and colonial experience on culture and cultural diffusion. We also show that cultural fractionalization is positively correlated with predicted genetic diversity, suggesting the long-term roots of a country's political culture.

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1 Introduction

Political scientists are simultaneously intrigued by, yet highly skeptical of, the concept of political culture. On the one hand, the often unspoken, implicit beliefs and practices that characterize groups are an ever-present aspect of social and political interactions. Differences in values and social conventions appear most acute when interactions take place across cultures.

Measuring cultural divergence is a task fraught with pitfalls; only deep ethnographic experience allows a researcher to interpret the meaning of the symbols and rhetoric that underpin cultures (Laitin and Wildavsky, 1988; Wedeen, 2002). Researchers' desire to map political culture across large swathes of time and space have favored analysis of worldwide public opinion polls which have queried citizens across regions about their beliefs, values and preferences. Ability to interpret and contextualize symbolic expressions in their full ethnographic context is not possible through this approach. On the other hand, the possibility of exploring a broad, comparative perspective on one dimension of political culture — shared social values — is, nonetheless, of scholarly value and does not preclude the opportunity for conceptualizing culture in terms of the "semiotic processes" (Wedeen, 2002) that characterize everyday interactions.

Most previous studies of political culture defined as a set of shared values have assumed the existence of a single, national culture within each country analyzed (e.g., Almond and Verba, 1965; Inglehart, 1997; Schwartz, 1999). Some studies recognize the limitation of this assumption, but struggle with existing methods to measure the diversity of views in a country Silver and Dowley (2000) We adopt an empirical strategy that allows for the measurement of value consensus both *within* and *across* countries. We show — using data for 57 countries from the 2005 wave of the World Values Survey — there is a strong case in favor of the existence of a single national culture for a minority subset of countries. The majority of countries in the sample exhibit meaningful heterogeneity in political culture, however. We find that there are seven basic cultural types that emerge globally and these types map only loosely onto existing conceptualizations of regional cultural variation.

While cultural heterogeneity is a feature of every country in the sample, there does exist considerable variation in the degree cultural fractionalization. Cultural heterogeneity is a defining feature of Eastern and Southeastern European countries, for example, while Latin American countries tend to exhibit overwhelming cultural homogeneity. This is despite the fact that Eastern and Southeastern European countries tend to be at a level of socioeconomic development similar to countries in Latin America. Drawing on an existing literature concerned with the geographic and historical influences on culture and cultural diffusion, we offer some initial thoughts on the long-run determinants of value consensus drawing on existing theories about the impact of geography, genetic diversity, migratory patterns and colonial experience on culture and cultural diffusion. We also show that cultural fractionalization is positively correlated with predicted genetic diversity, suggesting the long-term roots of a country's political culture.

2 Conceptualizing Political Culture

Pye (1991) calls political culture one of the few "mega-concepts" in the social sciences.[1] As such, conceptual and definitional discussions abound. There at least three significant trends in efforts to define culture, broadly speaking, and political culture, more specifically, employed in political

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[1]Difficulties of defining political culture, as a concept, are cataloged by Formisano (2001).

science; each exhibits an unstated emphasis on the methodological strategies underlying attempts to observe and measure the concept.

The first stream in the literature defines political culture as "shared values legitimating social relations" (Wildavsky, 1987, 3), emphasizing value consensus and the existence of core belief clusters. Scholars working in this tradition, typically employ the results of large-scale public opinion polls to examine cross-national variation in stated belief patterns.

A second stream in the literature draws inspiration from game theoretic depictions of coordination dilemmas, tipping processes and behavior influenced by lack of complete information. Some scholars have focused on culture as an informational equilibrium where individuals condition social behavior on common knowledge about the likely actions others will take in new situations. For example, Greif (1994, 915) defines culture as beliefs "that capture individual's expectations with respect to actions that others will take in various contingencies;" Laitin and Weingast (2006) build upon these ideas calling political culture an "equilibrium" in which individuals condition on knowledge about the beliefs of others. Kuran and Sandholm (2008) view culture as a pair of distributions — one over personal preferences and one over equilibrium behaviors — that jointly define communal identity; in this setting, individuals seek to express their personal preferences while simultaneously coordinating with the choices of others. Relatedly, Carvalho (2011) defines culture as "a restriction on an agent's strategy set."

Wedeen (2002) offers a conceptualization of culture as "semiotic practices" with a focus on meaning-making through rhetoric and symbolic displays. Wedeen's conceptualization draws inspiration from Laitin's proposal to refocus the study of political culture on cultural symbols to be interpreted in their "full ethnographic context" (Laitin and Wildavsky, 1988, 589). The methodological strategy required to understand the power and meaning of cultural symbols and rhetoric relies heavily on ethnography as rooted in anthropological field research.

Different definitional orientations toward political culture are not, in function, mutually exclusive. Scholars seeking to characterize value consensus at a national level acknowledge the importance of ethnographic context; interpretivists see the possibility for "fruitful collaboration" with equilibrium approaches to culture.[2] Broad definitions which describe political culture as a "mind set" providing some guidelines for the boundaries of acceptable behaviors and actions (Elkins and Simeon, 1979, 128) share intellectual space with all three approaches. From a research design perspective, such definitions represent an operationalization challenge. In this paper, we adopt a working definition of political culture which focuses on aggregation of stated beliefs — as measured in public opinion surveys — as one manifestation of culture. There is no doubt that this approach leads to costly reductionism.[3] What is lost in stripping away some of the conceptual complexity associated with "political culture" is gained in ease of operationalization and clarity of interpretation.[4]

Beyond the debate about definitional and conceptual issues, perhaps more controversial has been the use of culture as an independent variable to explain the two most significant dependent variables in comparative politics — democracy and development. Previous studies linking national culture to political and economic outcomes have suffered from a serious endogeneity problem. In particular, did "Protestant" cultural values with their emphasis on the psychological "need for achievement"

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[2]See Laitin and Wildavsky (1988) and Wedeen (2002).

[3]See Lehman (1972) for more on this point.

[4]Laitin (1998) focuses on one aspect of cultural identity, titular language, in part, due to ease of measurement and interpretation.

lead to better democracy and development outcomes? Or did good political institutions — and their associated economic outcomes — create a particular cultural configuration that we now associate with advanced industrial democracies?

This paper represents a first step toward taking up the challenge posed by Tsebelis (1997), and others, of explaining culture as a dependent variable.[5] The broad goal of the project is to understanding why particular cultural configurations emerged as equilibria out of a wide set of potential alternatives. In order to explain the emergence of particular political-cultural configurations requires an elaboration of the global landscape in terms of shared values. In particular, we seek to define and describe the world's cultural terrain by identifying broad belief "clusters" that exist both within and across countries. A next step in the project involves creating a measure for within-country cultural heterogeneity. We hope to eventually explain both why certain cultural configurations emerge as equilibria as well as why we find more systematic patterns of belief in some countries than others.

Our approach builds on a literature which suggests that political cultures are multifaceted and that they do not necessarily overlap, spatially, with national borders (Nesbitt-Larking, 1992, 86).[6] Indeed, advances in statistical analysis have made it possible to characterize the multifaceted nature of political culture to a greater extent than previously possible. In particular, we build on the work of Silver and Dowley (2000) who question the assumption that members of country necessarily share common attitudes and values. They find that within-country variation across ethnic groups often exceeds variation in attitudes across countries, suggesting that countries may not be the best units of analysis for exploring questions of political culture. Similar we find that countries differ in the extent to which there exists value consensus. We also expand on previous research by exploiting the increasing geographic scope of World Values Survey data to include a broad swath of countries in the developing world where national boundaries may be — to a greater extent than in Europe — endogenous to political processes.

3   Model

We consider stated beliefs as one manifestation of political culture and model belief clusters using a Bayesian hierarchical model. At the bottom of the hierarchy are a set of individuals, each of whom resides in a country. We suppose that each respondent belongs to a single *political subculture*. Substantively, we define a political subculture as profile of similar expressed values across the questions included in our model. We suppose that these subcultures are shared across countries and that each country can be represented by a mixture of the various global subcultures. A number of different processes might lead to the existence of multiple subcultures within a single state — the existence of distinct, ethnolinguistic or religious groups within a single country; geographic separation between parts of the country with may have different economic modes of production; patterns of diaspora, immigration, and trade contributing to the existence of subcultures.[7]

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[5]Also see Berman (2001, 233).

[6]See Hanson (2003) for the dangers of reifying "national" cultures and Reisinger (1995) for more on the importance of disentangling subcultures for a society's "overall" culture.

[7]One objection to this operationalization of political culture might be that individuals belong to many cultural groups, simultaneously. We agree that this is undoubtedly true and the current version of our model is ill-equipped to handle such a scenario. Furthermore, different cultural identities may be used instrumentally in social situations. That said, our model's assumption do facilitate the identification of a set of individuals who share similar expressed values. This constitutes one important manifestation of political culture.

At the top of the hierarchy are a set of countries — each of which is modeled as a mixture of the political subcultures. Substantively, this allows us to capture the heterogeneity in expressed views within a country. Sharing subcultures across countries allows us to provide a middle ground in a recent controversy on the methodology of measuring culture in survey responses. Inglehart (1997) measures a single political culture in each country. Seligson (2002) responds, arguing that such an approach discards individual-level responses unnecessarily, ignoring within-country variation. Our statistical model accommodates both perspectives. Like Inglehart (1997), we produce estimates at the country level. And like Seligson (2002), we retain interesting heterogeneity within each country. We provide the technical details of the model in Section 4.[8]

We apply our model to a wide array of questions to measure the mixture of expressed political culture in each country. We explicitly exclude questions related to political ideology from the question battery and focus on the set of categories described by Elkins and Simeon (1979, 132) deemed fruitful areas for distinguishing across political cultures including, but not limited to, assumptions about the orderliness of the universe and the nature of causality (i.e., are human agents impactful or are events random) and how people define their communities and the assumptions they hold about others. Our question battery also includes items on the most important values to inculcate in children, the extent to which respondents have high or low levels of trust in others, questions about the role of women in society and items about national priorities.

4   Data Generating Process

We begin with a set of N countries ($i = 1, \ldots, N = 57$) surveyed in the most recent wave of the World Values Survey. Within each country, i there are N_i individuals, ($j = 1, \ldots, N_i$). For each respondent j, in each country i, we assume there are R_i questions asked ($r = 1, \ldots, R_i$). And for each question we assume there are Q_r potential responses ($q = 1, \ldots, Q_r$)–including a category for a "don't know" response. For each question r, for each respondent j, for each country j, we observe response y_{ijr}—the option the respondent selected for the particular question. So, for example, if $y_{ijr} = q$, then the respondent chose the qth option available. For all respondents, we observe a vector of responses $\boldsymbol{Y}_{ij} = (y_{ij1}, y_{ij2}, \ldots, y_{ijR_i})$.

We assume that there are K subcultures $k = 1, \ldots, K$, and the proportion of individuals in country i from subculture k is given by π_{ik}. Collecting across all k groups, we have,

$$\boldsymbol{\pi}_i \;\; = \;\; (\pi_{i1}, \pi_{i2}, \ldots, \pi_{iK})$$

We suppose that each respondent belongs to only one subculture, which is indicated by $\boldsymbol{\tau}_{ij}$, an indicator vector. Because each respondent belongs to a single subculture, it follows that $\boldsymbol{\tau}_{ij}$ is a draw from a multinomial distribution,

$$\boldsymbol{\tau}_{ij} \;\; \sim \;\; \text{Multinomial}(1, \boldsymbol{\pi}_i)$$

Notice that $\boldsymbol{\pi}_i$ stochastically controls the distribution of types within each country.

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[8]Our model is distinct, though similar to a number of other mixture models used in political and social science. This includes Bayesian topic models (Quinn et al., 2010; Grimmer, 2010) and nonparametric models of roll call voting (Spirling and Quinn, 2012). Our model is closely related to Latent Class Analysis (LCA) with a single covariate (Linzer and Lewis, 2011), though we include a new prior structure and different estimation strategy.

Given an individual's subculture, we draw her response to each question. Suppose that the jth individual in the ith country belongs to the kth subculture (or that $\tau_{ijk} = 1$). We will suppose that each response is a draw from a subculture specific multinomial distribution. That is, each subculture is characterized by a particular distribution over responses to each question. So, for question r, we assume that the response, y_{ijr}, is a draw from a multinomial distribution, with rate parameter $\boldsymbol{\theta}_{kr} = (\theta_{kr1}, \theta_{kr2}, \ldots, \theta_{krQ_r})$,

$$y_{ijr} \sim \text{Multinomial}(1, \boldsymbol{\theta}_{kr}).$$

We assume that the responses are independent, given an individual's subculture and the subculture specific distribution over the responses to each question $\boldsymbol{\theta}_{kr}$. So the density of the response distribution is given by,

$$p(\boldsymbol{Y}_{ij}|\boldsymbol{\theta_k}) = \prod_{r=1}^{R} \text{Multinomial}(1, \boldsymbol{\theta}_{kr}).$$

To complete the model, we suppose that each country's distribution of subcultures is drawn from a common Dirichlet distribution,

$$\boldsymbol{\pi}_i \sim \text{Dirichlet}(\boldsymbol{\alpha})$$

where $\boldsymbol{\alpha} = (\alpha_1, \alpha_2, \ldots, \alpha_K)$ is a vector of shape parameters for the Dirichlet distribution.[9]

4.1 Estimation and Model Selection

We estimate our model using a variational approximation — a fast, deterministic method for estimating full posteriors in complicated Bayesian models. A major problem in the application of mixture models is determining the appropriate number of clusters to include in the model. Too many components and we *overfit* the data, while too few components leaves interesting variation unmodeled. There are formula-based approaches to determining the number of components such as the Bayesian Information Criterion or the Akaka Information Criterion (Fraley and Raftery, 2007). These methods, however, often provide poor guidance for model selection. Even under ideal conditions they only work asymptotically. Alternatively, we could use a Bayesian nonparametric approach, which allows the simultaneous estimation of the number of subcultures and the subcultures themselves. As Wallach et al. (2010) shows, however, these estimation approaches are heavily model dependent as there is an implicit parameter that controls the number of subcultures.

Rather than rely upon model-dependent methods to determine the fit, we use 10-fold cross-validation (Hastie, Tibshirani and Friedman, 2001) using average "held-out" predicted probability as the objective function to evaluate the models. Cross-validation has numerous advantages, including explicitly examining how well our model fits the data through its ability to predict new observations. Applying the model to our data reveals that *seven* types provide the best balance of fit.

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[9]We assume a Gamma prior on each component of the shape parameter to limit the amount of across country smoothing.
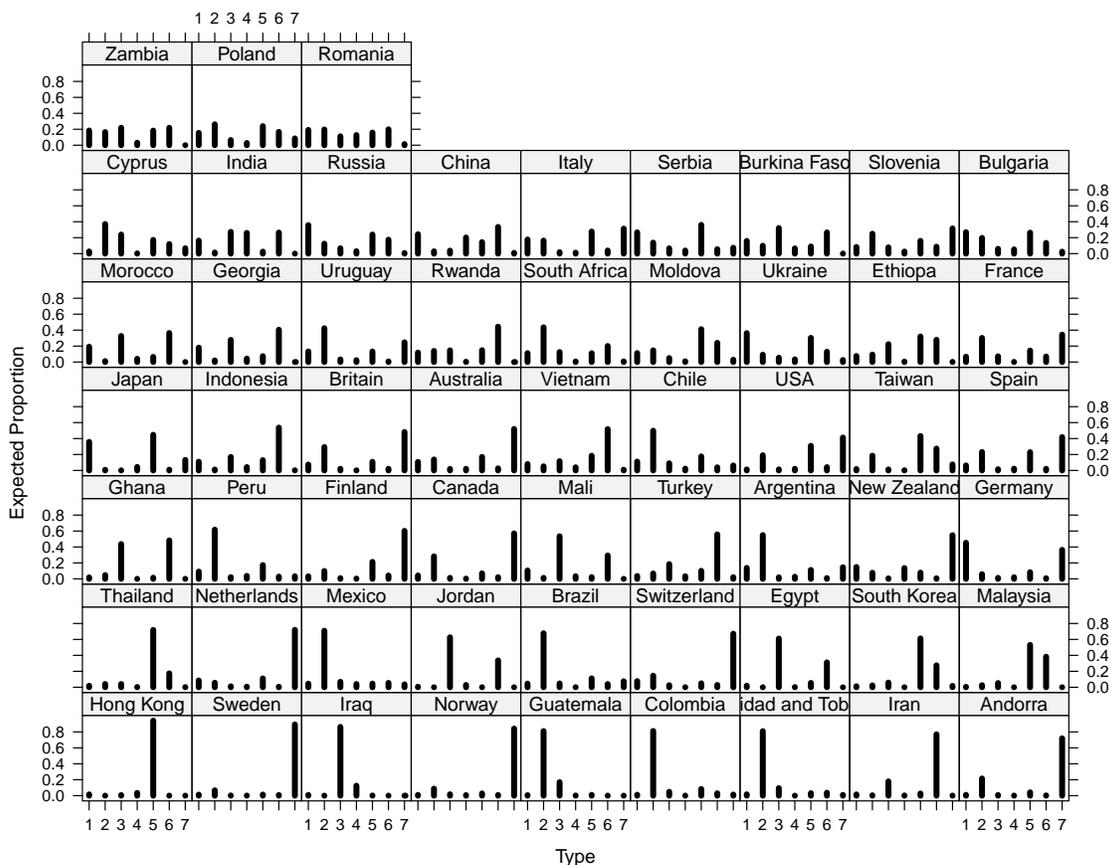
Figure 1: *Mixture of types across countries. Countries ordered by declining cultural heterogeneity.*

5 Results

Our results suggest that there exist certain universal values that are shared by the vast majority of respondents across countries and cultures. Respondents almost universally agree that family is important and, similarly, seek a greater emphasis on family in their lives. Although cultures differ in their tolerance for certain "undesirable" types in their immediate vicinity, very few people in the global sample find it acceptable to be neighbors with drug addicts or heavy drinkers. Finally, respondents tend to agree that they need to set their own goals in life and it is more important to be oneself than to follow others.

Beyond these three areas of value consensus, it is possible to break down cultural groups into seven broad types (Figure 1).[10]

1. *Work hard, no war*: This is the modal citizen type in Germany and Russia and one of two comparably-sized modes in Japan. Category 1 types do not care much about leisure time relative to other groups and are not particularly concerned with having a good time compared

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[10]As in the conceptualization put forward by Kuran and Sandholm (2008), there exists diversity both across and within cultures.

7

to respondents in other categories; they do not tend to think that politics matters much; they value hardwork in children more than other types; they are *less* likely to be willing to fight in a war; they want jobs for citizens; and they tend to be somewhat less bullish regarding technological advance compared to other types (perhaps because of their experience with the downside of technology). Although this group exhibits some of the characteristics of what might be described as "postmaterialism," respondents in category 1 place more emphasis on hardwork and less emphasis on leisure than postmateralism generally entails. Past experience with costly foreign wars – and associated reluctance to fight for country – also characterize this group.

2. *Follow authority, religious but tolerant*: A very large percentage of respondents in the Latin America countries of Chile, Brazil, Peru, Mexico, Argentina, Colombia and Uruguay fall into category 2. There are also significant numbers of category 2 respondents in the United States, Canada, Britain, South Africa and Cyprus. Category 2 respondents tend to care deeply about religion yet exhibit a tolerance toward others (for example, they are nonplussed by an unmarried couple living next door). Category 2 respondents care a great deal about work, believe that hardwork is very important and are highly interested in both employment and expanding exposure to new technologies. Category 2 respondents also exhibit a very high level of respect for authority and express more concern with fighting crime than respondents in other categories.

3. *Religious but intolerant (and misogynistic)*: Category 3 is the modal category for three of the four Arab countries in the sample (Egypt, Iraq and Jordan). Category 3 also makes up a significant percentage of respondents in Morocco, Ghana and Georgia. Category 3 respondents are quite distinctive from other categories on a number of dimensions. They tend to care a great deal about religion and believe that faith is important, even for children; they also tend to believe in the importance of charity. Category 3 respondents believe that children should be obedient and believe that it is important (for adults) to behave properly; they also indicate a high level of respect for authority. Category 3 respondents care tremendously about personal safety and safe surroundings. They also tend to be more discriminatory than the other categories regarding who would make an acceptable neighbor. Category 3 respondents are very concerned about jobs and employment, believing that work and success are both very important; they consider it humiliating to receive money without doing a job, believe that work is a duty to society and that people who do not work will become lazy. Category 3 respondents are distinctive for their misogynistic responses relative to other categories, believing that jobs should be reserved for men, being a housewife is fulfilling, men make better political leaders and so on. Category 3 respondents are uncritically positive toward science, technology and competition.

4. *Don't knows*: There are at least three possible interpretations for respondents who fall into category 4 — typically the smallest of the types in any given country (though a significant number of respondents in India). These individual tend to respond "don't know" at much higher rates than respondents in other categories. They appear reluctant to offer their thoughts either because a) they lack political knowledge and prefer not to offer an uninformed response, b) they are introspective and/or are not comfortable with the face-to-face survey setting or c) the do not care to answer the questions they are being asked and are "opting
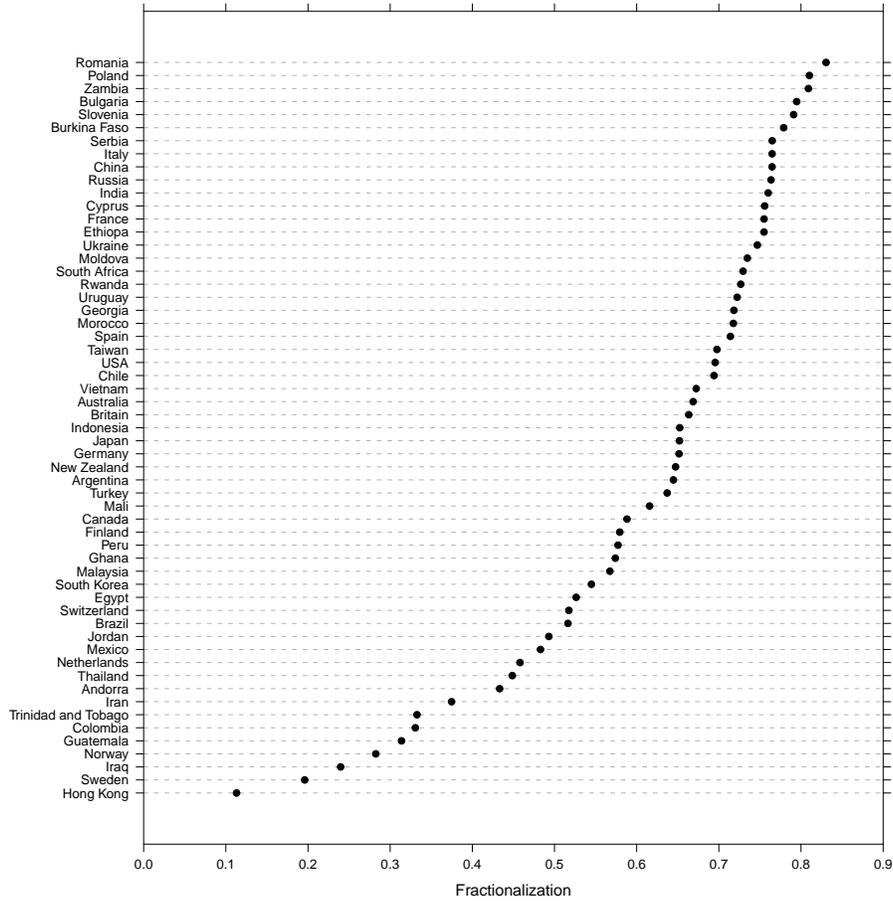
Figure 2: *Cultural fractionalization across countries. Fractionalization is one minus the probability that any two randomly selected individuals are from the same subculture. Higher values represent more fractionalized countries.*

out" of the process. Indeed, category 4 respondents are most likely to be judged by the interviewer to be not paying attention. This suggests that there may be classes of individuals for whom surveys fail to capture preferences. We include category 4 as a small — but separate — cultural type since we cannot distinguish between possibilities a and c — which suggest the limits of surveys for collecting information about preferences — and possibility b — which may tell us something about cultural type.

5. *Materialists*: Category 5 respondents represent overwhelming majorities in countries like Hong Kong and Thailand and are well represented in a number of other East Asian societies (though conspicuously, not China). This is also the modal category in Serbia and Ethiopia. Category 5 respondents are also found in significant numbers in the US. Few category 5 respondents believe that risk taking and having an "exciting" life describes them well. Category 5 respondents tend to be more bullish regarding technology than respondents in category 1; they also care a great deal about economic growth and very little about making cities more

9

beautiful, for example; they also care a great deal about a stable economy. Category 5 respondents tend to agree – but not strongly agree – it is important to make parents proud. On average, category 5 respondents care less about charitable giving than other groups.

6. *Order-seeking nationalists*: Category 6 respondents are the modal respondent type in Indonesia, Iran and Turkey but also common in Georgia, Rwanda, Ghana and Vietnam. Respondents in this category are the most willing to fight in wars and are less misogynistic than respondents in category 3, though they are similar on a number of other dimensions in that they believe that work and technology are important, care about maintaining order and are not pleased with neighbors who are gay, from other religions, people with AIDS and unmarried couples.

7. *Post-materialists*: Respondents in category 7 are the only ones who overwhelmingly value independent children and believe that a child's imagination is important. Tolerance is highly important to category 7 respondents. Friends are also considered to be very important. Authority is not emphasized but protecting the environment is emphasized. Category 7 respondents tend to care more about the importance of the work they are doing and less about money and job security when compared to respondents in the rest of the world. Category 7 respondents care less than their global counterparts about material things, suggesting with group may be picking up on Inglehart's description of respondents with "postmaterialist" values.

In some countries, there is a great deal of homogeneity over type (Figure 2). Citizens of Hong Kong, for instance, are almost universally category 5 respondents; Swedes fall predominantly into category 7; Iraqis are almost universally category 3. Latin American countries tend to be fairly homogeneously with large percentages of their citizens identifying to category 2. At the other end of the spectrum, countries of Eastern and Southeastern Europe, Africa and some the world's largest states — Russia, China and India — all exhibit high levels of cultural fractionalization.

It is also worth considering to what extent these groups are similar to each other. In other words, if two types are close (i.e., more similar in terms of values and beliefs), how does this translate into measures of fractionalization? A first step in addressing this issue involves assessing the relative "distance" between cultural types. Figure 3 is a matrix expressing the cultural difference across categories. Darker squares indicate greater difference between two categories. Category 4 appears to be quite dissimilar to all the other categories. Again, this is most likely related to the fact that individuals clustering in category 4 are less amenable to public opinion survey methodologies. It is also important to note that category 3 — the most common cluster for Arab respondents — differs considerably from category 7 — the post-materialists commonly found in Western Europe — but is relatively similar to category 6 — the most common category for Muslim-majority countries like Indonesia, Iran and Turkey. Categories 2 and 6 appear to share important similarities. Category 7 is most like 2 and 5. Categories 3 and 5 are also quite dissimilar.

To what extent do these cultural categories match up to scholarly conceptualizations of differences between world cultures? Huntington (1996) argues that the world can be divided into Western, Orthodox, African, Latin American, Islamic, Sinic, Hindu, Buddhist, and Japanese cultures. From a cultural values perspective, Huntington's typology only holds up in a very limited way. Latin American countries tend to be quite homogenous with regard to stated beliefs and values. Muslim-majority countries seem to be predominantly split between categories 3 and 6, which are relatively similar to each other but differ on the dimension of women's rights. Most societies
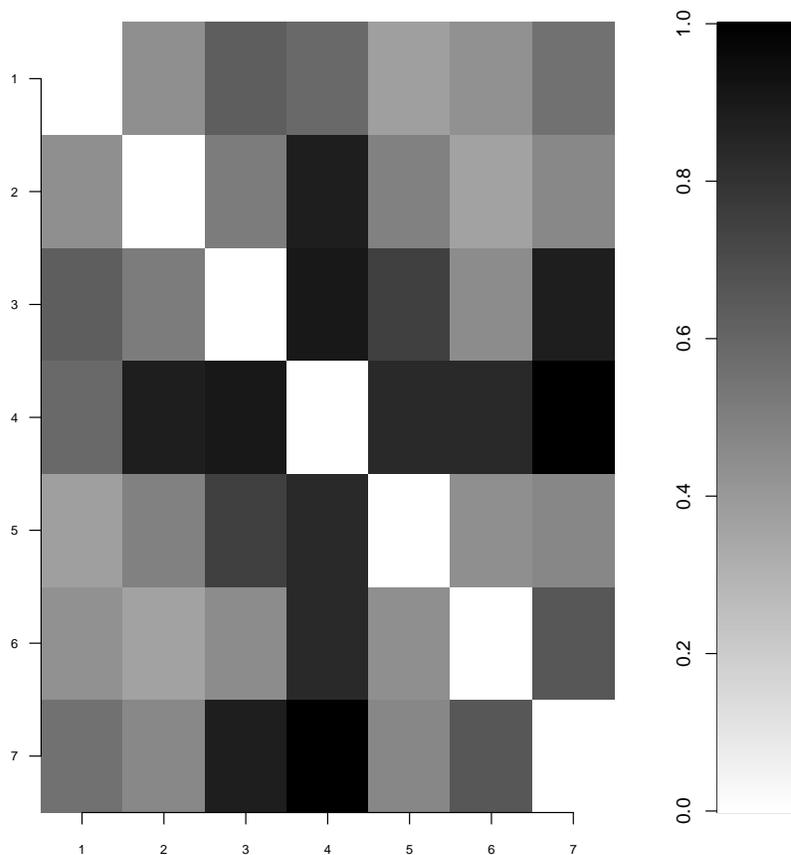
Figure 3: *Cultural distance across types. Darker colors suggest more divergent cultural values.*

Huntington categorizes as "Western" appear to be a mix of category 7 values and the values of a variety of immigrant group subcultures. The countries in the former Soviet-influenced space exhibit strikingly little cultural homogeneity. Most East Asian countries have large clusters of citizens with category 5 values; it is not clear that these values parallel Buddhist teachings and it is notable that there is considerable variation in cultural values across China.

One dimension on which Huntington (1996) may enjoy some support relates to the *distance* between what might be called "Western" values and the cultural values of Muslim-majority societies. Although there is considerable diversity within the Islamic world, the world cultures that appear to be most dissimilar are 3 — typically found of Egypt, Iraq and Jordan — and 7 — typically found in Finland, Sweden and, to a lesser degree, the United States.[11]

To what extent could differences in cultural fractionalization be artificially inflated because we place individuals in discrete bins, rather than generate more continuous measures of behavior? One way to address this is to include a measure of how similar groups are when we compute within

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[11]Huntington (1996) also argues that civilizational conflicts are prevalent and increasingly likely between Islamic and non-Islamic societies. It is not clear, however, that cultural differences necessarily make it harder for people to coordinate and cooperate in a way that will lead to conflict?
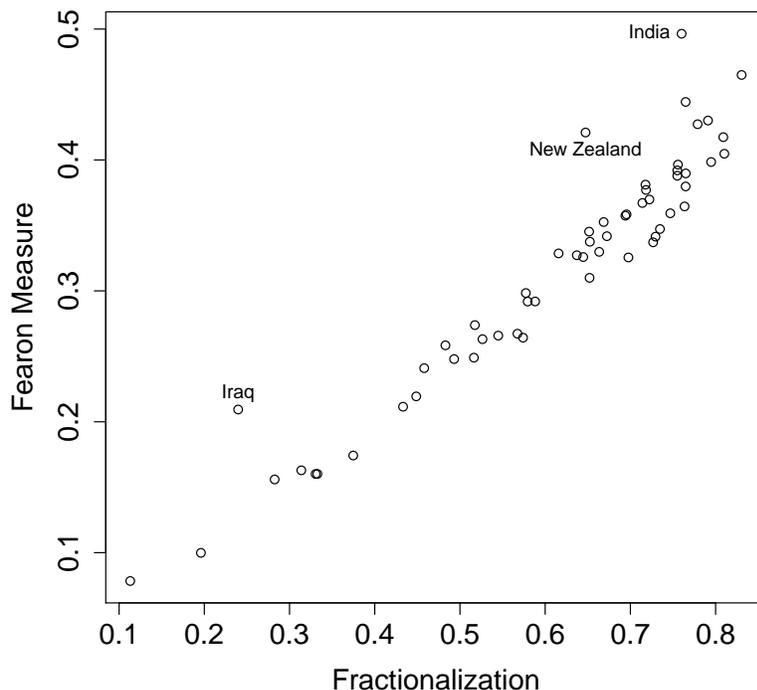
Figure 4: *Country-level fractionalization plotted against fractionalization with weights for "distance" between categories.*

country fractionalization. To do this, we follow Fearon (2003) who uses language similarity to recalculate measures of ethnolinguistic fractionalization. This reduces artificial distance between otherwise related languages. We can construct an analogous measure where we weigh the probability of two individuals belonging to different groups by the distance between those groups. The comparison of the two measures are found in Figure 4; the high degree of correlation between the two measures provides a validity check on our measures of fractionalization. Our measures appear to be identifying real variation in expressed beliefs.

6   Toward an Explanation for Cultural Heterogeneity

An ultimate goal of this project is to provide a better understanding for how certain political-cultural equilibria emerge and why we observe cultural heterogeneity in some countries and not others. The instrumental motivations of cultural entrepreneurs who "peddle" identities clearly influence the incentives individuals face when adopting a certain cultural outlook (Laitin, 1998). There may be meaningful limits or constraints, however, on the types of cultural identities that can be adopted based on existing cultural norms. In other words, not everything is on the table. There may also be a series of structural variables that help to explain both cultural outcomes and heterogeneity including country-level genetic diversity, geography, state size (though it is endoge-

nous), past histories of conflict (also, potentially, endogenous) and trade routes.[12] In this section, we explore theories of cultural heterogeneity and mechanisms of cultural transmission in light of the empirical results presented in the previous section. An ultimate goal of the project will be to validate our results drawing insight from the existing theoretical literature.

6.1 "Initial" Cultural Conditions, Genetics and Cultural Drift

The influence of geography on societies and cultures (and, subsequently, economic development) is a much discussed and debated topic.[13] Collard and Foley (2002) find that the number of "cultures" in an area closely relates to geographical patterns, including latitude, temperature and rainfall. Michalopoulos (2012) argues that differences in land endowments gave rise to location-specific human capital and the formation of localized ethnicities. Ashraf, Ozak and Galor (2010) exploit cross-country variation in geographical isolation prior to the advent of seafaring and airborne transportation technologies to explore long-term patterns of development and underdevelopment.

Ahlerup and Olsson (2012) develop a theory of ethnic diversity related to ideas of cultural and genetic drift. They argue that new ethnic or culturally groups emerge endogenously when peripheral populations fail to receive a sufficient supply of collective goods. From an empirical perspective, Ahlerup and Olsson (2012) find that the duration of human settlements since prehistoric times is strongly correlated with present-day levels of ethnolinguistic diversity. If we take pre-1500 CE societies as slowly evolving cultural groupings influenced by geography and land endowment, this provides a possible baseline for considering the political, economic and social volatility to follow.

Ashraf and Galor (2013) consider the impact of human genetic diversity of questions of comparative economic development. They find that there exists a "hump-shaped" relationship between genetic diversity and development — places with both high and low levels of genetic diversity witness bad economic outcomes while countries with middling levels, like Europe and Asia, tend to see higher levels of development. As part of their analysis, Ashraf and Galor (2013) create a measure of country-level predicted genetic diversity based on data from the Human Genome Diversity Cell Line Panel. Their analysis relies on previous scholarly work regarding the validity of the "out of Africa" conjecture, that migratory distance from Africa maps onto patterns of prehistoric human genetic spread.[14] What impact does genetic diversity have on measures of cultural fractionalization? Using Ashraf and Galor's measure of country-level predicted genetic diversity, we consider this question for the 43 countries of the "Old World" (i.e., Europe, Asia and Africa). Why analyze African and Eurasian countries only? Predicted genetic diversity based on the "out of Africa" conjecture can only be regarded as a good proxy for country-level genetic diversity in those countries that have been largely immune from major cross-country migrations in the past 500 years, which is true for countries in the "Old World". Table 1 provides some coefficient estimates for the effect of predicted genetic diversity on cultural fractionalization. Model 1 estimates that effect without region fixed

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[12]Similarly, once a cultural mode becomes common in country, why don't all citizens move to the prevailing cultural identity? Laitin's application of "tipping models" to language and ethnic groups would also seem relevant for cultural identities if such identities ease coordination and cooperation. We hope to explore the circumstances that can sustain cultural "marginality." See Laitin (1995) for a discussion of the logic underpinning the persistence of marginal ethnic groups.

[13]See Diamond (1997) for an influential treatment of these issues as well as various extensions and critiques for a more complete discussion.

[14]The Ashraf and Galor (2013) measure is imputed from an ethnicity-level regression of genetic diversity on migratory distance from Africa across contemporary ethnic groups that have been indigenous to their current geographic locations since before great cross-continental migrations

	Model 1	Model 2	Model 3	Model 4
Predicted Genetic Diversity	1.825	2.359	0.344	0.439
	(1.269)	(1.255)	(0.207)	(0.207)
Constant	-0.707	-1.035	-0.481	-0.395
	(0.928)	(0.910)	(0.641)	(0.626)
Region Fixed Effects	N	Y	N	Y
Observations	43	43	43	43
R-squared	0.048	0.204	0.063	0.197

Table 1: *Coefficient estimates for effect of predicted genetic diversity on cultural fractionalization.*

effects; model 2 includes region fixed effects. Model 3 considers the effect of predicted genetic diversity on cultural fractionalization after taking the "zero-skew" log of each variable; model 4 runs the same model but with region fixed effects. Predicted genetic distance is a positive predictor of cultural fractionalization in all models.

6.2 Cultural Transmission since 1500 CE

With important improvements in transportation technologies (particularly long-distance seafaring), all populated regions of the world have seen tremendous changes to their ethnic, linguistic, institutional, religious and cultural landscapes as a result of changing patterns of migration, colonization, slave trading, disease exchange and military conquest. While major human migrations over the past 500 years predominantly affected the population composition of societies in the Americas and Oceania, no society has been unaffected. Indeed, the role of geography in determining ethnic and cultural equilibria may have also seen important changes. For example, Michalopoulos (2012) shows that across territories where indigenous groups as of 1500 CE constitute a present-day minority, the ethnic composition of the population is no longer related to geographic factors. Ashraf, Ozak and Galor (2010) — using an index of overland travel times — show that geographical isolation generated important economic benefits in Eurasia prior to the advent of long-distance seafaring.

There exists a large literature which explores issues related to how cultural values transmit from one individual to another where individuals aggregate into communal groups. For Bison and Verdier (2001, 299), "the intergenerational transmission of cultural traits involves economic decisions of rational agents." Kuran and Sandholm (2008) seek to identify the conditions under which contact between different individuals or groups promotes cultural hybridization; in their setting, individual members interact with both insiders and outsiders and there may be tradeoffs associated with expressing personal ideals versus enjoying benefits from coordination. One context in which this type of hybridization occurs is as a result of world migration. Putterman and Weil (2009) have created a "world migration matrix" which reflects international movements of people since 1500 CE. While Putterman and Weil (2009) focus on the impact of migration on income inequality today, migratory patterns since 1500 CE may also help to explain current-day levels of cultural heterogeneity.

A number of additional factors are also likely to impact current-day levels of cultural fractionalization, including the importance of continental axes on the transmission of humans, disease, language usage and institution creation (Diamond, 1997; Turchin, Adams and Hall, 2006; Laitin and Robinson, 2011). If historical empires (Turchin, Adams and Hall, 2006) and imperial languages (Laitin and Robinson, 2011) were more likely to have expanded in an east-west fashion, do cultural

values operate in a similar way? The overall impact of colonialism on cultural diversity is a subject of scholarly debate (Ahlerup and Olsson, 2012). While colonialism led to disease transmission that had the potential to weaken indigenous populations (Diamond, 1997), it was also associated with migratory patterns that might increase other forms of cultural exchange, including the slave trade. Colonial models of direct or indirect rule may have contributed to a transformation of cultural values for local populations. Finally, to what extent have historical incidents of conflict "purged" areas of diversity? Fletcher and Iyigun (2010) show that patterns of conflict between 1400 and 1900 CE have affected current levels of ethnic and religious fractionalization. Indeed, areas with historical conflicts between Muslims and Christians tend to be more homogenous today.

What are the implications of these various theories for observed levels of cultural diversity within the countries of the world today? A few general observations can be made. The first relates to Latin American countries which tend to exhibit very high levels of cultural homogeneity, both within countries and across South America. An overwhelming percentage of individuals polled in Latin America fall into category 2. Why might this be the case? One can imagine a set of initial cultural conditions created, in part, as a result of geographical factors then subject to the common, exogenous shock of Spanish colonialism. Mahoney (2010, 33) writes, "the Spanish American cases share certain crucial similarities" particularly "similar colonial experiences."[15] This included institutional arrangements associated with the Catholic church and the *encomienda* system of labor exploitation (Mahoney, 2010, 33). Huge waves of Spanish migrants — hundreds of thousands in the 16th and 17th centuries — hailed overwhelmingly from a handful of regions in Spain (Mahoney, 2010, 43). Latin America was also a major destination for African slaves in a migratory wave that was completed by the 19th century.

Following the period of Spanish colonial influence, Latin America's relative geographic isolation may have encouraged more migration *within* the continent than between the continent and other areas. The relatively intense, temporally-bounded nature of Iberian influence in South America combined with the continent's subsequent geographic isolation may explain part of the region's cultural homogeneity. The dominance of Spanish language usage within South America may also have contributed to the transmission of dominant cultural values within the continent.

South American value consensus can be contrasted with the high degree of cultural heterogeneity displayed in Eastern and Southeastern Europe. Countries like Romania, Bulgaria and Serbia are among the most culturally heterogeneous in our sample despite the fact that they share a middle-income socioeconomic designation with much of Latin America. While South America was subject to a single, large-scale external shock related to Iberian colonialism between the 16th and 19th centuries, Eastern and Southeastern Europe has been historically situated at the geographic edge of cultural and religious boundaries that were subject to tremendous historical fluctuations. Roman Catholic traditions pressed into the area from the west while Eastern Orthodox influences emanated from former Byzantine areas. From the south and east, Islamic and Ottoman influences entered the region. Associated with this divergence in religious influences came the emergence of distinct ethnic populations and language groups. From a geographical perspective, cultural values emanating from both eastern and western Eurasia appear to have found a meeting place in Eastern and Southeastern Europe. The diversity of cultural values expressed by these populations reflect a distinctive geographical and historical context.

Finally, to what extent can we attribute cultural diversity within high-income countries to

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[15]Portuguese modes of colonial expansion exhibited important similarities with the Spanish colonial experience. See Mahoney (2010).

immigration? Immigration and immigration policy is a controversial issue in the United States, Europe and other developed economies. Immigration restrictionists believe that immigrant populations "dilute" target-country cultural values through the introduction of the immigrants language, religious beliefs and even household practices.

7   Conclusion

In his presidential address to the meetings of the European Economic Association in 2007, Guido Tabellini argued that norms of conduct, or culture, might provide the "missing link" in our understanding of how history impacts institutions and, subsequently, economic development (Tabellini, 2008). Indeed, ethnic diversity is considered to be among the most important variables used to explain outcomes including a country's economic growth rate, the level of public goods provision, prospects for democratic transition and the likelihood of civil war. Although we are very wary about attributing any causal effect to culture as a predictor for these outcomes, exogenous changes in a country's level of cultural diversity may influence a variety of dependent variables of interest.[16]

Existing studies of national culture assume a single national cultural identity for all citizens. Such an approach suggests what might be called a "melting pot" conceptualization of national culture — everyone living within the borders contributes to, and is influenced by, the dominant cultural trends within that state. An alternative understanding of national culture would be to think of multiple, distinct cultures coexisting within a single country, analogous to the "salad bowl" vision of multiculturalism. This research would allow for a more precise specification of the various components making up the mixture that might be called "national" culture.

Any attempt to depict political culture at a given point in time is a "Pyrrhic victory" given the mutability of cultural norms and likelihood of temporal flux (Nesbitt-Larking, 1992, 86). In this paper, we have laid out a conceptual framework which advocates for the use of public opinion data to serve as the basis for an empirical exercise to determine a) the existence of definable global values clusters and b) a measure of within-country cultural heterogeneity. We have characterized those groups and offered some preliminary validation of our approach. Finally, we have discussed some applications and next steps we hope to take with the research.

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[16]Berman (2001, 238) challenges the discipline to think more seriously about the types of exogenous shocks might lead to changes in cultural values.

A Model

$$\begin{aligned}
\alpha_k &\sim \text{Gamma}(0.25, 1) \\
\boldsymbol{\theta}_{r,k} &\sim \text{Dirichlet}(\boldsymbol{\lambda}) \\
\boldsymbol{\pi}_i &\sim \text{Dirichlet}(\boldsymbol{\alpha}) \\
\boldsymbol{\tau}_{ij}|\boldsymbol{\pi}_i &\sim \text{Multinomial}(1, \boldsymbol{\pi}_i) \\
\boldsymbol{y}_{ijr}|\tau_{ijk}=1, \boldsymbol{\theta}_{kr} &\sim \text{Multinomial}(1, \boldsymbol{\theta}_{kr})
\end{aligned}$$

If we assume $\boldsymbol{\lambda} = 1$, then the full posterior is given by,

$$\begin{aligned}
p(\boldsymbol{\alpha}, \boldsymbol{\theta}, \boldsymbol{\pi}, \boldsymbol{\tau}|\boldsymbol{Y}) &\propto \prod_{k=1}^{K} \frac{\exp(-\frac{\alpha_k}{1/4})}{1/4} \times \\
&\prod_{i=1}^{N} \left[\frac{\Gamma(\sum_{k=1}^{K} \alpha_k)}{\prod_{k=1}^{K} \Gamma(\alpha_k)} \prod_{k=1}^{K} \pi_{ik}^{\alpha_k - 1} \prod_{j=1}^{N_i} \prod_{k=1}^{K} \left[\pi_{ik} \prod_{r=1}^{R} \left(\prod_{q=1}^{Q_r} \theta_{rkq}^{I(y_{ijr}=q)} \right) \right]^{\tau_{ijk}} \right]
\end{aligned}$$

B Estimation

Variational approximations are a deterministic method to approximate a posterior. First, we assume a specific–though still very general–functional form for an approximating distribution. Then, we use an iterative algorithm to find the member of this approximating distribution family that is closest to the true posterior.

We will assume an approximation distribution given by,

$$q(\boldsymbol{\alpha}, \boldsymbol{\theta}, \boldsymbol{\pi}, \boldsymbol{\tau}) = q(\boldsymbol{\alpha}) \prod_{i=1}^{N} \left[q(\boldsymbol{\pi})_i \prod_{j=1}^{N_i} q(\boldsymbol{\tau})_j \right] \prod_{r=1}^{R} \prod_{k=1}^{K} q(\boldsymbol{\theta})_{kr}$$

We use the following algorithm to find the member of this family that is closest to the true posterior (Bishop, 2006; Grimmer, 2011)

B.1 Update for $q(\boldsymbol{\tau})_{ij}$

$q(\boldsymbol{\tau})_{ij}$ is a Multinomial$(1, \boldsymbol{r}_{ij})$ distribution with typical parameter r_{ijk}

$$r_{ijk} \propto \exp\left\{ \text{E}[\log \pi_{ik}] + \sum_{r=1}^{R} \left(\sum_{q=1}^{Q_r} y_{ijrp} \text{E}[\log \theta_{rkq}] \right) \right\}$$

We will calculate $\text{E}[\log \pi_{ik}]$ and $\text{E}[\log \theta_{rkp}]$ after deriving the parametric family of their approximating distributions.

B.2 Update for $q(\boldsymbol{\pi})_i$

$q(\boldsymbol{\pi})_i$ is a Dirichlet$(\boldsymbol{\gamma}_i)$ with typical parameter γ_{ik},

$$\gamma_{ik} = \alpha_k + \sum_{j=1}^{N_i} r_{ijk}$$

B.3   Update for $q(\boldsymbol{\theta})_{kr}$

$q(\boldsymbol{\theta})_{kr}$ is a Dirichlet($\boldsymbol{\eta}_{kr}$) distribution, with typical parameter η_{krq},

$$\eta_{krq} = \lambda_q + \sum_{i=1}^{N} \sum_{j=1}^{N_i} r_{ijk} y_{ijrq}$$

B.4   Completing $q(\boldsymbol{\sigma}_i)$ and $q(\boldsymbol{\tau})_{ij}$

To finish the updates, we calculate the following expected values, based on the derived derived distributional forms,

$$\mathrm{E}[\log \pi_{ik}] = \psi(\gamma_{ik}) - \psi(\sum_{z=1}^{K} \gamma_{iz})$$

$$\mathrm{E}[\log \theta_{krp}] = \psi(\eta_{krp}) - \psi(\sum_{z=1}^{K} \eta_{krz})$$

B.4.1   Update Steps for $\boldsymbol{\alpha}$

A closed form update step is unavailable for $\boldsymbol{\alpha}$ so we rely upon an efficient Newton-Raphson algorithm, developed in Minka (2000). Calculating the expected values and differentiating with respect to α_k shows that

$$\frac{\partial \log q(\boldsymbol{\alpha})_k^{\mathrm{new}}}{\partial \alpha_k} = -\frac{1}{\lambda} + N\Psi(\sum_{k=1}^{K} \alpha_k) - N\Psi(\alpha_k) + \sum_{i=1}^{N} \frac{\left(\Psi(\gamma_{itk}) - \Psi(\sum_{z=1}^{K} \gamma_{itz})\right)}{N}$$

and collect all the first derivatives into the (gradient) vector $\frac{\partial \log q(\boldsymbol{\alpha})_k^{\mathrm{new}}}{\partial \alpha_k}$. Define H as the Hessian (matrix of second derivatives). Typical on diagonal element $h_{jj} = N_s \Psi'(\sum_{k=1}^{K} \alpha_k) - N\Psi'(\alpha_j)$ where $\Psi'(\cdot)$ is the trigamma function (the derivative of the digamma function) and the typical off-diagonal element $(a \neq b)$ we have $h_{ab} = N_z \Psi'(\sum_{k=1}^{K} \alpha_k)$, so

$$\boldsymbol{\alpha}^{\mathrm{new}} = \boldsymbol{\alpha}^{\mathrm{old}} - \mathrm{H}^{-1} \frac{\partial \log q(\boldsymbol{\alpha})_k^{\mathrm{new}}}{\partial \boldsymbol{\alpha}_k}$$

until the change in $\boldsymbol{\alpha}$ drops below a tolerance level (10^{-8} in the implementation). H's structure makes it is easily invertible, making the Newton-Raphson algorithm exceedingly fast.

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