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Framing Institutional Identity in 5 Million Words: Communication Strategies for Navigating Complex Logics in Higher Education

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Abstract
How do universities – embedded in a complex social environment comprised of different entities, each with their own logic – frame their mission and identity during periods of change? We examine the marketing materials of universities to answer this question. Using a mixed-methods approach comprised of natural language processing and inductive content analysis, we examine 15 years of quarterly magazines at 8 tuition-driven universities during a period of notable social change from 2000–2014. We use a Latent Dirichlet Allocation topic model to assess vocabulary patterns across 5.9 million words in these universities' key referential texts that signify their organizational identity. We reveal these universities sought to frame and communicate their identity as they established a logic "constellation" that differentially balanced the coexistence of four societal logics – market, profession, state, and religion. The constellation patterns reveal how universities craft language with agency in entrepreneurial ways to convey different patterns of communication strategies that reflect their efforts to either frame their mission and identity as consistent or adapting. We also emphasize the interior components—or micro-foundations—of an institutional logic by identifying topics that drive the activation of individual logics. We discuss the implications of this work for both higher education and organizational theory.

Keywords Institutional logic · Mission · Higher education · Topic model · Natural language processing

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Introduction

Since the turn of the 21st century, higher education has been characterized by continuous change and environmental complexity (Brint et al., 2016). College and university leaders navigated these transformations while embedded in a complex social environment comprised of different groups, each with their own perspective, or societal logic (Brown, 2017, 2018). Legislators guided by a state logic focused on policy outcomes (Kelchen et al., 2024), faculty inspired by a profession logic emphasized quality and shared governance (Gerber, 2014), and administrators driven by a market logic stressed the need for campus amenities to attract greater student enrollment (McClure et al., 2020). In periods of continuous change and complexity, institutions strategically promote the core logics that make up their missions and identities, as when Harvard overhauled their website and university magazine to foreground the science logic in their mission amid recent federal cutbacks to science research (Schumaker, 2025). They understand the environment in which they operate, they understand the influence of the market, the state, faculty professionalism, and institution-specific aspects of identity, and they communicate their actions to a larger audience along their core logics.

When the environment of a university changes, the social norms and taken-for-granted societal logics that govern the environment also change, which impact the legitimacy and identity of the organization (Britton et al., 2023; Taylor & Morphew, 2010). A continuously changing environment can result in an institutional context that is considered "complex," in that it is comprised of a "constellation" of societal logics an organization must navigate if they are to successfully sustain their mission or identity (Goodrick & Reay, 2011; Greenwood et al., 2011). Rather than simply react or respond to changing societal logics, prior research has emphasized that in times of change entrepreneurial *individuals* leverage existing logics to maintain and communicate their organizational identity, which is the shared understanding by insiders about the core identity elements that distinguish it from others (Brown, 2021). We contend that strategies also exist at the level of the organization whereby colleges and universities act with agency in entrepreneurial ways to strategically communicate their missions and identity in times of change. Thus, this study asks: in times of change, how do universities use competing institutional logics when articulating their publicly communicated mission and identity? In addition, what constellations of topics do universities use to shape their communication of the institutional logics?

The transformational changes in the field of higher education during the early twenty-first century were particularly acute for a sector of colleges and universities known as "tuition driven institutions." Unlike elites, these schools rely on tuition as their primary source of revenue and possess access-focused missions for specific student populations that shape their organizational identity, including: historically Black (HBCUs), Hispanic serving (HSIs), Asian American and Native American Pacific Islander serving (AANAPISI), religious, women's, men's, minority serving (MSIs), and vocational institutions (Boland, 2025; Boland et al., 2021). We examine the largest type among tuition driven schools – the religious university – furthering the complexity of the logics constellation by including a religion logic, one that has remained under studied and under theorized in the literature since its inception (Gümüsay, 2020).

Regardless of the type of university, the principal public relations outlet is their quarterly magazine, a publication that centralizes other media publications and public statements into

an attractive print form (Brown, 2021). Similar to admissions viewbooks aimed at students, university magazines highlight how schools frame major events in marketing their brand to a wide array of constituencies including faculty, alumni, donors, parents, and members of the community (Phillips & Jones, 2025). Each of the universities in this sample published magazines on a regular basis and had similar sections, like "Letter from the President" that allowed for comparison and reduced missing data that could arise when relying on other documents, like strategic planning documents.

Using a mixed method, longitudinal approach comprised of natural language processing – a procedure that combines computational linguistics and machine learning – and inductive content analyses, we examine 15 years of quarterly magazines at 8 tuition-driven religious universities from 2000–2014, a period of notable social change (during and following the 2001 and 2008 financial crises) that universities are still feeling the impact of today. Our comparative research design varies the universities by geography (8 states), religion (Catholic/Protestant), and growth rate (high, medium, low, negative). This unprecedented dataset – comprised of 5.9 million words derived from 370 volumes – was analyzed using a Latent Dirichlet Allocation (LDA) topic model to assess the different ways universities linguistically frame and maintain their identity amid eras of change (Kim et al., 2025; Takei et al., 2024). Using both LDA and an institutional logics framework provide us with the tools necessary to "go inside" each of the multiple societal logics a university maintains to examine its interior composition – its micro-foundations – and how the logic might change over time.

The topic model analysis revealed that these universities framed their decisions in different ways over time in response to their university-specific environment by establishing a custom logic "constellation" that differentially balanced the coexistence of over 100 topics. We focus on four primary societal logics – market, profession, state, and religion. These individual strategies were enacted with agency in response to transformations in university leadership, enrollment, and industry-wide technology. Among these varied constellations, we determined different overall patterns of vocabulary strategies among the universities where some institutions adopted a "Reframe" strategy to communicate a constant shape of societal logics while shifting their constellation of topics, others leveraged a "Reorient" strategy that shifted the shape of both societal logics and topics, and still others employed a "Reinforce" strategy that held both the shape of their societal logics and topics constant. These strategies reflect the institutions' efforts to communicate how they either maintained their mission and identity or reassessed them. We discuss these strategies below as well as their implications for the fields of higher education and organizational theory.

Literature Review

Colleges and universities across the world, and especially in the U.S., have undergone numerous changes that required intensive rethinking of how educational services are provided (Brown, 2025). For instance, the increased reliance on technology-enabled online learning through the use of the internet or the digitization of print resources like books and journals created new educational platforms and products that brought about new markets (Williamson, 2021). Despite this unprecedented access to information, students in colleges and universities at the turn of the twenty-first century endured two major global recessions, the dot-com bust and the Great Recession, which decreased institutional resources and lim-

ited access to higher education for low-income students (Taylor & Cantwell, 2019). The cost of attending college has increased for all students and negatively shifted the public sentiment regarding the value of postsecondary education (Tough, 2023).

These changes in society impacted organizations in the postsecondary sector by adapting the way they provided education and funded their missions, much as environmental changes in other fields forced organizations to adapt to survive and maintain their identities (Glynn & Marquis, 2004). For instance, some colleges shifted from non-profit to for-profit missions in an effort to survive (Schwartz, 2022). Many liberal arts colleges, in response to declining enrollment in the 40 years between 1970 and 2010, altered their missions by becoming "universities" to increase enrollment (Jaquette, 2013). Others altered their identity by outright purchasing other institutions, such as when Purdue University purchased Kaplan University or the University of Arizona purchased Ashford University (Brown et al., 2022). These organizational changes came as colleges and universities balanced their missions with changing norms and logics in broader society. When college and university leaders make changes that impact the identity of the organization such as altering its name, adapting its mission, adding new campuses, shifting athletic conferences, increasing their Carnegie categorization, or swelling student enrollment, they routinely advertise and promote the changes in their publications to a diverse array of constituents. Scholars have previously assessed how colleges and universities communicate changes in their identity by focusing on different publications including, mission statements (Morphew & Taylor, 2010), archival photographs (Metcalf, 2012), university websites (Ford & Patterson, 2019; Saichaie & Morphew, 2014), and admissions viewbooks (Hartley & Morphew, 2008).

To best capture how institutions communicate how they balance these often conflicting solutions to environmental changes, we need a theoretical framework used by researchers and practitioners to understand how organizations use language to communicate their mission amid eras of change. Institutional logics are defined as, "the socially constructed, historical patterns of cultural symbols and material practices, including assumptions, values, and beliefs, by which individuals and organizations provide meaning to their daily activity, organize time and space, and reproduce their lives and experiences" (Thornton et al., 2012, p. 2). Institutional logics is a theory that helps organize many different cultural symbols and material practices that actors draw upon when communicating ideas to their constituencies. The various logics used in the theory can exist at different hierarchical social levels including: societal level, field level, and organizational level. At the broadest level, the societal level, logics have been categorized by scholars as comprised of seven different social institutions that include the family, religion, market, state, professions, community, and corporations (Friedland & Alford, 1991; Thornton et al., 2012). Other logics exist at the narrower level of the field. Field level logics are the cultural symbols and material practices embodied by a collection of organizations that operate in the same realm, such as healthcare, technology, aviation, or higher education. The interconnected organizations and companies within a field co-exist in the same space, sharing norms, resources, customers, and policies (Bastedo, 2009; Kraatz & Block, 2008; Taylor & Cantwell, 2019). Lastly, in their narrowest form, logics exist at the organizational level. Here, the cultural symbols and material practices are unique to a specific organization, company, non-profit or government body. Institutional logics theory offers a schema to "map" the multiple logics that make up the environment in which an organization is embedded at multiple levels. This paper utilizes the

societal level, framing how universities strategically communicate identity and actions from the seven social institutions outlined above (Thornton et al., 2012).

Recent research has highlighted that higher education organizations navigate competing societal logics with different strategies. Early research in institutional logics emphasized that organizations were guided by a single logic and in rapidly changing contexts they shifted from one dominant societal logic to another. When the field of higher education publishing experienced systemic consolidation, Thornton and Ocasio (1999) showed organizations adopted different executive succession strategies. Dunn and Jones (2010) highlighted how medical schools implemented new curricular strategies to balance plural logics. Amid the rise in industry logic, Gumport (2019) emphasized innovative strategies universities used to modify their academic structures. Similarly, Warshaw and Upton (2020) stressed organizational structures and processes were altered when actors used logics in blending, distancing, and positioning behaviors, while Perkmann et al. (2019) found university research centers strategically employed three kinds of work strategies (leveraging, hybridizing, bolstering) to maintain the coexistence of plural logics. Indeed, in their extensive review of institutional logics research in higher education, Cai and Mountford (2022) underscored most studies focused on a small number of logics (i.e., 2–3) and strategies related to isomorphism or structuration processes. What remains overlooked among the strategies has been an assessment of the different *linguistic* strategies organizations employ to navigate competing societal logics as well as examining strategies within a complex composition of societal logics (i.e., more than just two logics).

In leveraging different combinations of institutional logics, organizations create different "constellations" of logics that vary by type and over time (Goodrick & Reay, 2011). The "constellation of institutional logics" terminology invokes a visual representation of how multiple logics may work together. As described above, organizations have access to multiple logics, but the pattern of the constellation they access may differ across time or location (Casasnovas & Ventresca, 2019). Higher education institutions in precarious financial circumstances may invoke language characteristic of a dominant market logic to legitimate new academic programs (e.g., "innovative", "growth", etc.), but not completely discard the now secondary profession logic that remains central to sustaining its identity (Brown, 2021). Utilizing the constellations framework highlights the possibility that a single dominant logic may exist for one organization in the space, but others may balance two or more societal logics, and all may shift these constellations over time (Goodrick & Reay, 2011).

Mapping the different logic constellations of organizations in complex contexts has remained limited by its focus on specific institutional logics as well as specific types of data. First, prior research that examines logic constellations has predominantly overlooked some societal logics, such as religion. For instance, many constellation studies focus on a state/market logic core in addition to another logic such as a "corporate logic" (Vican et al., 2020), or "family logic" (Jaskiewicz et al., 2016). Despite the broader impact religion plays in global society as well as its seminal role in institutional logics theory (Hinings & Raynard, 2014; Weber, 1930), the skew in coverage by organization, management, and higher education scholars has been toward the market or state and away from religion. Second, prior research on logic constellations has focused on data and methods that capture narrow and time bound aspects of institutions, including ethnography (Sadeh & Zilber, 2019), historical content analysis (Goodrick & Reay, 2011), and literature reviews (Greenwood et al., 2011). These approaches make tradeoffs in their analytical emphases whereby they

adopt a singular focus on either in-depth analysis, time duration, or organizational comparisons. Their limited analyses restrict the scope of data complexity necessary to understand the complex institutional milieu in which organizations are embedded. Third, many studies often map two logics at broader levels leaving a gap in our understanding about how organizations navigate a more accurate reflection of complex environments made up of four or more societal logics (Berman, 2015; Dunn & Jones, 2010).

In addition, because of the singular focus or short time period, most prior analyses have focused on actions taken by organizations without focusing on how they communicated their actions and identity to a broader audience. How a university markets itself in eras of change is important in understanding its identity and what combinations of societal logics it employs to communicate this identity in complex social environments (Phillips & Jones, 2025). Scholars commonly assess the marketing language of an organization using a vocabularies framework that examines ways the language of an organization (micro-foundations) is related to themes drawn from broader social institutions (macro-foundations) (Powell & Rerup, 2017). The recent development of natural language processing, such as topic modeling, has enabled researchers to assess the promotional materials of organizations using larger and more complex linguistic data (DiMaggio et al., 2013; Hannigan et al., 2019). We bring this analysis to higher education to assess university magazines across time and multiple universities to examine strategies in linguistic themes rooted in how they want to communicate their identity. By employing a natural language processing approach we do not have to make analytical tradeoffs between an in-depth analysis, time duration, or university comparisons.

Methodology

The technological and analytical advancements in natural language processing can add new insights to understanding how universities embedded in complex environments balance competing societal logics when framing and maintaining their publicly communicated identity in times of change. These arguments are developed and examined using a sample of 8 tuition-driven religious universities operating under the influence of multiple societal logics during a 15-year period from 2000 to 2014. During this era universities encountered multiple political, economic, and social changes including two recessions (2001, 2008), the Affordable Care Act (2010), Occupy Wall Street (2011), and the start of the Black Lives Matter movement (2013). Universities crafted media statements and news stories about their own identity during these periods of change, and these social changes still impact how they operate today. The data set is constructed from archival data where a Latent Dirichlet Allocation (LDA) topic model is used to assess the linguistic patterns in these universities' key marketing texts that signify how they wish to communicate their identity during this era of complexity and change.

Research Setting

Higher education experienced myriad transformational changes throughout the early twenty-first century whereby an entire sector of schools known as "tuition driven institutions" were profoundly impacted. Tuition driven universities predominantly rely on student tuition as

their primary revenue source to sustain access-focused identities for specific student groups. Within this group, religiously affiliated colleges and universities remain the largest type of tuition driven institution. While all colleges and universities must engage three distinct institutional logics—the professions, state, and market—the religious university has an added level of institutional complexity given that it must also engage the logic of religion. It has also been shown that religious universities employ strategic mission framing strategies when faced with social and resource challenges (Rine & Brown, 2023; Rine, Brown, & Hunter 2021; Taylor, 2015) and provide an ideal setting to further examine strategies in both changing and complex settings.

The organizational set for this study was selected from the population of Catholic and Protestant postsecondary institutions in the Integrated Postsecondary Education Data System (IPEDS) in 2014 (n = 873). In order to identify a variety of tuition driven institutions, schools were restricted on two factors: level of enrollment (e.g., 12-month unduplicated headcount < 3000 to equalize resources) and school type (e.g., Carnegie category to eliminate research/elite institutions). These organizational constraints control for structural conditions that lead to different identities based on category and resources. To further control for enrollment trajectories, we divided the restricted sample of 75 schools into four categories based on enrollment growth: high (> 100%), medium (60–99%), low (1%–59%) and negative (< 0%). We selected one Catholic and one Protestant school in each category for inclusion in the study Additionally, we selected schools in different states to vary the sample due to policy variation. The universities in the final sample of eight reported in Table 1 allowed us to vary the sample by different identities based on region, growth, and religion.

Table 1 Descriptives by university for 2000–2014

Organization	Type	Publication years	Frequencies for university magazines		Overall means of institutional logics				
			Volumes (n = 370)	Word count (n = 5,889,499)	Religion	Market	Profession	State	Total
Ardmore University	Protestant	2000–2014	56	1,008,156	0.142	0.071	0.038	0.138	0.389
Boxborough College	Catholic	2000–2014	54	806,750	0.051	0.060	0.053	0.048	0.212
Havertown College	Protestant	2000–2005; 2009–2014	39	1,068,755	0.043	0.052	0.069	0.043	0.206
Lansdale University	Protestant	2000–2014	55	689,981	0.094	0.053	0.078	0.032	0.257
Pepperell University	Catholic	2000–2014	55	913,206	0.045	0.074	0.097	0.025	0.241
Stoneham University	Catholic	2000–2014	36	470,228	0.037	0.059	0.121	0.046	0.263
University of Malvern	Protestant	2000–2014	36	559,867	0.068	0.069	0.074	0.022	0.232
University of Winchendon	Catholic	2001–2014	39	375,556	0.046	0.065	0.110	0.029	0.251

The names and specific details of the 8 universities used in this study are pseudonyms to maintain confidentiality.

Vocabularies Framework

Organizational scholars have examined characteristics of human language to understand matters of meaning, values, identity, and legitimacy (Meyer et al., 2018). One important vein of work in this area – a vocabularies framework – examines word systems and how their meanings are differentially used by actors within and across groups (Loewenstein et al., 2012). This area of work is important for understanding institutional logics which frame discourse and human language as vocabularies of motive that compete for audience attention in a changing and complex society (Thornton, 2004). The vocabularies approach provides a more direct measure of analyzing the underlying categories of logics than the use of interviews or quantitative variables, the predominant approaches employed in the literature (Loewenstein et al., 2012). Each institutional logic represents a fundamentally different vocabulary of motive represented by different words and their connotations that can be examined to assess changes in meaning, identity, and legitimacy (Ocasio et al., 2015).

We advance the vocabularies framework by focusing on "co-occurrences," or the relationships of words one to another using a mixed-methods, longitudinal approach comprised of a machine learning technique and inductive content analyses. Using this approach, we establish an aggregate vocabulary model that incorporates words, topics, and logics (Fig. 1). The quantitative measure associated with each level of analysis (e.g., words, topics, and logics) permits different facets of the vocabulary to be aggregated. Figure 1 highlights the

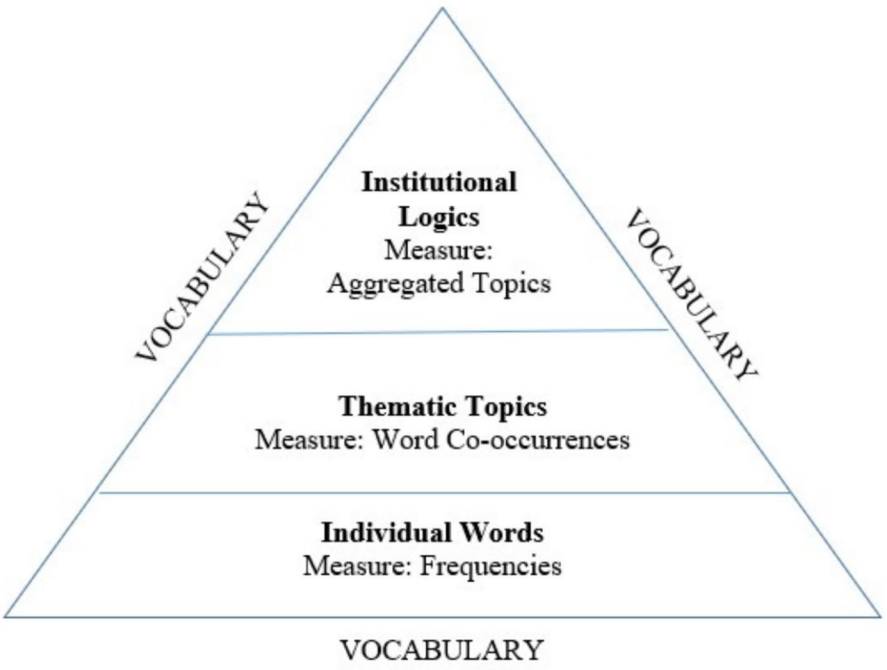

Fig. 1 An aggregate model of vocabularies

"nested" structure of analysis beginning with the grouping of individual words upward into discursive categories that enable researchers to identify a series of topics within and across documents (Augustine & King, 2019). We contend that when topics are aggregated, these elemental categories can be used to identify societal, field, and organizational logics. The vocabularies approach examines the words of actors in order to "go inside" the micro-foundations of a logic and assess the underlying categories or aggregate its granular characteristics into broader macro structures, such as logics.

Data Collection

Given the many constituents of most universities, official publications are often used to promote its unique mission, traditions, and diverse services. We collected 370 university magazines from the 8 selected universities during a 15-year period ranging from 2000 to 2014, a period of notable social change that provided an assessment of six-year lag periods following the 2001 and 2008 financial crises. University magazines were obtained in Portable Document Format (pdf) with the assistance of the Office of Public Relations at each institution for more recent volumes (2008–2014) and the University Archives for the earlier volumes (2000–2007). Despite assistance from official university personnel, volumes were unable to be located for four years in two of the universities: Winchendon (2000) and Havertown (2006–2008). Using optical character recognition (OCR) software, volumes were then individually converted from pdf to txt format. Each line of the digitized volume was manually spell-checked to eliminate analytical noise caused by typographical errors. Once converted, the 370 volumes comprised approximately 5.9 million individual words (Table 1). The digitized volumes were imported with the "tm" package in R (Feinerer & Hornik, 2015), along with their respective organizational metadata, whereby the volumes were preprocessed for analysis with the removal of whitespace, punctuation, and lower-case conversion.

Data Analysis

This study employed a form of topic modeling known as Latent Dirichlet Allocation (LDA), which uses a suite of algorithms based on Bayesian statistics to identify the latent structural forms in a collection of texts (Hannigan et al., 2019; Kim et al., 2025; Takei et al., 2024). To create the topic model, the 370 pre-processed volumes were analyzed using the "topicmodels" package in R (Grün & Hornik, 2011). Because university magazines are comprised of multiple sections with varied content (e.g., presidential letter, athletics stories, alumni updates), further segmentation of the volumes was required to improve the validity of the algorithmic processes in determining the co-occurrence of terms (Jockers, 2014). The full corpus of volumes was segmented into 1,000-word "units" to allow for more accurate classification of words in the model (n = 6775). From this, a Document Term Matrix (DTM) was created as the input data for the topic model, which yielded 16,061 unique terms across 6775 units with an overall sparsity index of 98%. A Gibbs topic model was conducted (burnin = 1000; thin = 100; iterations = 1000) on the corpus to assess different models of fit. Two human coders examined the top 300 words of each topic as well as their corresponding posterior probabilities and selected the 100-topic model as the best fit (see the Appendix for the model selection process).

This study utilized institutional logics theory as an a priori dimension reduction technique to identify the feature set of topics among the 100 that pertained to the seven institutional logics in the theory: family, community, religion, state, market, profession, and corporation (Thornton et al., 2012). Two human coders reviewed each of the 100 topics in the model to assign a thematic label and determine whether it warranted classification within a societal, field, or organizational level logic (see Table 2). The categorizing of a topic within a logic was mutually exclusive – a topic in only one societal, field, or organizational level logic – and complete agreement by both coders was necessary. Identifying a feature set by theoretical rather than statistical means is viable given that topic model algorithms identify latent structures in vocabulary, but the thematic sense-making of the output is left to humans (Isoaho et al., 2021).

Given that few studies employ a methodology to examine more than 2–3 societal level logics, we focused our contribution in this study on assessing the descriptive complexity *between* and *within* societal level logics. A societal logic was retained as part of the feature set for further analysis if it was comprised of five or more topics; thus three logics were eliminated (community n = 3, corporation n = 0, family n = 3) and four logics were identified for further between and within analyses (market n = 7, profession n = 6, state n = 6, religion n = 6) as shown in Table 3. This aggregated measurement approach functions like exploratory factor analysis where multiple variables confirm the presence of a broader latent construct or psychometric testing where a construct is examined using multiple test items rather than a single test question. We established definitions of each societal logic using thematic content and terms provided by the inter-institutional matrix in Thornton et al., (2012, p. 73).

Finally, to augment the topic model results, we conducted an inductive content analysis of specific volumes at significant time intervals for each university as indicated by the aggregated topic models (these will be described later in more detail). A common next step in topic modeling processes, inductive content analyses help researchers further understand the meanings of the latent linguistic patterns in their specific historical and cultural context (Bakharia, 2019). Our inductive content analyses focused on a targeted reading by two human coders of specific organizational magazines for a specified topic as identified by the topic model graphs. For instance, to further understand the meaning in specific linguistic patterns, we read multiple Ardmore volumes between 2006 and 2008 regarding the drop in the logic of religion. We similarly read multiple Winchendon volumes between 2001 and 2003 to understand the drop in the market logic highlighted by the topic model. We use the topic model outputs combined with inductive content analysis to generate the three vocabulary strategies presented in the results that universities employed amid moments of change.

Limitations

First, in considering various dimension reduction techniques for our topic model analysis, we relied on an a priori approach that identified seven existing societal logics found in the interinstitutional system (Thornton et al., 2012). These logics included family, community, religion, state, market, profession, and corporation. We further refined our final analyses to four of these logics. In doing so, we did not analyze the remaining field and organizational level topics identified in the full model. Future studies might employ a methodology that examines the relationship between logics at all three levels – societal, field, and organizational. Second, it should be noted that university magazines are the marketed version of

complex organizations and do not necessarily represent all perspectives within the university. Other publications such as student newspapers, yearbooks, and strategic plans offer opportunities to further identify field and organizational level logics common to universities.

Third, while our study examines change over time, it remains limited to a 15-year period from 2000 to 2014. The use of physical archives to locate our sources was limited by the *manual* digitizing capacities of the research associates at the 8 universities and our research team for the more than 12,000 pages of archival documents. As organizational archives become increasingly digitized, further works may not possess these human limitations and could therefore take up a broader history of institutional logics that spans 25, 50, or even 100 years given that university magazines have remained a persistent feature of American colleges and universities for generations. Finally, by focusing on university magazines, we do not study "on the ground" practices such as how the logics are applied at the local level. We cannot speak to how any one practice can shape a topic or logic, or vice versa.

Results

In this study, we ask how universities use competing societal logics when articulating their publicly communicated mission and identity in times of change. We focus on what constellations of topics universities use to communicate the shape of the societal logics they engage. To address these, we utilize a topic model analysis to examine how 8 religious universities frame their mission and work through their official university magazine, their primary public relations outlet. We assess the topics generated and examine year-by-year changes in the prevalence of the communicated societal logics by university. Below we introduce the topic model analysis in two parts – by providing logics as aggregated topics and logics by strategy.

Logics

Twenty-seven topics from the full 100-model topic model were categorized as applying to the four societal logics of the market, profession, state, and religion (see Table 3; to see the overall means of these four logics and their total, see Table 1). The *market* logic was comprised of seven topics that include: campus construction, estate planning, financial statement, fundraising for scholarships, numeric growth terms, philanthropic organizations, and university rankings. The *profession* logic was comprised of seven topics that include: academic credentials, academic programs, faculty rank, professional associations, science research, university governance, and university vision statement. The *state* logic was comprised of six topics that include: the American court system, American politics, federal government, law enforcement, U.S. military, and war. Unique to this study of higher education institutions, the *religion* logic was comprised of seven topics that include: Biblical terms and characters, Catholic culture, Christian witness, life of giving and morals, mission trips, the church in community, and religion and the public square. The definitions of the four societal logics provided in Table 3 were established using the "ideal type" terms and ideas provided in Thornton et al., (2012, p. 73).

For each of the 27 retained topics in the topic model analysis, the top 300 words were extracted to aggregate the posterior probability coefficients. The posterior probability coeffi-

Table 2 100 Topics in LDA topic model by level of institutional logic

#	Societal level topics	Type	#	Field level topics	Type	#	Organization level and misc topics	Type
72	Campus Construction	Market	20	Alumni—Accomplishments	Alumni	29	Specific School—Ardmore 1	Organization
16	Estate Planning	Market	38	Alumni Events	Alumni	21	Specific School—Ardmore 2	Organization
12	Financial Statement	Market	100	Alumni Profiles	Alumni	1	Specific School—Boxborough	Organization
58	Fundraising for Scholarships	Market	85	Alumni Roster—Attention to Degrees	Alumni	3	Specific School—Haverton 1	Organization
54	Numeric Growth Terms	Market	35	Alumni Roster—Attention to First Names	Alumni	51	Specific School—Haverton 2	Organization
92	Philanthropic Organizations	Market	45	Alumni Roster—Attention to Initials	Alumni	98	Specific School—Haverton 3	Organization
46	University Rankings	Market	28	Alumni Roster—Attention to Titles	Alumni	76	Specific School—Lansdale	Organization
55	Academic Credentials	Profession	73	Alumni Weekend	Alumni	84	Specific School—Lansdale 2	Organization
64	Academic Programs	Profession	40	Athletics—Accolades	Athletics	6	Specific School—Malvern	Organization
63	Faculty Rank	Profession	18	Athletics—Conference Schedule	Athletics	27	Specific School—Pepperell	Organization
87	Professional Associations	Profession	77	Athletics—Showcase	Athletics	65	Specific School—Stoneham	Organization
43	Science Research	Profession	86	Athletics—Teams	Athletics	2	Specific School—Winchendon	Organization
75	University Governance	Profession	78	Athletics—Tournaments	Athletics	61	Alumni Updates—Haverton	Organization
7	University Vision Statement	Profession	57	Professional Education—Aviation	Credential	82	Alumni Updates—Lansdale	Organization
37	Biblical Terms and Characters	Religion	41	Professional Education—Business	Credential	24	Alumni Updates—Pepperell	Organization
11	Catholic Religious Terms	Religion	26	Professional Education—Divinity	Credential	69	Athletics—Pepperell	Organization
99	Christian Witness	Religion	39	Professional Education—Financial Mgmt	Credential	31	Parts of Speech 1	Language
48	Life of Giving and Morals	Religion	14	Professional Education—Law	Credential	50	Parts of Speech 2	Language
60	Mission Trips	Religion	23	Professional Education—Leadership	Credential	70	Parts of Speech 3	Language
88	Protestant Denominations	Religion	95	Professional Education—Medical	Credential	96	Parts of Speech 4	Language
53	Religion and the Public Square	Religion	91	Professional Education—Nursing	Credential	97	Parts of Speech 5	Language
67	American Court System	State	90	Professional Education—Teacher Training	Credential	19	Art	Misc
59	American Politics	State	44	Buildings, Architecture and Space	Education	25	Future Oriented Time	Misc
4	Federal Government	State	42	Career Emphasis	Education	79	Gender	Misc
15	Law Enforcement	State	30	Commencement	Education	10	Holidays	Misc
80	US Military	State	71	English, Literature and Books	Education	49	Race in America	Misc
17	War	State	66	Honors and Awards	Education	93	Terminal Illnesses	Misc
94	Overcoming Obstacles	Community	68	International Education	Education	32	The Environment and the Planet	Misc

Table 2 (continued)

#	Societal level topics	Type	#	Field level topics	Type	#	Organization level and misc topics	Type
62	Relational Nostalgia	Community	34	Musical Arts	Education	47	The Media	Misc
74	Service to the Community	Community	52	Online Education	Education			
81	Families	Family	36	Online Graduate Programs	Education			
56	Narrative of Life and Intimacy	Family	13	University History	Education			
22	Obituary	Family	9	Campus Experience for New Students	Student			
			33	Cuisine and Dining	Student			
			8	Greek and Honor Societies	Student			
			5	Outdoor Activities	Student			
			89	Student Events	Student			
			83	Student Learning	Student			

cients (the statistical probability of observing each word for each topic) for individual words within a given topic were summed to establish the numeric value of the respective topic. In the same vein, the aggregated posterior probability coefficients for individual topics were summed to establish the numeric value for a given societal logic. Figure 2 highlights the proportion of the university discourse devoted to the four societal logics in a given year. For example, approximately 22% of the discourse within the publications for the University of Winchendon in the year 2001 was devoted to topics pertaining to the profession logic (the total mean scores can be found in Table 1). With this method, we are able to construct a logic constellation by quantifying and visualizing the prevalence of these four societal logics over time for each university.

Vocabulary Strategies

Each university's particular communicated constellation of societal logics is unique to the time and place as universities acted with agency to frame their identity in different ways. We found evidence that the 8 institutions engaged in one of three strategies – Reframe, Reorient, or Reinforce – as they communicated different frequencies of the market, profession, state, and religion logics in their language during periods of change (Table 4).

Reframe

One vocabulary strategy we observed among the universities in this study was exhibited by Pepperell, Lansdale, and Malvern. When they employed the Reframe vocabulary strategy, these institutions maintained a constant (unchanging) constellation of societal logics but shifted their use of topics within those logics. As their early volumes explained, these universities introduced new market forms of adult education at the onset of the study period. They were innovative first movers among non-profit universities, responding to the ballooning for-profit sector and the fear that for-profits would successfully compete for the same underrepresented students they traditionally served. Pepperell, Lansdale, and Malvern aimed for ways to expand new possibilities for accessible education while trying to avoid scaling online education too quickly or widely like many for-profit universities, in an effort to maintain their mission, like this example from Pepperell:

> New programs continue to be added to meet the demands of an evolving world. These enhancements were made possible by our phenomenal student enrollment growth. Our expansion [even] caught the attention of *The Chronicle of Higher Education*… During difficult economic times, when many schools have had to cut programs and limit growth, we are grateful to be able to continue the mission of Pepperell and move it forward into the future (Pepperell, 2013).

Their university magazines showcase the three organizations created new market forms, such as adult education, online offerings, and satellite branches.

Pepperell, Lansdale, and Malvern presented these decisions using a vocabulary strategy that reframed these new market forms as helping the universities evolve with the tumultuous times in a positive way that would keep them successful and would expand, rather than sacrifice, their missions. Universities using the Reframe vocabulary strategy maintained

Table 3 Topic descriptions and top ten associated words

Topic name	Description	Top ten associated words
Market Logic – Centers on the idea that organizations strive to maximize their own benefits in a competitive environment. This often involves prioritizing efficiency, innovation, and profitability in business operations.		
Campus Construction	Discussion of the growth and new development of the built campus environment from design to occupancy.	new, center, will, campus, building, facility, construction, square, space, also
Estate Planning	Discussion of the management and planning of financial assets including gifts, wills, and tax benefits.	gift, tax, income, can, estate, life, will, planned, charitable, free
Financial Statement	Discussion of the financial statement that summarizes financial health, cashflow, and performance.	year, financial, million, total, tuition, current, net, years, new, investment
Fundraising for Scholarships	Discussion of the soliciting and financial activities involved in securing money for scholarships.	scholarship, university, fund, students, support, scholarships, campaign, funds, gift, annual
Numeric Growth Terms	Explicit mention of the growth and expansion of new programs, facilities, finances, and student enrollment.	percent, number, average, time, now, us, one, increase, per, million
Philanthropic Organizations	Discussion of the various organizations that give money and assets to the university.	inc., foundation, company, bank, co., society, corporation, family, insurance, group
University Rankings	Promotion of rankings the school achieves such as prestige (Forbes) or "Best of" (facilities, safety, etc.).	university, colleges, college, schools, universities, education, higher, programs, institutions, best
Profession Logic – Emphasizes expertise, specialized knowledge, and adherence to professional standards and norms. It offers a framework for professionals to make sense of their work, evaluate situations, and guide actions in the field.		
Academic Credentials	Discussion of the various degree levels and types offered by the university.	degree, university, masters, education, arts, earned, graduate, bachelors, college, bachelor
Academic Programs	Discussion of the elements, faculty, and students in academic programs offered by the university.	faculty, students, academic, learning, programs, university, student, education, new, support
Faculty Rank	Discussion of the different professional levels of faculty positions and areas of specialization.	professor, Dr., university, associate, assistant, faculty, department, dean, teaching, education
Professional Associations	Discussion of faculty presentations made at annual conferences and meetings of professional associations.	conference, presented, published, association, also, titled, paper, annual, international, journal
Science Research	Discussion of the scientific research maintained and produced by the university and its knowledge community.	research, science, biology, chemistry, project, grant, engineering, department, science, physics
University Governance	Discussion of the university governing structure as well as its respective positions and functions.	board, president, served, member, vice, committee, also, trustees, executive, university
University Vision Statement	Discussion of the guiding aims and values of the university that comprise its mission and scope of impact.	university, community, values, mission, life, world, work, commitment, vision, spirit
Religion Logic – Fundamental beliefs centered around a worldview, cosmology, or understanding of the divine. These beliefs inform the values, norms, and practices that define the religious community and its relationship with society.		
Biblical Terms and Characters	Discussion of religious stories, divine beings, characters, and ideas unique to the Christian Bible.	God, Jesus, Christ, us, gods, bible, life, prayer, Lord, spiritual

Table 3 (continued)

Topic name	Description	Top ten associated words
Catholic Culture	Discussion of denominations, groups, people, and theology central to the Catholic faith.	Catholic, St., theology, religious, church, faith, dialogue, Pope, Jewish, Paul
Christian Witness	Discussion focused on showing one's beliefs to others through action and example.	Christian, faith, human, religion, religious, truth, Christians, moral, culture, society
Life of Giving and Morals	Discussion about the central Christian tenet of generosity and benevolence toward others in need.	life, help, can, people, give, need, make, want, others, many
Mission Trips	Discussion focused on the practice of traveling to other nations to proselytize or share one's beliefs.	team, people, trip, mission, Africa, many, world, missions, trips, two
The Church in Community	Discussion of denominations, groups, people, and communal focus central to the Protestant faith.	church, Wesleyan, Baptist, community, Christian, united, Methodist, city, pastor, life
Religion and the Public Square	Discussion of the integration of religion and society including government and schools.	religious, officials, Christian, public, said, school, rights, district, Bible, federal
State Logic – Rooted in the idea of the state as a legitimate authority with the power to govern and control societal affairs. It emphasizes principles like public safety, national interest, and the rule of law.		
American Court System	Discussion of the American legal system including its members, courts, and specific laws.	court, marriage, state, supreme, case, sex, law, judge, one, states
American Politics	Discussion of American politics with a focus on nationally contested topics addressed by Congress and the President.	president, Bush, abortion, life, pro, said, house, political, senate, Sen.
Federal Government	Discussion of topics related to the federal government, federal polices, and federal agencies.	government, public, history, political, state, American, Washington, policy, issues, politics
Law Enforcement	Discussion of the government agencies overseeing law enforcement at national and local levels.	police, justice, security, criminal, department, enforcement, safety, fire, crime, new
US Military	Discussion of the various branches of the US military, their areas of focus, and outcomes.	military, army, US, air, force, ROTC, veterans, war, fort, service
War	Discussion of authorized violence by government and its connection to other nations (i.e., world war, Mideast, etc.)	war, world, US, peace, Israel, will, time, American, America, nation

For each topic 300 words were extracted to determine coding labels. However, only the first ten terms are reported herein. Definitions of logics were established using content and terms provided by Thornton et al., (2012:73)

a blended use of logics in discussing their decision to establish new market forms, with a distinct use of the market logic in addition to maintaining a balance across all four societal logics in the topic model analysis over time (Fig. 2). Because no one time period stood out in Fig. 2 as being a turning point, we reviewed these university's magazines at three-year intervals starting in 2000. As described in their university magazines, these schools attempted to reframe the identity of a non-profit university while simultaneously outsourcing the development and growth of new educational markets to for-profit vendors known as online program managers (OPMs). All three universities remained largely consistent in their distinct use of the market logic across the 15 years as highlighted in Fig. 2. They reframed their enrollment decisions with language consistent with the way they had already been discussing the university (such as "numeric growth terms" and "fundraising for scholarships")

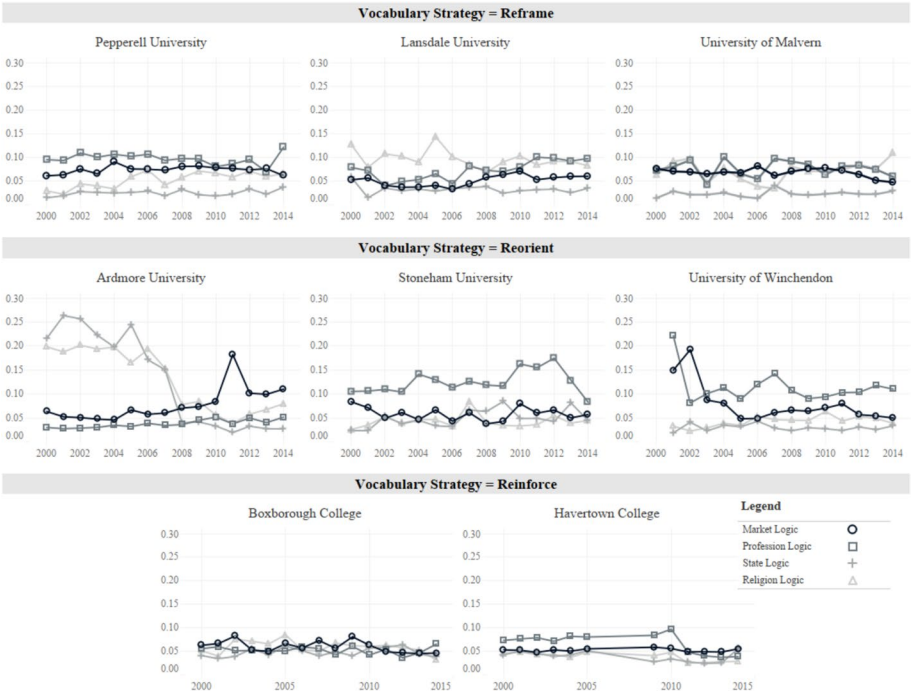

Fig. 2 Sum topic scores of primary institutional logics by organization

Table 4 Vocabulary Strategies and Composition of Constellations

Vocabulary strategy	Constellation of societal logics & topics		Action	Logic pattern
	Composition of logics	Composition of topics		
Reframe	Constant	Shifting	New market forms	Blended
Reorient	Shifting	Shifting	New organizational leader	Dominant
Reinforce	Constant	Constant	Strengthen tradition	Non-dominant

and underplayed any major changes or resemblance to the for-profit sector (as seen by the lack of any large change in the non-market topics).

The topic model data highlights the innovative legitimacy practices in language happening at the micro-foundational level through the changing composition of topics. Continual changes in different individual topics permit institutions to maintain balance across their blended logics (Fig. 3). Pepperell and Malvern balance their use of the religion logic by switching the topics "life of giving and morals" and "Catholic culture" (Pepperell), or switching its use of all topics within the religion logic (Malvern). Sample magazine excerpts further highlight how these two institutions used religious topics to frame their mission and growth strategies. One magazine author, reflecting on her two terms as Alumni President at Pepperell wrote, "In taking part in discussions at the Trustee level, I see continued growth in the future that should always keep the university's core mission, values, and identity in mind, making in clear that it is a Catholic institution, while welcoming members of all

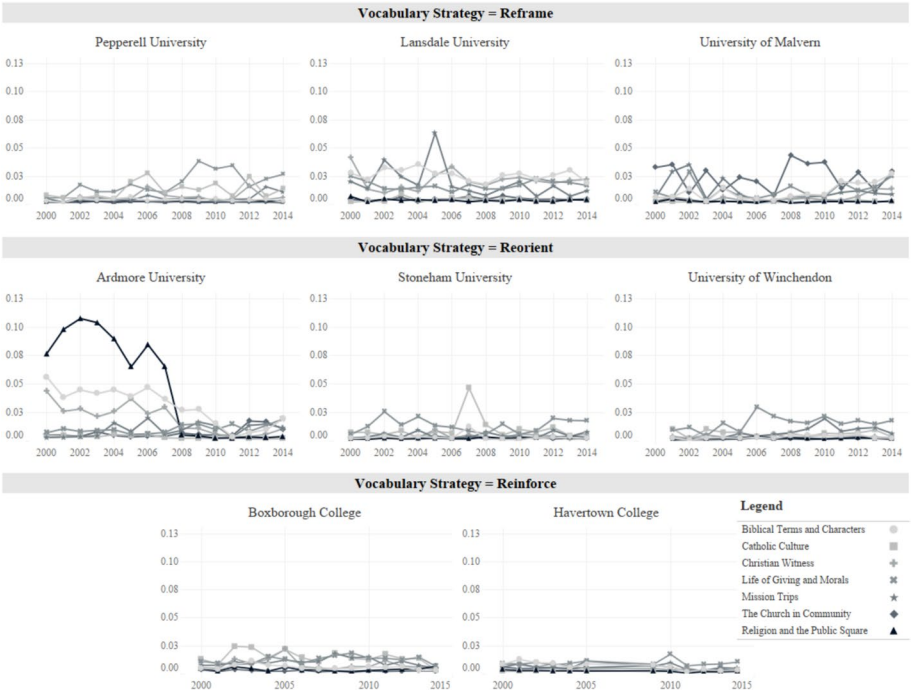

Fig. 3 Religious logic composition by organization

faiths" (Pepperell, 2010). Similarly, at Malvern, religious topics were given priority in their planning for strategic growth and expansion:

> God has truly blessed the university with a golden opportunity. For the past year, a team of administrators and staff has convened to plan for reaching an enrollment of 25,000 students. The plan, financial package, marketing approach, academic programming, staffing needs, and mission impact have all been discussed and the Board of Trustees has given approval to proceed. To reach this goal, the school must grow in at least five ways: (1) quality improvement systems, (2) new academic programs, (3) new geographic locations, (4) innovative delivery systems, and (5) spiritual mission fulfillment (Malvern, 2005).

Similarly, Lansdale increased its use of the profession logic with its emphasis on the topic of "professional/faculty rank" (Fig. 4). For instance, one article stressed the growth would be rooted in affordability and underscored the responsible approach to growth, a key professional norm in college admissions associations:

> A comprehensive campaign to support and advance our vision will build a foundation, while the continual development of innovative models for accessibility and affordability will lead to growth and financial stability. Responsible, comprehensive enrollment strategies and matching relevant academic programs with diverse student

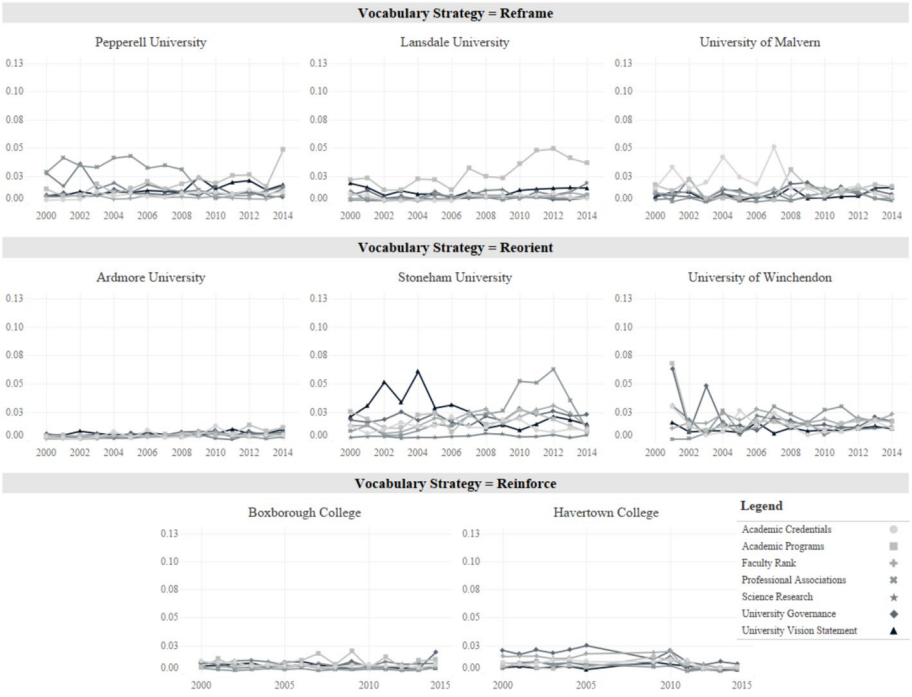

Fig. 4 Profession logic composition by organization

populations will result in a appropriate and resilient capital structure with a strong balance sheet (Lansdale, 2011).

At the micro-foundational level, none of the changes in topics were strong enough to cause an abrupt change in the communication of the broader religious or profession logics. Although our topic model analyses highlighted how the Reframe universities framed and communicated their decisions through a blended use of constant societal logics yet shifting topics within those logics, other universities in the study attempted to reorient their mission and identity to respond to sudden changes they encountered.

Reorient

The second main vocabulary strategy we observed in this study was exhibited by Ardmore, Stoneham, and Winchendon. These universities utilized a Reorient strategy that framed their decisions using a shifting constellation of societal logics and topics that brought about a change in their dominant societal logic. A contextual examination of key volumes surrounding the moments of sudden linguistic change reveals each of the three universities experienced a dramatic change in language due to leadership transitions and the corresponding identity redevelopment. The three universities underwent leadership transitions among longstanding board members and presidents during the moments of marked decline in their respective dominant societal logics. The senior-most leaders of these universities prioritized

these publications and shaped the language in an intentional manner, as an example from Ardmore highlights when the new president discusses the focus of the prior president:

> The president was personally involved with the magazine. He spent many hours each month editing and proofreading every article and every advertisement. He spent many Saturdays in the office with the editors compiling new editions. The magazine was truly one of his passions in life. When each new edition was delivered to campus, he would proudly hand deliver copies to many of us at the university as well as to everyone in his extended family (Ardmore, 2008).

The volumes highlight that what accompanied the loss of senior leaders at Ardmore, Stoneham, and Winchendon was a substantial change in the organizational vocabulary and societal logics.

To frame their transition to new leaders and the identity redevelopment that followed, the universities that employed the Reorient vocabulary strategy shifted their dominant societal logic. An examination of their university magazines revealed similar patterns at each of the three schools. Winchendon faced a leadership change in the late 1990s and early 2000s with the passing of a long-tenured board member and president. As shown in Fig. 2, the university communicated a completely new constellation of societal logics in the transition that follows by deemphasizing the profession and market logics. Similarly, Ardmore had a particularly long serving president whose departure in 2007 can be seen in a change in the use of societal logics, particularly the drastic decline in the religion and state logics (Fig. 2). Lastly, Stoneham experienced two presidential leadership changes – one in 1997–1998, and then again in 2014–2015. This second change is seen in the final two years of the data with the sudden decline of the professional logic in their vocabulary strategy (Fig. 2). While the dominant societal logic for all three universities differed, in each instance, these once-dominant logics underwent a sharp decline amid senior leadership transitions.

The topic model analyses show the magazines experienced significant changes in language with the losses of these leaders, but content analyses further explain the magazines also underwent changes in format. The new president of Ardmore explained in one issue:

> Because the [prior] president was so intimately involved in the production, some thought it would be the most difficult part of the university to continue. We pondered our options and decided that, not only should the magazine continue, but it should be upgraded. We have invested in a new format that we hope will make the magazine more convenient for you to read and share with others (Ardmore, 2007).

Content analyses also revealed that these instances of leadership transition were repeatedly recounted across multiple issues that followed the departure or passing of the leader. For example, at Winchendon, with the loss of their key leader of 50 years who served as president, chancellor, and later chairman of the board, stories about her vision and impact were retold in three issues in 2001, again in 2003, and a final time in 2010. At Stoneham, this same element of recounting the pivotal leadership change helped reorient readers about its widespread impact on the organization:

> Stoneham's board of directors took action, bringing aboard a new president to reverse the troubling trends. Over the next ten years, the president addressed the school's myriad and complex challenges with a refreshingly simple formula: focus on the needs of its students. The turnaround that followed came as a result of achieving long-term goals such as increasing enrollment, taking care of short term needs such as maintenance, and maintaining the school's strong tradition of bringing educational opportunities to the students it serves (Stoneham, 2007).

Further examination of the topic model data reveals that these changes in the societal logics across institutions using the Reorient strategy occur most prominently in changes at the micro-foundational level. More specifically, changes in the dominant societal logic of an institution happens as a result in the changes in 1–2 components *within* their topic constellation. The change in the religious logic (comprised of seven topics) is activated by the strength of two topics: "religion and the public square" and "Biblical terms and characters", especially for Ardmore (Fig. 3). The change in the profession logic – comprised of 7 topics – is also activated by two topics: "university vision statements" and "professional associations", especially for Stoneham (Fig. 4). The change in the market logic (comprised of seven topics) is activated by the strength of a singular topic, "campus construction" (Fig. 5). Lastly, the change in the state logic (comprised of six topics) is similarly activated by two topics: "American court system" and "American politics", especially for Ardmore (Fig. 6). Significant shifts in individual topics at moments of leadership change demonstrate how leader-specific priorities shape the framing and communication of broader societal logics.

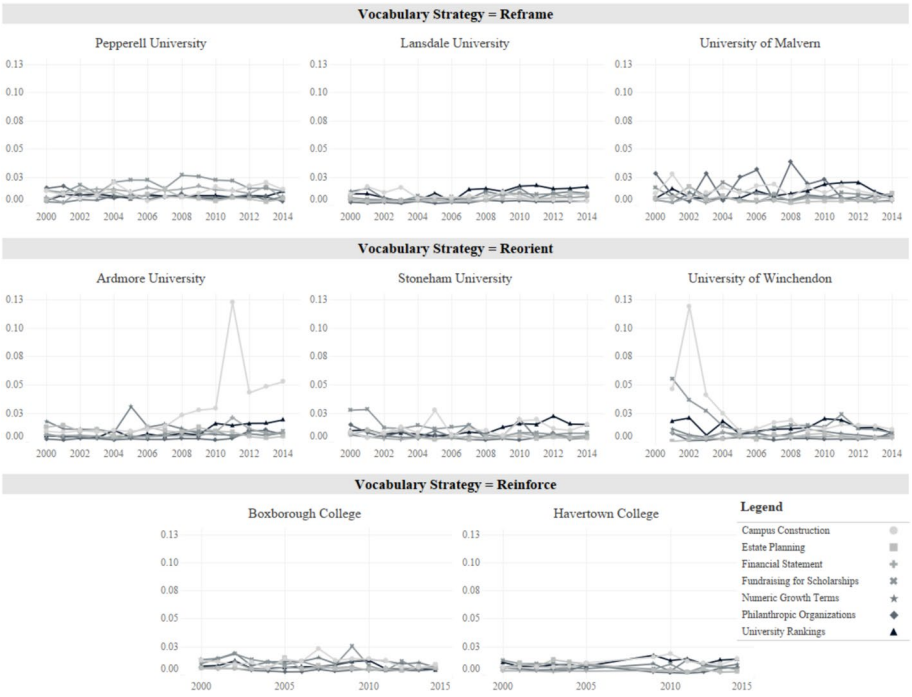

Fig. 5 Market logic composition by organization

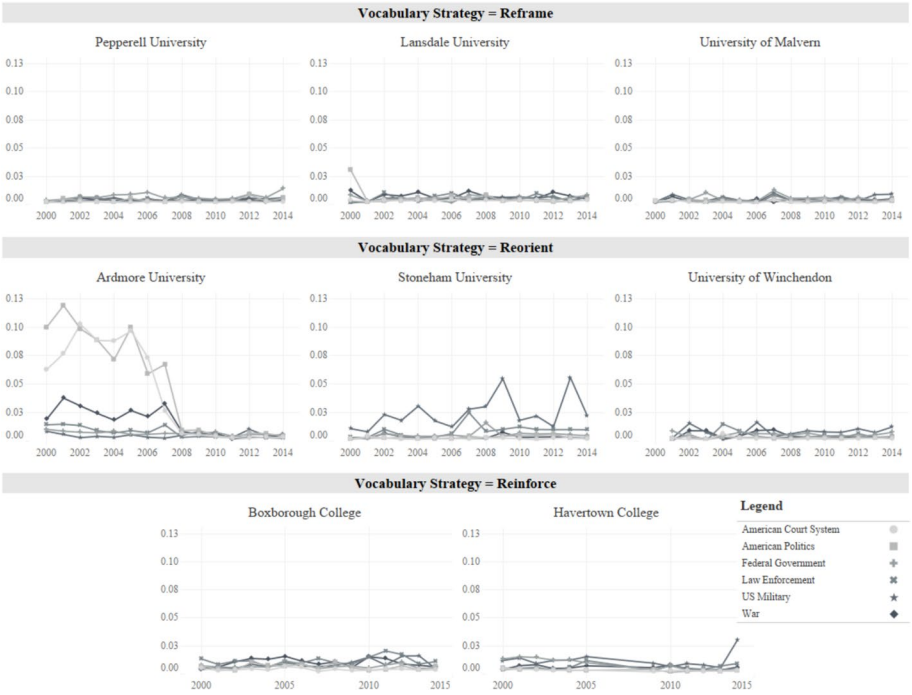

Fig. 6 State logic composition by organization

Topic model analyses show universities that use the Reorient vocabulary strategy framed their transitions to new leadership by changing their dominant societal logics due to shifts in their constellation of societal logics and constellation of topics. Yet other universities opted to reinforce their mission and values when confronted with changing environmental resources.

Reinforce

The third vocabulary strategy we observed among the universities in this study was exhibited by Boxborough and Havertown. When they employed the Reinforce vocabulary strategy, these institutions maintained a constant constellation of societal logics and a constant constellation of topics that maintained a linguistic status quo to frame their tradition-focused actions. Like the universities who engaged in the Reframe strategy, Boxborough and Havertown also saw a period of leadership stability during the 15 years between 2000 and 2014. However, the universities engaging in the Reinforce vocabulary strategy did not seek to capitalize on online education or non-residential markets, but rather sought to strengthen their institutional mission by supporting premier athletic programs, establishing reputable graduate programs, and investing millions of dollars in state-of-the-art academic buildings. An excerpt from a presidential address at Havertown highlights their traditional emphasis on mission amid social change, “It has been exciting to see Havertown College transformed into Havertown University, which has earned a national and international reputation for its mission and outstanding graduate and professional schools” (Havertown, 2003).

In the face of environmental change and complexity, schools that employed a Reinforce vocabulary strategy did not change how they communicated their societal logics and instead choose to emphasize stability in their decisions and the adherence to their organizational mission through a constant societal logic constellation and constant topic constellation. As described in their university magazines at equal intervals of time, their message was to maintain stability in mission and present this stability as valuable at a time when resources, funding, technology, and polices were changing in the higher education environment. Boxborough and Havertown also did not employ a dominant societal logic to frame their major organizational decisions, but instead doubled-down on vocabulary that endeavored to maintain consistency amid complexity and change.

The emphasis on stability in the topic models is further reinforced by content analyses that reveal the doubling down on organizational values that brought about "unprecedented change in self-esteem and stature." At Boxborough the athletic director stressed the impact of its investment in premier athletic programs went far beyond a sport to broader society:

> It is a first-rate institution with a values proposition that, quite frankly, our society needs. In the athletic part there's a tradition and history of winning here, and there are the resources to be successful. Selfishly, as an athletic director, the thing you want the most are those resources. They give you the ability to be successful on a national level (Boxborough, 2013).

Similarly at Havertown, the president underscored their emphasis on establishing high quality academic programs were rooted in its long-standing mission, "Havertown will respond to the existing and developing needs of the region, state, and nation by providing new undergraduate, graduate and professional programs that compliment and extend Havertown's mission" (Havertown, 2003). Volumes that followed discussed annual events of "Celebrating the Mission Day" and showcased "a five-part series of stories that describe the ways in which Havertown fulfills its mission." The university publications made it clear the long-standing commitment to organizational values and mission had anchored the schools in the past and would continue to do so into the future, as one Boxborough volume explained:

> As the university celebrates its … anniversary, it acknowledges proudly its tradition. It is clear about what it is, where it has been, and where it wants to go. In its own special way each generation of faculty, students, administrators, alumni, trustees, and friends has sought to retrieve and reinvigorate the values of the university's traditions and bring them in line with the challenges and demands of their times (Boxborough, 2006).

In addition to lacking a dominant societal logic, the Reinforce topic constellations lack variation and magnitude compared to the other two vocabulary strategies. When reviewing the multiple topics within each societal logic in Figs. 3, 4, 5 and 6, no topic stood out in any year as dominating the vocabulary for Boxborough, unlike most other universities in the study. In a targeted review of the volumes from 2009 to 2011, our content analysis shows that the one small change we observe in the composition of logics for Havertown (Fig. 2) occurs during their change in publication form. Havertown created a university magazine in 2010, switching from an alumni newspaper to a full color high-gloss magazine much later

than other universities. This shift from newspaper to magazine linguistically coincides with the decrease in the profession logic starting in 2010 until 2014.

By analyzing the university magazines of eight institutions using LDA topic model analyses to "go inside" their societal logics (market, profession, state, and religion), we identify three strategies in how universities strategically frame and communicate their responses to changes in the higher education environment – Reframe, Reorient, and Reinforce. An examination of the micro-foundations of each logic reveals that institutions can innovatively activate broader societal logics by: changing the use of select topics, shifting their usage of multiple topics to hold the legitimating societal logic constant, or "double-down" on topics with the aim of emphasizing stability of institutional mission amid times of change.

Discussion

Given the increasingly complex social and resource environment that university leaders navigate, we set out to understand how institutions publicly communicate their identity while coping with threats to their mission outside their control. We find that the colleges and universities in this study act in entrepreneurial ways as they strategically balance multiple societal logics by communicating different "constellations" of topics, while also adapting to internal and external sources of change. We discuss the practical, methodological, and theoretical implications of this work below.

Practical: Vocabulary Strategies

The vocabulary of a university – how it communicates itself to the broader world – is an important indicator of its identity and mission, particularly in times of change when resources and norms are in a state of flux as when Harvard overhauled its website and magazine to emphasize its commitment to research amid federal cutbacks to science research (Schumaker, 2025) or when public institutions amplify their commitment to the public good to justify their market efforts (Warshaw & Upton, 2020). The strategy a university employs to communicate their identity offer clues as to how they engage a complex environment comprised of multiple competing societal logics. Given the many constituents of colleges and universities, the official magazines serve the organization as a centralized outlet of the multiple marketing and planning publications used to promote its mission, policies, plans, achievements, traditions and diverse services. By focusing on university magazines, we can target how these organizations present themselves to faculty, alumni, and donors who have a vested interest in the mission, identity, and future of these organizations.

Our inductive content analyses connected themes in topic model outputs with the material practices of actors in the university magazines to further show how schools engaged in entrepreneurial ways with their changing context. Honing in on the four most prevalent logics found in the analysis, we explored the strategies the universities displayed in their magazines. The vocabulary strategies universities used illustrate how they activate combinations of societal logics available to them as a "toolkit." Language is an important part of understanding how universities use institutional logics to balance the tension between agency and constraint to differentially engage the complex and changing higher education environment in which they are embedded. The tension between agency and constraint, known as the

"paradox of embedded agency," describes how actors have both the freedom to act and the obligation to adhere to norms and expectations when embedded in broader societal logics (Brown, 2021).

By mapping the vocabulary constellations, our study shows at the organizational level that universities operate on a continuum of embedded agency. While individual actors and organizations may not understand the various "institutional logics" in the way that theorists discuss them, they do understand the effect of the environment in which they operate and the existence of market forces, religious identity, state policies, and faculty professionalism, and how these influence how they do business and frame their actions to a larger audience (Brown, 2021). Institutions that employed the Reorient strategy communicated one type of agency focused on leveraging a specific topic to activate broader societal logics. Schools that shifted between topics in the Reframe strategy communicated with a different type of agency that limited the magnitude of their topics so as to not change the legitimating societal logic. Future research that follows if and how actors become increasingly aware and intentional about their use of logics in their communications could build on this study by understanding the ground-level practices that are strategic actions in support of particular logics.

Lastly, institutions that communicated with the Reinforce strategy displayed yet another type of agency focused on holding both their societal logic and topic constellations constant to convey stability to constituents. In rapidly changing environments, it is vital to understand how actors can maintain agency and frame their actions in ways that enable them to maintain their mission and identity. Future studies with larger samples of universities should connect these logics with organizational outcomes to determine when and how these publicly communicated logics shape organizational decisions and outcomes.

Method: Logics as an Aggregate

Our mixed-methods longitudinal approach makes it possible to examine larger volumes of qualitative data across multiple universities that were previously limited by human coding capacity. By analyzing university magazines from eight institutions over 15 years, we were able to expand any previous study of vocabulary strategies or the micro-foundations of institutions logics by employing a topic model analysis that quantitatively assessed latent patterns in 5.9 million words in 370 volumes. The sheer volume of magazines limited their categorization by human coders let alone identifying any latent patterns in language that might exist across them. This method of analysis enabled us to "scale up" the analysis of meaning and aggregate multiple variables to confirm the presence of a societal logic within and across universities.

Our measurement approach shows how each societal logic can be quantified as an aggregate sum of multiple variables rather than a single variable that functions as a proxy for a specific logic. This aggregated approach increases the validity of a logic by triangulating multiple values to confirm its salience. By aggregating multiple variables, we retained four societal logics: market (n = 7), profession (n = 7), state (n = 6), and religion (n = 7). Our aggregate approach also enabled us to establish a threshold to eliminate smaller groupings of variables (topics) that might be conflated with broader constructs (societal logics). The aggregate approach increases the transparency as to which societal logics are included in the overall model of analysis and the interior composition of the selected logics.

By emphasizing the interior components of an institutional logic, the aggregate approach enabled us to identify which topics were driving the activation of societal logics within a university or across universities. Researchers have questioned the interior composition of institutional logics, or what is referred to as their "micro-foundations" (Cardinale, 2018). Data from this study highlights that logic activation – that is, drawing upon the broader logics available to all universities – is influenced by the interior composition of a logic (an aspect rarely made transparent and commonly referred to as a "black box"). For instance, the ascension of the communication of the market logic at Ardmore was predominantly influenced by the rapid increase of the "campus construction" topic, whereas at Winchendon the decline of the market logic was driven by the reduction in both the "campus construction" and "fundraising for scholarships" topics. The "campus construction" topic is by no means a societal logic on its own, but the change in its magnitude in either direction has a notable influence on the overall presence of the market logic at both universities. In a different instance, the sustained presence of the profession logic at Stoneham was not driven by one topic, but rather a change in topics from "university vision statement" to "professional associations." Our study extends the theory of institutional logics by underscoring that what is inside a logic remains important for understanding the specific logic itself. For example, though it retains the same label, the composition of the market logic in universities in 2000 does not have the same composition in 2006 or in 2014.

An aggregate approach to measuring and assessing the presence of a societal logic enables us to avoid missing one or many of the important variables that comprise a logic. Had we solely relied on the measurement of "university rankings" or "estate planning" to assess the presence of the market logic, we would have underassessed the presence of the market logic across this set of university communications as these schools are not high-ranking universities with large endowments. The market logic looks different at these tuition driven universities than elite and research universities that tend to dominate organizational and higher education research (Posselt, 2016). Given that societal logics are the broadest of social constructs in the theory of institutional logics, the use of single variables to assess them must be approached with caution. Logic complexity is not solely about the multifaceted interaction of many societal logics *between* one another, rather it also means understanding the equally complex interior composition *within* each societal logic at its most foundational level.

Theory: Complexity, Constellations, and Composition

This study advances our theoretical understanding of the complexity, constellations, and composition of institutional logics. Our study extends the understanding of logic *complexity* by assessing the presence of societal logics within the language of university publications over a 15-year period, specifically the market, profession, and state logics. In addition, we examine tuition driven religious institutions who work with the added complexity of the logic of religion, a persistently underexamined element of the theory (Thornton et al., 2012). This inclusion highlights value-laden topics such as "life of giving and morals" as a key theme in many of the organizations in our study. Each college and university in this study tries to balance all four of these logics to strategically frame and communicate their mission and identity. Even colleges that are no longer religious but were founded as denominational

campuses might still reflect and leverage a religion logic through tradition and mission, furthering the importance of studying this logic in the higher education space.

This study highlights that an essential element in understanding the complexity of institutional logics is being able to specify the *constellation* of multiple logics at a given moment. We extend the work of Goodrick and Reay (2011) by examining the change in the societal logic constellations of organizations rather than the field as a whole. Our work shows the societal logic constellations communicated by institutions are as complex as the environment they navigate. Prior research described how an institutional logic became dominant or blended to become hybrid, but our emphasis on complexity over time advances the understanding of logics from descriptive to dynamic. Topic model analyses revealed these constellations were comprised of two features – composition of societal logics and composition of topics (see Table 3). The logic composition revealed the intensity of each of four societal logics at a given moment in time, whereas the topic composition highlighted the specific components that activate a logic. In other words, in our constellation approach we do not describe how a singular star became dominant (Polaris), instead we show the societal logic pattern the star is part of (Little Dipper) as well as its distinctiveness as it moves across the night sky. Even within this sector of religious tuition driven universities, Table 1 highlights how the intensity of a logic varies across schools as the religion and state logics were more dominant in some schools than others. Furthermore, in some instances the profession logic was more dominant than the religion logic, highlighting that religion is not uniform among religious universities (Rine & Brown, 2023; Rine, Brown, & Hunter 2021; Taylor, 2015). Our findings underscore that there is a complex pattern of logics within an organization, and that pattern shifts over time.

Lastly, our study sheds light on the ways in which actors shape the interior *composition* of logics, which in turn, shape broader societal logics if the magnitude is strong enough. Institutions could communicate strategic approaches toward specific micro-foundational themes. As such, an institution could innovatively shift the magnitude of a topic (up or down) resulting in a corresponding shift in the societal logic, or they could shift topics in an alternating way so as to keep the legitimating logic constant, or they could keep the topics constant, also resulting in a constant logic (see Table 3). The study of logic complexity highlights how colleges and universities grapple with the same environment, but they are responding with agency in very different ways with very different constellations of societal logics available to them.

Conclusion

Colleges and universities in the United States have been subject to continuous change and environmental capacity the last three decades. Universities have adapted to technology, global recessions, and rising costs that have impacted the way they provided education, forcing them to reconsider or reinforce their missions. During this time, scholars have contended that dominant logics exist in higher education, such as the expansion of the market logic in academic capitalism (Slaughter & Rhoades, 2010), its corresponding transformation of academic science (Berman, 2015), as well as the now pervasive industry logic among publics (Gumport, 2019). These approaches to explaining logics in higher education not only portray solitary logics to explain the field, but they do so in a specific setting – elite and

large research universities – that ultimately overlook the rich organizational diversity that serves as the backbone of American higher education in the global postsecondary marketplace. By examining multiple universities in the religious-based tuition-driven sector with emergent linguistic analyses, we show a much more nuanced story – the environment that confronts university leaders is comprised of multiple competing societal logics they must navigate and communicate with equally complex strategies.

Appendix

The final topic model selection was comprised of a three-step evaluation process that included the examination of individual topics, correlation coefficients, and quartiles. First, a qualitative label was affixed to the individual topics in each of the five models (e.g., commencement, faculty rank, philanthropy). Two human coders reviewed the top 50 words in the individual topics to determine a qualitative label where complete agreement by both coders was necessary. Second, posterior probability coefficients for each word were aggregated for individual topics to establish correlation coefficients that were examined across topics using heat maps. Third, quartiles were established to examine individual topics outside the 25th and 75th percentiles across institutions and time. In the higher models (100, 125, and 150 topics), patterns occurred beyond the outer quartiles that pertained to authorship and language unique to the specific university such as administrators, cities, buildings, traditions, mascots, and states, to name a few. The final model selection for this study was determined based on the lowest overall model where authorship and university-specific topics remained beyond the outer quartiles. Based on these three parameters, the 100-model topic model was selected as the best fit of the five that were examined: 50 topics, 75 topics, 100 topics, 125 topics, and 150 topics.

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Declarations

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