Missionaries, Mechanisms, and Democracy*

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Abstract

What causal pathways link Protestant missionaries to the spread of liberal democracy? Woodberry’s (2012) theoretical explanation includes three central mechanisms: the development of mass printing, the expansion of education and literacy, and the growth of civil society. However, his quantitative analyses of non-Western countries focus exclusively on the positive total effect of conversionary Protestants (CPs) on democracy. We conduct a direct empirical evaluation of his proposed mechanisms using causal mediation methods. Our results corroborate the positive total effect, but show limited support for its causal pathways. We find minimal evidence that CPs’ impact operated via mass printing or civil society. There is more support for education as a mechanism, although its mediation effect is sensitive to specification choices and still only explains a minority of the total effect. We conclude that further development and testing of causal processes is necessary to understand Protestant missionaries’ political legacy.

Keywords: Conversionary Protestants; Liberal Democracy; Causal Mechanisms; Causal Mediation Analysis

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1 Introduction

In 1799, missionaries from the London Missionary Society arrived in what is now Botswana to convert the native population to Christianity. In addition to preaching the gospel and encouraging the abolition of traditional practices, these conversionary Protestants (CPs) built and supported schools and increased access to books and other printed material. They served as political advocates for the Batswana and even influenced politics directly by facilitating the establishment of the Bechuanaland Protectorate. Eventually, democratic institutions strengthened in Botswana. While standard theoretical accounts might identify secular forces of modernization to explain the country’s path to democracy, an alternative narrative that incorporates “human capital” factors—such as the legacy of CPs—has recently emerged in the scholarly discussion (Woodberry 2011, 2012; Lankina and Getachew 2012). Specifically, this work asks: did missionaries play a role in the rise of democracy? And if so, how did they exert such influence?

In a highly-cited, award-winning article, Woodberry (2012) develops a compelling theory to answer these questions. Using a discussion of the historical record as well as novel data from a sample of 142 non-Western countries, he asserts that CPs contributed to the spread of democracy via several distinct causal pathways, the most prominent being the development of mass printing, the expansion of education and literacy, and the growth of civil society. However, while he presents a considerable amount of evidence supporting a positive total effect of CPs on democracy, his quantitative analyses include no tests of these pathways. In this letter, we aim to build on Woodberry’s work by conducting a direct empirical assessment of his proposed mechanisms.

Using causal mediation analysis, we recover the positive effect of CPs on democracy that Woodberry reports. However, we also find limited empirical support for his theoretical framework. Some of our evidence suggests that education mediated a noteworthy portion of the total effect, but these results are dependent on specification choices and at best still imply that much of the effect remains unexplained by that mechanism. Additionally, we demonstrate little to no support for the theorized roles of mass printing and civil society. Ultimately we conclude that, despite the general robustness of the total effect, more investigation is necessary to understand
Protestant missionaries’ impact on the rise of democracy. If CPUs contributed to the development of democracy in the non-Western world, the causal pathway was either predominantly a direct effect or one that operates through a different mechanism altogether.

2 Background

Woodberry (2012) advances the thesis that CPUs contributed to democratic development alongside the more common scholarly explanations, such as secular rationality, colonial institutional legacies, and economic development (244, see also Lankina and Getachew 2012). His theoretical contention is that CPUs “fostered greater separation between church and state, dispersed power, and helped create conditions under which stable democratic transitions were more likely to occur” (Woodberry 2012, 249). He proposes a comprehensive set of causal pathways to animate this theory. The most prominent of these are (1) the promotion of mass access to printed materials, (2) the spread of mass education and literacy beyond the elite classes of society, and (3) the encouragement of organizational structures as vehicles of protest, which laid the groundwork for the development of civil society. We briefly review these mechanisms here; see Woodberry (2012, 249–256) for complete details.

First, Woodberry argues that CPUs greatly accelerated the growth of mass printing. CPUs believed that books must be accessible to everyone so that they could easily read God’s word. Additionally, they used Protestant literature as a means of conversion, which forced other religious groups to adopt similar practices. Protestant missionaries worked to provide printed materials to the masses, which contrasted with the thinking of societal elites—that the general population was not qualified to read and interpret printed materials. Woodberry notes that CPUs’ role in this pathway was as an initial spark. As printing became more widespread, market forces took control and news media that was independent of the state emerged. In short, mass printing linked CPUs to democracy by paving the way for the fourth estate.

To read and understand the Bible, people needed education and literacy. Woodberry (2012) contends that CPUs catalyzed the rise of mass education around the world for this purpose by focusing on the education of non-elite segments of society—groups that previously had little to no
opportunity to attend school or learn to read (252). Reducing inequality in access to education subsequently expanded the group of people who were able to participate in a country’s democratic development. Furthermore, he argues that economic competition ensured that this process even occurred in predominantly Catholic countries. CPs’ presence spurred Catholics to provide their own mass education system, continuing the extension of schooling and literacy to non-elites.

Finally, Woodberry (2012) presents the development of civil society as a third major pathway of CPs’ impact on democracy. Missionaries contributed to the dispersal of political power by facilitating the organization of opposition. They provided start-up mobilization efforts such as signature gathering for petitions and generally assisted anticolonial activists with nonviolent protest. Some of CPs’ most notable legacies include publicizing colonial abuses, lobbying for policy change, and advocating for social reform in the colonies and back home.\footnote{Woodberry (2012) separates civil society and “colonial transformation” as distinct mechanisms in his theory. We focus on civil society here as a means of simplifying our empirical analyses, but our operationalization of the concept relates to both forms (see below).} These efforts helped increase individual participation in public life, even leading to the creation of political parties in some cases. Woodberry (2012) contends that this increase in political participation eventually led to the formation and success of democratic government.

Despite the rich description of causal mechanisms in his theoretical framework, Woodberry’s (2012) empirical analyses narrow in focus to estimation of only the total effect of CPs on democracy. He employs a suite of regression analyses on a sample of 142 non-Western countries to accomplish this objective. Specifically, he models Bollen’s (2009) liberal democracy measure, averaged over the period 1950–1994, as a function of several covariates. These include controls for alternative theoretical processes, precolonial conditions, other factors that influenced colonizers and missionaries, and several other variables (see Woodberry 2012, 257–258). Most important, however, are three “mission variables,” which represent cross-sectional country-level variation in CPs: (1) Protestant missionaries per 10,000 population in 1923, (2) years exposure to Protestant missions until 1960, and (3) percent evangelized by 1900. These “treatments” repeatedly yield regression coefficients that indicate strong positive association between CPs and democracy.
Woodberry (2012) ultimately concludes that his theory holds empirical support. However, this claim centers on the array of positive regression coefficients generated by the mission variables. He references literature that connects CPs to the mechanisms, but never demonstrates empirically that those mechanisms do, in fact, mediate the effect of CPs on democracy. Indeed, he states that his statistical models “attempt to demonstrate a causal association between Protestant missions and democracy, but do not test which mechanism is most important” (256). In what follows we conduct a more comprehensive test of Woodberry’s theory—one that involves estimation of the total effect of CPs on democracy and the mediating effects that he claims connects those two factors.

3 Research Design

We test Woodberry’s (2012) three primary mechanisms with the methodology for causal mediation analysis developed by Imai, Keele, Tingley, and Yamamoto (2011). With several key assumptions in place (see the appendix), this approach quantifies a causal mechanism using a series of two regression models: one that regresses a mediator—a quantitative measure of the mechanism—on a treatment variable and covariates, then a second that regresses the outcome on the treatment, mediator, and covariates. The algorithm generates predicted values of the mediator by manipulating treatment status in the mediator model. Those two values are then entered into the mediator variable in the second model to produce potential outcome predictions.

The difference in the predictions from the outcome model represents a key quantity of interest: the average causal mediation effect (ACME), which provides an estimate of the (average) strength of the mechanism. Then a typical approach to quantifying uncertainty in the ACME, which we follow here, is to bootstrap the entire estimation process (Imai et al. 2011). Another relevant quantity is the average direct effect (ADE), or the portion of the total effect that does not operate through that particular mechanism. The total effect is represented by the sum of the ACME and ADE. A useful means of substantively evaluating an ACME estimate is to consider the proportion of the total effect mediated by the mechanism of interest, computed by dividing the estimated

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2Mediation analysis has existed in many forms for decades. We employ Imai et al.’s (2011) implementation because it rigorously connects the role of mechanisms to the potential outcomes framework of causal inference.
ACME by the estimated total effect.

3.1 Model Specification

To employ this methodology, we must select a model specification. Woodberry (2012) presents more than 30 distinct regressions in the main text of his article and dozens more in the supplementary materials. Thus, our own analyses carry high risk of the problems associated with “researcher degrees of freedom,” such as emphasizing only those specifications that conform to a preconceived set of expectations (explicitly stated or not). To reduce this risk, we publicly deposited a preanalysis plan for this research in June 2018, prior to observing any mediation analysis results (see the appendix for the complete text). In that document we selected Woodberry’s (2012) Model 4 from Table 3 (262) as our main model specification due to its comprehensive coverage of the theoretical framework. We also preregistered several alternative specifications that we thought merited consideration; we present some of those results below and the remainder in the appendix.

We replicated Woodberry’s (2012) robust regression estimates exactly, then implemented mediation analysis using Protestant missionaries in 1923 as our treatment variable. We justified this choice over the other two mission variables in our preanalysis plan. Briefly, the years exposure variable measures the timing of missionaries, not the more conceptually-accurate missionary levels. Additionally, the percent evangelized measure is problematic because it includes both Protestant and Catholic conversions (Woodberry 2012, 257).³

3.2 Measuring Mechanisms

A key feature of our analysis is the addition of measures of the mechanisms to the regression models. We employ indicators from Woodberry’s (2012) own replication data as well as from additional sources. Our data collection efforts yielded multiple candidate measures. We report results with all of them, but in choosing a set on which to focus we considered the following characteristics, in order of importance: (1) conceptual match with Woodberry’s theoretical framework, (2) data originating in Woodberry’s replication materials, and (3) amount of missing data. Regarding this third point, all of the measures have some missingness. Thus, we employed multiple impu-

³See the appendix for results with each of the other two mission variables as treatment.
tation with the Amelia II software (Honaker, King, and Blackwell 2011) to maintain the original sample of 142 countries.\footnote{See the appendix for details on combining multiple imputation with mediation analysis, diagnostic reports on the quality of the imputations, and results from addressing missing data with listwise deletion.}

We measure mass printing with Woodberry’s (2012) data on average daily newspaper circulation per 1,000 population. This indicator aligns with his contention that CPs’ use of printed materials gave rise to a robust news media. For mass education, we use a Gini coefficient measure of education inequality from the Varieties of Democracy Project (V-Dem, see Coppedge et al. 2018). This variable closely matches Woodberry’s theoretical discussion of CPs’ influence on education among non-elites (see above). Finally, we employ V-Dem’s civil society participation index for the third mediator. This index measures societal involvement in civil society organizations (CSOs), whether major CSOs are consulted by policymakers and thus involved in governance, whether women participate in CSO, and whether nominations of candidates within political parties are decentralized (see Coppedge et al. 2018).

We provide detailed discussions of our measurement choices in the preanalysis plan and appendix. However, one point that is important to note here before proceeding is the issue of timing. Woodberry’s (2012) models are cross-sectional in nature. The treatment variable represents the state of CPs in 1923 and the outcome is an average democracy score over the period 1950–1994. We also average over several years’ worth of data with our mediators, which leads to the question of which timeframe to choose. In our main analyses below, the newspaper circulation variable is averaged over the earliest years available in Woodberry’s data (1975, 1980, 1985, and 1990) and the V-Dem measures are averaged over 1924–1994. Thus, these measures occur contemporaneously with the outcome. This approach is somewhat at odds with the concept of a mediator, which should ideally come between treatment and outcome in the causal sequence (Imai et al. 2011).

Accordingly, we also consider versions of the V-Dem measures, as well as an alternative mass printing measure, averaged over 1924–1949.\footnote{Specifically, we substitute Fink-Jensen’s (2015) measure of book titles published per capita for the newspaper circulation measure.} Syncing the temporal sequence is conceptually helpful, but also places more burden on the imputation procedure because larger proportions of the
mediation measures are missing for earlier years. Admittedly, we did not take a firm position in our preanalysis plan on which strategy to emphasize in our primary results. We ultimately decided (post-hoc) to choose the versions measured partially concurrent with the outcome (i.e., averaged over 1924–1994) for the sake of using less imputed data, but we report results with the other approach in the appendix.

4 Results

We begin by estimating the mediation effects of newspaper circulation, education inequality, and the civil society participation index using the main model specification discussed above. Figure 1 presents the ACMEs, ADEs, and total effects for each one along with their bootstrapped 95% confidence intervals. We generate these estimates for each mediator sequentially, ignoring the other two. This procedure yields slight variation in the total effect estimates due to bootstrapping error. However, we recover (within bootstrapping error) the same total effect that Woodberry (2012) reports: an estimate of 4.43 with a 95% confidence interval of (1.28, 7.59). Substantively, a standard deviation increase in the treatment variable corresponds with a 0.26 standard deviation increase in the outcome.

[Insert Figure 1 here]

Figure 1 shows that none of the estimated ACMEs are statistically significantly different from one another, nor are there significant differences within the ADEs. This lack of certainty is due, in part, to the relatively small sample of data as well as our use of multiple imputation. There are limits to what we can learn from 142 countries with some missing data. Nonetheless, with appropriate caution we contend that assessing point estimate magnitude as well as testing for individual null effects can still be useful and informative.

\footnote{We also estimated the main model specification with \textit{multiple mediation analysis}. This approach relaxes a key assumption of standard mediation analysis: no association between mediators (see the appendix). However, it requires that we use a binary version of the treatment variable (Imai and Yamamoto 2013). Thus, this approach cannot provide much insight into the question of the mediators’ absolute roles as causal mechanisms because the treatment variable is considerably different. It is helpful in checking the robustness of their relative magnitudes, and we find that our conclusions are unaffected in this regard.}
The ACME of 0.57 for the mass printing mediator is reasonable in size, representing 13% of the total effect. However, the confidence interval shows that this estimate is not statistically significantly different from zero. The civil society ACME is quite small (0.06)—mediating just 1% of the total effect—and also nonsignificant. This lack of support for civil society as a mediator stems from the fact that there is no association in the first stage of the causal pathway: the coefficient on the treatment variable in the mediator model is essentially zero (see the appendix). In contrast, the education estimates in Figure 1 clearly demonstrate a mediation effect. The ACME is 1.53, which is both substantively and statistically significant: it represents over one-third (35%) of the total effect and its confidence interval is bounded away from zero.

In sum, a model specification that we chose *a priori* for its prominence in Woodberry’s (2012) analysis demonstrates favorable evidence for one of his proposed causal mechanisms, but limited support for the other two. However, while the main model is comprehensive and theoretically-informed, it is only one of many models that could be used to test the theory. Thus, we also must consider the robustness of these results to other reasonable specifications.

### 4.1 Alternative Specifications

As with our choice of the main model, we discussed several plausible alternatives in our pre-analysis plan. We briefly outline these alternatives here; see the appendix for details. First, we add controls for settler mortality and gross domestic product (GDP) per capita to the main model. Past work points to these variables as important explanations of the rise and spread of democracy (e.g., Acemoglu, Johnson, and Robinson 2001; Woodberry 2012, 263). Our second alternative specification uses the main model with different measurement strategies for the mass printing and mass education mediators: book titles per capita (Fink-Jensen 2015) for the former and the literate proportion of the population for the latter (Coppedge et al. 2018). Third, we estimate the effects using another specification that Woodberry (2012) features prominently: Table 2, Model 3 (260). This model omits covariates related to the “process of colonization.” Finally, we consider results

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7To maximize consistency with Woodberry’s (2012) original analyses, we use the versions of these measures included in his replication materials. See the appendix for analyses with alternative measures.
with a “streamlined” model specification, which addresses several potential problems that we uncovered as we replicated Woodberry’s original results. Specifically, the streamlined model avoids posttreatment bias, simplifies the definition of treatment, and conserves degrees of freedom.

We summarize the essential results of these alternative specifications here. Table 1 reports, for each mediator and each alternative specification, (1) the proportion of the total effect mediated and (2) whether the corresponding ACME is statistically significantly different from zero.

[Insert Table 1 here]

Several patterns stand out in Table 1. First, all of the specifications yield the same relative ordering with respect to proportion mediated. Mass education is the strongest mediator, followed by mass printing, then civil society. However, the education effect shows considerable specification dependence. In some cases it produces a large mediation effect that reaches statistical significance (e.g., specifications 1, 2, and 4), while in others its effect is closer in magnitude to that of mass printing and not statistically significant (specifications 3 and 5). Nonetheless, the weight of the evidence indicates that education is the most important of the three mechanisms—a point that is underscored by the fact that it is the only mediator whose ACME reaches statistical significance in any specification. Indeed, even in cases in which the substantive magnitude of the mass printing mediator increases to noteworthy levels (e.g., specifications 1–4), the uncertainty surrounding those estimates tempers the inferences we can draw. Finally, Table 1 clearly indicates that there are other pathways that transmit the effect of CPs on democracy. Summing the proportions mediated within each specification still leaves an average of 60% of the total effect in the ADEs.

These findings naturally lead to the question of what other mechanisms might play a role in this process. In the appendix we test one more possibility—economic inequality—and find no evidence that it mediates the effect of CPs either. Thus, one realistic possibility is that CPs’ impact on democracy is predominantly a direct effect. Indeed, it may be the case that democracy is simply a natural extension of the Protestant worldview, which emphasizes equality and individuality as well as deference to the will of the people when God’s will is ambiguous (e.g., Schumpeter 1950; Bollen
1979). In short, the causal process may actually be much more straightforward than Woodberry (2012) implies.

5 Conclusions

Understanding causal mechanisms is often considered a fundamental component of social science (e.g., Deaton 2010; Imai et al. 2011, but see Holland 1988). Studying pathways and processes draws the focus away from causality as a “black box” and emphasizes the theoretical heart of a substantive research question (Hedström 2008; Imai et al. 2011). In this case, a crucial line of scholarly inquiry is at stake: should factors related to human capital development be considered alongside historical, institutional, and economic explanations of democracy? Woodberry’s (2012) important research on Protestant missionaries may seem implausible to many because the existing scholarship largely ignores the role of activist religion in shaping democratic development. We contend that a key tool for confronting such skepticism involves developing mechanisms in a theoretical framework, as Woodberry does, then testing those mechanisms empirically.

We build on Woodberry’s (2012) work in this letter by completing the second of those two tasks. Using causal mediation analysis, we empirically assess the role of the three central causal pathways that he proposes to explain the positive influence of CPs on the spread of democracy: the development of mass printing, the expansion of education and literacy, and the growth of civil society. We confirm the overall positive effect of CPs, but find limited support for the theory itself. The results weakly suggest that mass printing may have mediated a portion of the effect, demonstrate virtually no support for civil society’s effect, and yield stronger, but not entirely robust, evidence in favor of education as a mechanism. Ultimately, we conclude that Protestant missionaries’ political legacy in the non-Western world deserves further theoretical and empirical scrutiny. Woodberry’s (2012) theory is well developed, but its empirical support is quite limited. More appraisal of the causal processes involved is necessary to determine how spreading the Gospel helped spread democracy.
References


Figure 1: Mediation Effects of Mass Printing, Mass Education, and Civil Society

Note: The graph presents the estimated ACME, ADE, and total effects for each mediator. Line segments indicate 95% confidence intervals.
Table 1: Summary of Mediation Results with Alternative Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Mediator</th>
<th>% Mediated</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Original Results</td>
<td>Mass Printing</td>
<td>13</td>
<td>–</td>
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<tr>
<td></td>
<td>Mass Education</td>
<td>35</td>
<td>✔</td>
</tr>
<tr>
<td></td>
<td>Civil Society</td>
<td>1</td>
<td>–</td>
</tr>
<tr>
<td>Control for Settler</td>
<td>Mass Printing</td>
<td>18</td>
<td>–</td>
</tr>
<tr>
<td>2. Mortality and ln(GDP per Capita)</td>
<td>Mass Education</td>
<td>30</td>
<td>✔</td>
</tr>
<tr>
<td></td>
<td>Civil Society</td>
<td>4</td>
<td>–</td>
</tr>
<tr>
<td>Alternative Printing and Education Measures</td>
<td>Mass Printing</td>
<td>10</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>Mass Education</td>
<td>14</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>Civil Society&lt;sup&gt;a&lt;/sup&gt;</td>
<td>–</td>
<td>–</td>
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<tr>
<td>Table 2, Model 3</td>
<td>Mass Printing</td>
<td>22</td>
<td>–</td>
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<tr>
<td>4. (Woodberry 2012, 260)</td>
<td>Mass Education</td>
<td>23</td>
<td>✔</td>
</tr>
<tr>
<td></td>
<td>Civil Society</td>
<td>6</td>
<td>–</td>
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<tr>
<td>5. Streamlined Specification</td>
<td>Mass Printing</td>
<td>4</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>Mass Education</td>
<td>13</td>
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<td></td>
<td>Civil Society</td>
<td>2</td>
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</tbody>
</table>

Note: Cell entries report the proportion of the total effect mediated and whether the corresponding ACME is statistically significantly different from zero (denoted by ✔) or not (–). <sup>a</sup>Civil society results are not reported in specification #3 because there is no alternative measure for that mediator.