A Topic-Modelling Analysis of Christianity in *The Life of Charlotte Brontë*[1]

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1. Introduction: Structure and Religion

This paper attempts a literary interpretation of the keywords in Elizabeth Gaskell's *The Life of Charlotte Brontë* revealed through computer-assisted analysis of the text which is in contrast to its conventional interpretations based on critics' subjective intuitions. This so-called "corpus stylistic" analysis pursues two aims—structural and religious.

The first aim is to unearth any structural designs within texts by means of statistically investigating them, since structure is one of the principal devices for the author construct, or "mental construct" which emerges through careful reading of a text,[2] to convey textual themes. The critical tradition has witnessed literary critiques being conducted principally in terms of critics' subjective concerns. Feminists, for instance, pick out patriarchal elements from a text to argue for "the patriarchal structure of society" and "the rediscovery, and republication, of a whole tradition of books by women 'silenced' by the traditional male canon" (Peck and Coyle 170-71). Psychoanalysts explore "the personal unconsciousness of the writer" in a text which is "a symptomatic reproduction of the author's infantile and forbidden wishes" (Peck and Coyle 186). Deconstructionists "track down within a text the aporia or internal contradiction that undermines its claims to coherent meaning" in order to "reveal how texts can be seen to deconstruct themselves" (Baldick 52). New Historicists focus on such internal and external factors of a text as "politics, ideology, power, authority and subversion" (Peck and Coyle 184) as they look at "literary works within their historical and political contexts" (Baldick 150). If interested in a specific topic like "colour," "comic spirit," "evil," the "medical system," or "nature" within a text, critics attempt to analyse it from such perspectives. In such critical methodologies, in short, priority in interpretation is placed on critics' concerns rather than those of the author. In contrast, this corpus-stylistics analysis attempts to identify some hidden structures within a text, or the author construct's concealed designs for it, through a statistical analysis of the keywords revealed by concordance as well as topic-modelling tools. These computer-assisted attempts at a literary interpretation of a text with the help of corpus-linguistic techniques provide a unique approach to literary interpretation, as they are performed on the basis of the data obtained through scientific means.

The second objective of this corpus-stylistic exploration into literary texts is to survey how the Christian doctrine "God's Plan of Salvation" is applied to the depictions of characters' lives. We human beings who lived with God as spirits in the pre-mortal world (Acts 17.29; Rom. 8.16) are born into earth after receiving physical bodies, and only through this may our souls attain the

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[2] The author construct, or the urauthor, "is not the historical producer of the text, but a mental construct resembling the historical producer as closely as possible in all relevant ways. [. . .] The urauthor is our vehicle for gaining access to the meaning, the intended communication, of the author himself" (Irwin 61-62). In other words, the author construct, an intentionalist her-meneuticists' term coined to distinguish a historical or living author from the functional author who constructed a text, denotes the author who emerges only through careful reading of the structures of a text.

necessary experiences to grow up in preparation for meeting God again; death which separates spirits from bodies is a step on the eternal journey that includes the Resurrection, when spirits will reunite with bodies (1 Cor. 15.13-14, 54; John 5.28-29, 14.19); we can return to our Heavenly Father only through Jesus Christ His son, whom He sent for us to overcome sin and death (John 3.16; Acts 4.10-12). [3]

Literature, sacred or secular, is thus seen a projection of the Christian doctrine. This view is endorsed by certain intellectuals. Nicholas Boyle, for instance, insists that "if we believe the teachings of the Catholic church to be true statements about human life, then we must necessarily expect literature that is true to life to reflect and corroborate them, whether or not it is written by Catholics" (139). The Cambridge professor continues in support of the view of all literature as a reflection of the Christian doctrine that "Even in the works and words that seem to hide God's face, or to spit on it, we can see God revealed at the heart of our world and in our culture" (Boyle 145). "Our literature," T. S. Eliot observes, "is a substitute for religion, and so is our religion" ("A Dialogue" 32). As to the religious function of literature, Evelyn Waugh confesses that his work is "the attempt to represent man more fully which . . . means only one thing, man in his relation to God" ("Evelyn Waugh"). In a summary of the religious aspect of the fiction of two Japanese Christian nov-elists—Ayako Miura (1922-99), a Protestant, and Shusaku Endo (1923-96), a Catholic— Haruo Katayama, a former professor of Hokkaido University of Education, writes that their literary uniqueness and descriptive methods are rooted in the Bible (39). For Miura herself, fiction-writing is an activity to convey God's love to the reader ("We Want to Meet"). Endo, invariably char-acterised as "the Graham Greene in Japan" (Bull, "A Literary Love Affair"), is described by the British Catholic novelist himself as "one of the century's greatest writers" (Myers, "Shusaku Endo") because of his constant "concern with sin and redemption" and "relentless curiosity about the sources of human goodness and evil" (Bull, "A Literary Love Affair"). These authors' views of literature as a projection of Christian truth provide the background to our research into Christianity in 19th-century British fiction.

Accordingly, this paper performs a corpus-stylistic analysis of *The Life of Charlotte Brontë* (hereafter abbreviated *LCB*) chiefly using the free topic-modelling software MALLET to identify certain hidden structural patterns of this biographical fiction, and to investigate the author construct's depiction of Christianity uncovered by topic-modelling exploration.

First, the basic concepts of corpus stylistics and topic models will be explained in **Section 2** to elucidate the purpose of employing these methods which lies in the attempt to make a literary interpretation of a text on the basis of scientific data obtained through computer-assisted means. After explaining the mechanism MALLETS uses to find topic models, **Section 3** focuses on the results of its application to *LCB*. Since MALLET innately produces slightly different results even with the same corpus, operations were carried out ten times and the top-ranking keywords of each

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[3] "Our hope and happiness lie in knowing who we are, where we came from, and where we can go. We are eternal beings, spirit children of an eternal God. Our lives can be compared to a three-act play: premortal life (before we came to earth), mortal life (our time here on earth), and postmortal life (where we go after we die). God has had a plan for our lives since the beginning of the first act—a plan that, if followed, provides comfort and guidance now, as well as salvation and eternal happiness in our postmortal life" ("Our Eternal Life").

operation were se-lected to make the best objective identification of topic-modelling keywords. The investigation found 19 in total, which reveal one of the running themes of the book—describing the lives of the Brontë family in their Haworth home. The validity of this finding shall be verified in two ways: first, through a quest for semantic information of the topics, and second, through an inspection of the frequencies of the names of the Brontë family members and geographical place names, using AntConc, a free concordance software. The results of a contextual categorisation of all 2,795 examples of the 11 most frequent topic-modelling keywords are illustrated in **Section 4**. The most noteworthy result of this computer-assisted analysis is that these 11 keywords are used in association with the Brontës' "literary career." The uniqueness of this discovery shall be verified by a survey of previous studies of this biographical fiction. Additional scrutiny of the data above shall be made in this section to investigate the general tendency of the usage of the keywords bearing the Christian connotation "Religion/Morals," which compose the second-largest category. After the quantitative analysis reported in **Section 3** and the qualitative interpretation of the results in **Section 4**, **Section 5** will close this paper with a summary of the arguments above, focusing especially on the Gaskell construct's unique depiction of Christianity.

2. Topic Models

Corpus stylistics "is concerned with the application of corpus methods to the analysis of literary texts by relating linguistic description with literary appreciation" (Mahlberg, *Dickens's Fiction* 5; see also Mahlberg "Digital Forum" 295). The purport of this computer-assisted method is succinctly summarised in the statement of David I. Holmes, a statistician who "applies the techniques of stylometry—the statistical analysis of literary style—to uncover the authorship of anonymous works of literature" (Holmes, "Using Math"), that the "statistical analysis of a literary text can be justified by the need to apply an objective methodology to works that for a long time have received only impressionistic and subjective treatment" ("Vocabulary Richness" 18).

A topic is defined as a mathematically identified collection of words from which the author is presumed to have selected when composing his/her text:

Topic modeling programs do not know anything about the meaning of the words in a text.
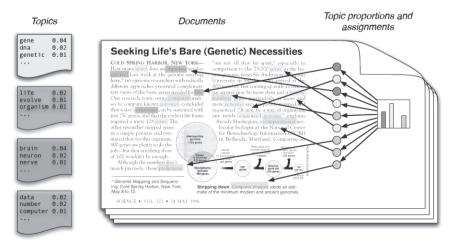

Fig. 1. Blei's Image of Topic Model ("Probabilistic" 78)

Instead, they assume that any piece of text is composed (by an author) by selecting words from possible baskets of words where each basket corresponds to a topic. If that is true, then it becomes possible to mathematically decompose a text into the probable baskets from whence the words first came. The tool goes through this process over and over again until it settles on the most likely distribution of words into baskets, which we call topics. (Graham, Weingart, and Milligan "Getting Started")

According to David M. Blei, topic modelling was initially conceived by computer scientists to find "large archives of documents with thematic information" from the enormous amount of online data: "Topic models are algorithms for discovering the main themes that pervade a large and otherwise unstructured collection of documents" ("Probabilistic" 77). "Topic modeling algorithms are statistical methods that analyze the words of the original texts to discover the themes that run through them, how those themes are connected to each other, and how they change over time" ("Probabilistic" 77-78).

Topic modelling assumes that any document is made up of topics and words (see Fig. 1). For instance, let us imagine we are writing a biography of a novelist. We first determine the topics our biography contains. It probably encompasses such topics as geography, the author's era, family, education, religion, and main works. We draw heavily from some topics and lightly from others. Weights are then assigned to each topic: 20% of the document will be about the novelist's family, 30% about his religion, and 10% about his/her works. Now we extract words from the topics and start to write. The "religion" topic might contain a few irrelevant words like "banana" and "football," which are mixed into the bag mostly by accident. The topic, however, should include 200 appearances of the word "god," 150 of "christianity," and 100 of "church," for instance. We reach into the "religion" bag for 30% of the words and put them in the document. In depicting family matters, we pick out such words as "home," "father," and "mother" from the "family" topic bag, and place them on a page. The process is repeated until the document is complete. Thus, the biography ends up as a document containing the prescribed percentage of each topic.[4] "Topic models," in short, "provide a simple way to analyze large volumes of unlabeled text. A 'topic' consists of a cluster of words that frequently occur together. Using contextual clues, topic models can connect words with similar meanings and distinguish between uses of words with multiple meanings" ("Topic Modeling," *Mallet*).

Topic modelling software reverses this procedure and surmises the topics which generated the document. By examining the words used in the biography, it is able to find the particular collections of words and infer "the distribution over topics that best describes its particular collection of words" (Blei, "Probabilistic" 78). The statistical processing of the frequencies of words is based on the idea that "the more often words are used together within a document, the more related they are to one another" (Weingart, "Topic Modeling").

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[4] This summary of the basic idea of Latent Dirichlet Allocation, the simplest topic model, owes much to Weingart's explanation in "Topic Modeling and Network Analysis," Blei's in "Probabilistic" (78-79), and Steyvers & Griffiths' "To make a new document, one chooses a distribution over topics. Then, for each word in that document, one chooses a topic at random according to this distribution, and draws a word from that topic. Standard statistical techniques can be used to invert this process, inferring the set of topics that were responsible for generating a collection of documents" ("Probabilistic Topic Models" 2).

3. Top 19 Keywords

3.1. Topic Modelling Analysis

MALLET, a topic-modelling toolkit "takes a single text (or corpus) and looks for patterns in the use of words; it is an attempt to inject semantic meaning into vocabulary," and is designed to find the keywords, or "the words that help define a statistically significant topic," in a text (Graham et al., "Getting Started").

The software produces two files "keys" and "composition" in extracting topics from the target corpus (Sample excerpts are shown in Tables 1 and 2). The "Key" file contains Topic Number (0-19), the percentage of topic distribution over the corpus, and the 19 words constituting the topics. The "Composition" file includes Document ID, document name, and twenty pairs of topic numbers and their proportion over the document arranged in accordance with their weights.

Topic NO.	%	WORDS
0	0.11669	bessy tom ll mary mother mrs nathan ve benjamin uncle jem money aunt jenny doctor thou hester home jenkins
1	0.04467	theresa victorine duke amante de bessy castle la madame mark lady tourelle husband room monsieur knew madam french miller
2	0.0835	miss mrs norah hall morton mr dawson openshaw lady dorothy alice squire phillis ethelinda great furnivall house sir lord

Table 1. A Sample of "Keys" Generated by MALLET (Extract)

#doc name topic proportion		1st PROPORTION		2nd PROPORTION		3rd PROPORTION	
ID	DOCUMENT	No.	%	No.	%	No.	%
0	1837_p_Sketches among the Poor No. 1	9	0.358313317	15	0.324639385	3	0.084468311
1	1840_s_Clopton House	4	0.252949344	9	0.178601362	12	0.162466534
2	1847_s_Libbie Marsh's Three Eras	9	0.274744527	3	0.226067698	19	0.172586762
3	1847_s_The Sexton's Hero	9	0.345599681	15	0.200157105	3	0.1817385
4	1848_s_Christmas Storms and Sunshine	0	0.320660108	3	0.240807209	9	0.208228707
5	1849_s_Hand and Heart	3	0.362632011	0	0.28398175	9	0.272300202

Table 2. A Sample of "Composition Table" Generated by MALLET (Extract)

Although MALLET is helpful for the scientific discovery of topics within a corpus, the topic modelling tool nonetheless "includes an element of randomness," and "the keyword lists will look different every time the program is run, even if on the same set of data" (Graham, et al., "Getting Started"). [5] In order to make the best objective identification of the keywords which appear most frequently in the *LCB* topics, therefore, it would be more appropriate to use the averaged data of several runs, rather than the data generated by only one run, or operation. Accordingly, ten topic-modelling operations were run on MALLET, labelled Operations A-J. The top five topics of each operation, or the top 50 out of 200 topics (20 topics multiplied by 10 operations), determined on the basis of their weight points, are given in Table 3.

Furthermore, in order to find the keywords appearing most frequently in these top five topics

and the topic which contains the largest number of the most frequent keywords, the total 701 types of words incorporated into the 50 topics in Table 3 were first arranged in accordance with their frequency of appearance, then all topics by order of their weights. The results are shown in Table 4. It was discovered that the top-ranked keywords in the 50 topics are the following 19: "home," "miss," "mr," "brontë," "charlotte," "letter," "day," "great," "made," "good," "haworth," "long," "de," "emily," "character," "time," "life," "thought," and "house." They are incorporated into six topics—B2, F5, H13, J2, G4, and I19—among which the topic with the heaviest weight is B2. This outcome implies that the life of the Brontë family—especially of Charlotte and Emily—in their Haworth home is the most dominant subject of this work. This seemingly trite discovery is endorsed also by the computer-assisted investigation into characters' frequency of appearance and into geographical place names discussed in **Section 3.2.**

In seeking semantic information on the topics, this paper focuses only on the top two topics (out of 20) of each of ten MALLET operations, because the probabilities of their distributions occupy more than 70% of each document in the *LCB* text on average (see Table 5). In Operation B, for instance, where the sum of the probabilities of the top two topics is closest to the average of the total 20 topics, Topic B2, containing "time," "brontë," "mr," "miss," "life," "charlotte," "great," "letter," "day," "made," "good," "long," "home," "haworth," "de," "thought," "house," "emily," and "character" as its components (see Table 3), seems to denote "the life of Charlotte and Emily Brontë in their Haworth home." This result is nearly identical to the conclusion drawn from the above study of the top 19 topic-modelling keywords. Topic B14, on the other hand, having "earnestly," "red," "repeated," "falling," "shows," "valley," "establishment," "fox," "murmur," "accordance," "sincerity," "managed," "subdued," "expensive," "directed," "engage," "explain," "seat," and "observed," as its components, looks like a mixture of words of irrelevant meaning, probably because of the low probability of the topic distribution (2.513%; see Table 5). In Operation D, taken as another instance since its top pair of topics shows the least probability difference between them (see Table 5), Topic D5 ("time," "mr," "life," "letter," "made," "long," "haworth," "de," "charlotte," "thought," "house," "day," "character," "work," "kind," "read," "good," "years," and "mind") appears to indicate "Charlotte's life in Haworth." The semantic information of Topic D4 ("brontë," "miss," "great," "home," "emily,"

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[5] "In answer to the question why different locally optimal solutions could be generated in different runs, Neal Audenaert of Texas A&M University states "The short version is that topic modeling algorithms create estimates of an underlying statistical model of how documents are formed and related (the Bayesian posterior). The models that they estimate involve too many permutations to compute the exact answer." After quoting Blei as saying "That number of possible topic structures, however, is exponentially large; this sum is intractable to compute. As for many modern probabilistic models of interest—and for much of modern Bayesian statistics—we cannot compute the posterior because of the denominator, which is known as the evidence. A central research goal of modern probabilistic modeling is to develop efficient methods for approximating it. Topic modeling algorithms . . . are often adaptations of general-purpose methods for approximating the posterior distribution" ("Probabilistic" 81), he continues, "These approximations are usually very good, but they typically depend on some degree of randomization. This randomization is different for each computation. Consequently, the final results might converge to different models when run different times. In my (rather limited) experience, the differences across multiple runs are usually minor. If they are not, that might be a good sign that the resulting topic models are of low quality. By low quality, I mean they don't accurately capture what you and I would understand as the relevant topics covered within a collection of documents. So this is not a bug, but a consequence of the mathematical techniques being used."

OPERATION	RANK	TOPIC NO.	WEIGHT	WORDS
A	1	A0	96.43128	miss mr brontë charlotte letter day great made good home haworth long de emily character place mind friend days
	2	A8	86.72444	time life thought house kind work people la feel till letters left family half knew heard year church things
	3	A7	6.21093	derived grieve exchange sank start composure stay mun fine lines carlisle rachel appreciation roughly europe bodily brown indignant portrait
	4	A11	5.20549	soft cherished success combined row person oppressive pensionnat thousands mrs difficulties remote modern palladium refusal sovereign beings ame clinging
	5	A18	5.016	continues search thin sixteen beatrix periodicals delay afraid entertained double beginning main hungry ceased anticipate exhibition austen windy opium
B	1	B2	144.95209	time brontë mr miss life charlotte great letter day made good long home haworth de thought house emily character
	2	B14	20.25317	earnestly red repeated falling shows valley establishment fox murmur accordance sincerity managed subdued expensive directed engage explain seat observed
	3	B16	5.51625	cares finds qualified presses opera guides eloquence advertisements attraction par notions mademoiselle avec analyse sensitive seeking accomplishment disliked oldest
	4	B17	5.06693	absolutely tabby accounts eyre management attended september recollections beck emanuel cheering reception objections needed occurrence indulgence draught wool iii
	5	B3	4.98556	stock phrase ranthorpe discriminating multitude particulars visitor summoned rejected beset speed demands eu enjoying shattered moaning remorse wretch humbug
C	1	C7	73.28014	time letter day home de thought emily character friend read years people papa kind father anne part school place
	2	C18	67.84774	brontë mr miss life great made good house long haworth mind feel make written morning nature dear pleasure things
	3	C0	61.9926	charlotte sisters write till present il knew visit letters small leave told return power heard half smith end les
	4	C13	5.53898	donne red submit couple usual sight lodgings vigour selfish burning studying simpler pace range subsequently impending material earned intimating
	5	C2	4.99396	opera advisable voit suited stern ideal clothing hint despair ye host conjecturing worded forwarded restlessness highest unseen byron hurried
D	1	D5	94.62619	time mr life letter made long haworth de charlotte thought house day character work kind read good years mind
	2	D4	80.92609	brontë miss great home emily place friend people days father part london give visit book papa written family half
	3	D15	6.24683	ms nieces crime brother rising aspect wrung variance cross pronounce arrange anguish contrast deny distress yearned frere christians conflict
	4	D18	5.8986	refusal chambers renewed destitute avail unjust leaf privilege iv top colour bloom germ au rallied compare recreation restored shed
	5	D8	5.01826	stronger measure fortitude striven tenor eyes ball remote ame midsummer decision mist music concerns assembled wealthy coach eighty professional
E	1	E5	100.99754	time mr miss life charlotte letter great day made good long home de thought house emily place kind read
	2	E8	80.52137	brontë character years give feel write till haworth left hope sister subject morning things heard pleasure church dear eyre
	3	E12	5.74882	cut affairs particulars quick exquisitely declare indulged quote accounts merit cambridge illness human pressed reconciled outset devoir appealed noticed
	4	E10	5.16421	ma moments confess remarked daring grateful etait concerned armed burning looked advised foreign states table visitor valley reviving derby
	5	E3	5.02936	treatment emanuel ont qualified absent occasions absolute stimulants mute host tenaciously faut decoration mansion obscurity destiny fluently gaiety thousands

F	1	F5	134.61796	time brontë mr miss life charlotte great letter day made long home haworth good de thought house emily character
	2	F8	40.45522	loved form wished occupied derived likewise subjects invitation wishes holidays afternoon childhood action impressions leur genuine strongly characteristic hold
	3	F17	5.704	serene experienced couple misery perfection sadly unwilling oppressive glass potent evils undoubtedly gardens belgian believing detail replies entire storm
	4	F7	5.24369	failing quickly scarborough stayed stage clerical balzac earning verses alas usual apparent diet noiseless brain ardent gate force motherless
	5	F6	4.96534	closed straight consisting record estrangement amiable impress headache competition lettres excited university indomitable situated deem dropping comprehend libraries transmit
G	1	G4	121.58541	time brontë mr miss life charlotte great letter day made good long home haworth de thought house emily character
	2	G16	53.84984	real des hours returned women stood lines anxiety door grey man girl houses happiness martha gentlemen bring bear offered
	3	G19	5.19055	hair yah personal cared authoress depart peculiarly solitary edge suspect mistake colonel detail render forcibly reside pointing lover touch
	4	G15	5.03375	easily relish deeply aux kindest social acting serene strung honourable publishers vigour varied ailment spite dependence pressing merciful prospects
	5	G17	4.97519	profound allusion damp witness displayed disgrace wear comprehend praised temperament proceed conceal earthly principle wrath enclosure proposed strength dead
H	1	H13	130.20532	time brontë mr miss life charlotte day letter great made good long home haworth de thought house emily character
	2	H19	44.89891	low elder month strength wished terrible august white black send forget dreary faithful headache nights progress habits leeds borne
	3	H1	5.21954	highest towns describing france couple companion employed chat spirited arrange undertake calculate holiday harm bought portion roots acted belief
	4	H8	5.0661	crushed ni sont search showing control fewer ensued situations vue revive maid free relish induced discussions robert sate eyre
	5	H6	5.0532	laugh acquired connection beheld resignation spread harassing vigne guild criticism varied experienced combined rate composure waiting cruelty modesty belief
I	1	I19	114.48732	time brontë mr miss life charlotte great letter day made good long haworth de house thought home emily character
	2	I10	61.6454	feel told find bell death glad called love case men home household future reason sort sense stone call close
	3	I11	5.96642	inscription dreams slightly conclusion doubtful brilliant recreation procured se breaking fragment severe proof handsome talk riding square horizon authoress
	4	I0	5.11835	increasing combined brave reliant cet yard romantic sedentary sinking obstinate continued realised informant ll simplicity review sleeplessness beaucoup appreciation
	5	I4	4.929	yielded fixed situated cela perceptions enable heard mounted advisable impunity appreciation arbaletriers yesterday advertising ability inconvenienced forces wasted parle
J	1	J2	124.86325	time brontë mr miss life charlotte great letter day made good home long haworth de thought house emily character
	2	J12	49.57873	year power spirits glad reason began future anxious hard kindness situation grey forget considered road frequently cowan gentlemen view
	3	J9	5.73283	holy inspiration david discussion toute thinks certainty attacks appointed names revived observed ultimate instant grounds blow whereof humbug moved
	4	J0	4.9177	satisfied line features principles affectionately wasted appeal absent displayed occasioned hearty charnock materials william fail mistress figures mind scotland
	5	J14	4.9171	sign wednesday dreams bronchitis assist tyranny entertained altered mills ill volume remind quotation affair walls sold conversation hours penzance

Table 3. Top Five Topics in Each of Ten MALLET Operations A-J for *LCB*

"place," "friend," "people," "days," "father," "part," "london," "give," "visit," "book," "papa," "written," "family," and "half") could be "the Brontë family at home and their London visit." Thus, both topics in Operation D indicate the centrality of the Brontë family—again, a result similar to the conclusion we arrived at after examining the top 19 topic-modelling keywords.

WEIGHT RANK		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	WORD FREQUENCY
INTERNAL RANK		B-1	F-1	H-1	J-1	G-1	I-1	E-1	A-1	D-1	A-2	D-2	E-2	C-1	C-2	C-3	I-2	
TOPIC ID		B2	F5	H13	J2	G4	I19	E5	A0	D5	A8	D4	E8	C7	C18	C0	I10	
RANK	WEIGHT	144.9521	134.618	130.2053	124.8633	121.5854	114.4873	100.9975	96.43128	94.62619	86.72444	80.92609	80.52137	73.28014	67.84774	61.9926	61.6454	
1	home	1	1	1	1	1	1	1	1	0	0	1	0	1	0	0	1	11
2	miss	1	1	1	1	1	1	1	1	0	0	1	0	0	1	0	0	10
2	mr	1	1	1	1	1	1	1	1	1	0	0	0	0	1	0	0	10
2	brontë	1	1	1	1	1	1	0	1	0	0	1	1	0	1	0	0	10
2	charlotte	1	1	1	1	1	1	1	1	1	0	0	0	0	0	1	0	10
2	letter	1	1	1	1	1	1	1	1	1	0	0	0	1	0	0	0	10
2	day	1	1	1	1	1	1	1	1	1	0	0	0	1	0	0	0	10
2	great	1	1	1	1	1	1	1	1	0	0	1	0	0	1	0	0	10
2	made	1	1	1	1	1	1	1	1	1	0	0	0	0	1	0	0	10
2	good	1	1	1	1	1	1	1	1	1	0	0	0	0	1	0	0	10
2	haworth	1	1	1	1	1	1	1	1	1	0	0	1	0	1	0	0	10
2	long	1	1	1	1	1	1	1	1	1	0	0	0	0	1	0	0	10
2	de	1	1	1	1	1	1	1	1	1	0	0	0	1	0	0	0	10
2	emily	1	1	1	1	1	1	1	1	0	0	1	0	1	0	0	0	10
2	character	1	1	1	1	1	1	1	1	1	0	0	1	1	0	0	0	10
2	time	1	1	1	1	1	1	1	0	1	1	0	0	1	0	0	0	10
2	life	1	1	1	1	1	1	1	0	1	1	0	0	0	1	0	0	10
2	thought	1	1	1	1	1	1	1	0	1	1	0	0	1	0	0	0	10
2	house	1	1	1	1	1	1	1	0	1	1	0	0	0	1	0	0	10
20	place	0	0	0	0	0	0	1	1	0	0	1	0	1	0	0	0	4
20	mind	0	0	0	0	0	0	0	1	1	0	0	0	0	1	0	0	4
20	kind	0	0	0	0	0	0	1	0	1	1	0	0	1	0	0	0	4
20	feel	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	4
20	heard	0	0	0	0	0	0	0	0	0	1	0	1	0	0	1	0	4
OCCURRENCE		19	19	19	19	19	19	18	17	16	7	6	5	10	12	2	2	

Table 4. Topics of Heavy Weight and Their High Frequency Keywords in *LCB*

RANK	TOPIC NO.	PROBABILITY	OPERATION	PROBABILITY
A1	A0	0.435381	A	0.743578
A2	A8	0.308197		
B1	B2	0.701216	B	0.726346
B2	B14	0.02513		
C1	C7	0.306592	C	0.570859
C2	C18	0.264267		
D1	D5	0.407621	D	0.742953
D2	D4	0.335331		
E1	E5	0.465086	E	0.744984
E2	E8	0.279898		
F1	F5	0.658872	F	0.739604
F2	F8	0.080732		
G1	G4	0.617977	G	0.740872
G2	G16	0.122895		
H1	H13	0.644956	H	0.74577
H2	H19	0.100814		
I1	I19	0.559131	I	0.744281
I2	I10	0.185149		
J1	J2	0.627922	J	0.74395
J2	J12	0.116028		
			AVERAGE	0.72432

Table 5. Probability of Distribution of Top 2 Topics of Each of 10 MALLET Operations for *LCB*

3.2. AntConc Analysis

In order to examine the validity of this outcome, an inquiry was additionally made into the frequency of appearance of the names of the Brontë family members and of the geographical places in *LCB* by using the free concordance software AntConc 3.4.1w. Data concerning characters' names and geographical proper nouns has been taken from the Word List tag of AntConc, where the total 12,608 word types are arranged in the order of their frequency of occurrence. The result of the former is shown in Table 6 and Fig. 1, the latter in Table 7 and Fig. 2.

BRONTË FAMILY MEMBERS	WORD TYPES	FREQ	TOTAL FREQ
Patrick Brontë	Reverend Monsieur Brontë	1	102
	Mr. Brontë	99	
	Rev. Patrick Brontë	1	
	Rev. P. Brontë	4	
Mrs Brontë	Mrs Brontë	14	21
	Maria Brontë	1	
	Maria Branwell	2	
	Maria	1	
	Miss Branwell	3	
Elizabeth Branwell	Miss Branwell	16	16
Maria	Maria, eldest daughter	21	27
	Maria Brontë	6	
Elizabeth	Elizabeth, 2nd eldest daughter	11	11

Charlotte	Charlotte	247	539
	Charlotte Brontë	34	
	C. Brontë	19	
	Miss Brontë	170	
	Miss Branwell [sic Miss Brontë]	1	
	C. B. Nichols	2	
	Mrs Nicholls	1	
	Currer Bell	46	
	Currer	5	
	C. Bell	11	
	C. E. A. Bell	3	
Branwell	Branwell	66	7
	Patrick Branwell	5	
Emily	Emily	160	182
	Emily Brontë	2	
	Emily Jane Brontë	1	
	Ellis Bell	5	
	Ellis	11	
	E. Bell	3	
Anne	Anne	111	129
	Anne Brontë	9	
	Acton Bell	6	
	A. Bell	3	
A. B. Nicholls	Arthur Bell Nicholls	1	23
	Mr Nicholls	22	
Tabby	Tabby [servant]	65	65
TOTAL		1186	1186

Table 6. Frequency of Appearance of the Brontë Family Names in *LCB*

Among several structural features unearthed by this AntConc analysis, particularly noteworthy are the following two. (a) First, the character's name which appears most often is Charlotte (539 times), followed by Emily (182 times), Anne (129 times), and Patrick Brontë (102 times). (b) Second, "Brontë," one of the 19 keywords of heaviest weight in the topic-modelling analysis, is used especially for Charlotte (Miss Brontë 170 times, Charlotte Brontë 34, C. Brontë 19), Patrick (Mr Brontë 96 times, Rev P. Brontë 4, Rev Patrick Brontë 1, Reverend Monsieur Brontë 1), Maria (Mrs Brontë 14 times, Maria Brontë 1), Anne (Anne Brontë 9 times), and Emily (Emily Brontë 2 times, Emily Jane Brontë 1). Charlotte Brontë's centrality in Gaskell's narrative may be too obvious, as it is her biography; so might be the focus on her family members for the same reason. It is an intriguing discovery, however, that "emily" exhibits the second highest occurrence rate, "anne" the third, their father the fourth, "branwell" the fifth, and "tabby" the sixth.

A comparison of the results of the MALLET and AntConc analyses demonstrates the validity of the topic-modelling data in three ways. (a) First, Charlotte's centrality revealed by the MALLET analysis is confirmed by the AntConc keyword analysis, by which her highest frequency in appearance was uncovered. (b) Second, the significance of "emily," one of the top 19 most heavily-weighted keywords in the topic-modelling investigation, is corroborated by AntConc text mining, in which it shows the second most-frequent occurrence among the Brontë family's names. (c) Third, the frequencies of occurrence of the words "anne" and "branwell" are lower than that of

ID	AntConc RANK	WORD	FREQ	ID	AntConc RANK	WORD	FREQ
1	106	Haworth	210	18	1910	Lancashire	9
2	189	London	111	19	1961	Scarborough	9
3	339	Brussels	61	20	2015	Cambridge	8
4	411	Yorkshire	50	21	2081	Halifax	8
5	557	Keighley	36	22	2083	Heckmondwike	8
6	664	Leeds	30	23	2299	Filey	7
7	675	England	29	24	2337	Ireland	7
8	748	Bradford	25	25	2485	Ambleside	6
9	778	Cowan	24	26	2716	Oakwell	6
10	1139	Cornhill	16	27	2916	Belgium	5
11	1236	Manchester	15	28	2928	Bruxelles	5
12	1299	Edinburgh	14	29	2935	Casterton	5
13	1384	Europe	13	30	3098	Huddersfield	5
14	1586	Dewsbury	11	31	3144	Liverpool	5
15	1632	Penzance	11	32	3367	Westmoreland	5
16	1808	Scotland	10	33		others	105
17	1902	Hartshead	9			TOTAL	878

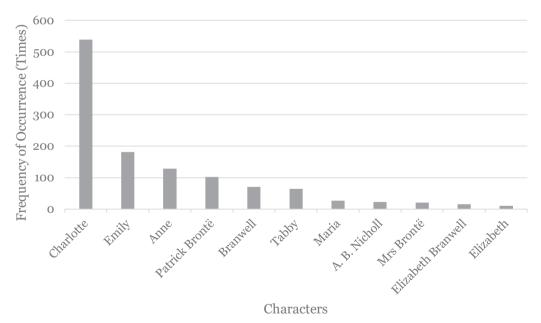**Table 7. Frequency of Occurrence of Geographical Place Names in *LCB***

Fig. 1. Frequency of the Names of the Brontë Family Members in *LCB*

"emily" in both the AntConc and the MALLET's examinations.

A survey of *LCB*'s Word List provided by AntConc reveals that, out of the total 878 proper nouns of geographical places, "haworth" appears most often, or 210 times (23.9%), followed by "london" 111 times (12.6%), "brussels" 61 times (7.0%), and "yorkshire" 50 times (5.7%) (see Table 7 and Fig. 2). Thus, the topic-modelling outcome concerning the leading role of Haworth is likewise confirmed by the AntConc analysis.
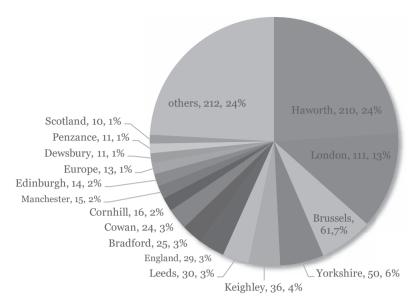
Fig. 2. The Frequency of Occurrence of Geographical Place Names in *LCB*

3.3. Unique Discoveries

The MALLET and AntConc analyses of the *LCB* text shed light on the dominant structure depicting Charlotte Brontë with Haworth as the background of her life. This discovery, however humble it might seem, is significant for the following three reasons: first, scientific (or objective) confirmation of the central figure and stage is established; second, the outcome of the statistical investigation accords with traditional (or subjective) criticism of the text (for instance, Chadwick 252; Easson, *EG* 132; Easson, introd., *LCB* ix; Pollard 152-53; Yamawaki 227; see **Section 4.2** for details); and last but not least, the results of the computer-assisted methods exactly match Gaskell's confession of her intention in writing this biographical fiction (Chapple and Pollard, *The Letters of Mrs Gaskell* [6] 348, 349, 361, 369, and 396; *LCB* 15, 440; see **Section 4.2** for details). This third reason might provide evidence to counter the harsh attack of anti-intentionalist critics concerning the assertion of intentionalist hermeneuticists' that the author construct's meaning may be identified through careful investigation into the formal design of a text. The significance of this discovery might not lie in the discovery itself, as it is commonplace, but instead in this agreement between formal design and authorial meaning, because it suggests that the computer can precisely trace the author construct's writing scheme.

4. Results of Contextual Categorisation

4.1. Overview

The results of a contextual categorisation of the total 2,795 examples of the top 11 topic-modelling keywords shall be discussed in this section. The aim is to detect the Gaskell construct's hidden or open references to Christian elements from the mathematically obtained, relatively objective data.

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[6] This source shall be abbreviated as *Letters* hereafter.

The procedure for selecting the top 11 topic-modelling keywords is as follows. Our current corpus is the collection of the topics with the top five heaviest weights selected from the 20 topics generated by each of the ten MALLET operations performed (that is, 5 topics × 10 operations = 50 topics in total). It thus contains 950 tokens, as each topic consists of 19 words (i.e., 19 words × 50 topics), and 564 word types. Since the research purpose is to detect the Gaskell construct's references to Christianity from the mathematically obtained data, all 564 word types were first inspected one by one according to their occurrence in the King James version of the Holy Bible, in order to select only those words in the list having biblical connotations.

ID	KEYWORD	NO. OF EXAMPLES
1	home	214
2	time	495
3	life	311
4	great	249
5	letter	247
6	day	246
7	made	224
8	good	217
9	long	214
10	thought	192
11	house	186
TOTAL (Times)		2,795

Table 8. Top 11 Topic-Modelling Keywords and Their Numbers of Examples

This inspection finds that 349 of the 564 words appear in the scriptures. They are then arranged in descending order of frequency in the table of the 50 most heavily weighted topics. The keywords thus found, accordingly, are also the top-ranked topic-modelling keywords appearing in the Holy Scriptures as well. Table 9 displays the results of this inspection, along with each keyword's frequency of occurrence in *LCB* and the Bible. The eight words—"miss," "mr," "brontë," "charlotte," "haworth," "de," "emily," and "character"—that do not appear in the Holy Scriptures are excluded from the list of target keywords, since an exploration of the Gaskell construct's description of Christian truth is one of the primary objects of this research.

ID	Frequency of Appearance in Top 50 Topics	Total Rank	Topic No.	Internal Rank	Keywords	Frequency of Occurrence in *LCB*	Frequency of Occurrence in the Bible
1	11	10	A0	10	home	214	51
2	10	5	A0	5	letter	247	37
3	10	6	A0	6	day	246	1743
4	10	7	A0	7	great	251	962
5	10	8	A0	8	made	224	1405
6	10	9	A0	9	good	217	720
7	10	12	A0	12	long	214	212
8	10	20	A8	1	time	495	623
9	10	21	A8	2	life	311	450
10	10	22	A8	3	thought	192	81
11	10	23	A8	4	house	186	2024
12	4	16	A0	16	place	159	716
13	4	17	A0	17	mind	141	95
14	4	24	A8	5	kind	149	45
15	4	28	A8	9	feel	112	7
16	4	35	A8	16	heard	91	641
17	3	18	A0	18	friend	143	53
18	3	26	A8	7	people	145	2143
19	3	29	A8	10	till	108	169
20	3	33	A8	14	half	91	136

21	3	38	A8	19	things	86	1162
22	3	200	C7	10	read	144	70
23	3	201	C7	11	years	137	539
24	3	251	C13	4	couple	6	10

Table 9. Top-Ranked Topic-Modelling Keywords Appearing in the Bible in *LCB*

All examples of the top 11 keywords generated by MALLET are grouped into categories according to the connotations they bear in contexts and/or according to the contexts themselves. For instance, the following citation which includes the keyword "home" can be classified into the "unhappiness" group, as it focuses on Charlotte's disorder, distress, and anxiety.

> There were causes for distress and anxiety in the news from **home**, particularly as regarded Branwell. (*LCB* 207) [7]

For the next example, taken from a quotation including "time" as its node, the connotation/context group of "literary career" should be the most suitable as it depicts the initial period of the establishment of Charlotte's literary career.

> Messrs. Smith and Elder again forwarded a copy of "Jane Eyre" to the Editor, with a request for a notice. This **time** the work was accepted. (*LCB* 259)

The third instance, an extract from 311 examples with the keyword "life" as their node, contains the narratorial remarks on Charlotte's trust in God, so is grouped into the "religion/moral" category:

> If her trust in God had been less strong, she would have given way to unbounded anxiety, at many a period of her **life**. As it was, we shall see, she made a great and successful effort to leave "her times in His hands." (*LCB* 94)

ID	CONNOTATION/CONTEXT	FREQ	ID	CONNOTATION/CONTEXT	FREQ	ID	CONNOTATION/CONTEXT	FREQ
1	literary career	386	19	domestic life	43	37	family	5
2	religion/morals	271	20	letter writing	39	38	feminism	5
3	unhappiness	217	21	nature	39	39	Penzance	3
4	health	207	22	London	38	40	imagination	2
5	personality	174	23	school plan	33	41	Mama's letters	2
6	friendship	150	24	building	31	42	mesmerism	2
7	Yorkshire	133	25	career	30	43	freedom	1
8	education	122	26	narratorial comment	28	TOTAL (Times)		2,795
9	book reading	93	27	affection	25			
10	visiting	87	28	evils	23			
11	death	80	29	human beings	23			
12	marriage	71	30	politics	19			
13	happiness	69	31	social problems	19			
14	duty	65	32	biography	11			
15	literature	65	33	clothing	11			
16	Brussels life	55	34	food	9			
17	governess	49	35	greeting	8			
18	talent	44	36	money	8			

Table 10. Summary of the Categorisation of the 2,795 Examples of the 11 Topic-Modelling Keywords

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[7] Keywords in the quotations from *LCB* are emphasized by bold letters hereafter.
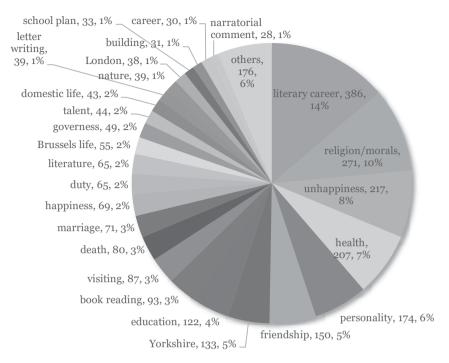
Fig. 3. Categorisation of the 2,795 Examples of the 11 Topic-Modelling Keywords

This process was repeated for the 2,795 examples of all 11 topic-modelling keywords. The results are summarised in Table 10 and visualised in the pie chart in Fig. 3. We must admit here that the classification process might not necessarily have been carried out with full objectivity, as determining the most appropriate category of connotation/context requires subjective judgement, and this selection is sometimes exacting and tough. For example, in the following quotation with "life" as its node, which has been classified into the category of "unhappiness" connotation/context, the first three sentences depict Charlotte's depressive frustration, but the last sentence her positive attitude towards her life.

> Meantime, **life** wears away. I shall soon be thirty; and I have done nothing yet. Sometimes I get melancholy at the prospect before and behind me. Yet it is wrong and foolish to repine. (*LCB* 220)

A similar context is created in the next citation, which begins with Charlotte's negative feelings towards life, but ends with her self-confirmation of her positive decision.

> Leave home!—I shall neither be able to find place nor employment, perhaps, too, I shall be quite past the prime of **life**, my faculties will be rusted, and my few acquirements in a great measure forgotten. These ideas sting me keenly sometimes; but, whenever I consult my conscience, it affirms that I am doing right in staying at home. (*LCB* 248)

The decision was made according to the implication of the sentences nearer to the node, but we cannot but admit that this is tinted with subjectivity.

Another example of a similarly complicated situation is found in the quotation depicting Charlotte's kind concern about her father's health with the word "letter" as its node:

> It may easily be conceived that two people living together as Mr. Brontë and his daughter did, almost entirely dependent on each other for society, and loving each other deeply (although

not demonstratively)—that these two last members of a family would have their moments of keen anxiety respecting <u>each other</u>'s health. There is not one **letter** of hers which I have read, that does not contain some mention of her father's state in this respect. Either she thanks God with simple earnestness that he is well, or some infirmities of age beset him, and she mentions the fact, and then winces away from it, as from a sore that will not bear to be touched. (*LCB* 350-51; emphasis added)

Which group of connotation/context should this example be placed into? Would "health" be most suitable, as Charlotte and her father have "keen anxiety respecting each other's health"? Or would "(filial) duty" be most appropriate, as the letter contains her "mention of her father's state"? Or how about "affection," since her letter is the manifestation of their "loving each other deeply"? The "religion/morals" group is a fourth option, as is implied by the passage that "she thanks God with simple earnestness that he is well." The "letter" in the citation above appears to encompass any of these connotations. Our decision was made in favour of the "affection" group, because Charlotte's concern about her father's health is the central topic of the sentence which contains the node, and also because the phrase "each other" appears as many as three times in this citation.

Such being the case, the collected data simply shows the probability or general tendency of the author construct's choice of words. Even this, however, implies some intriguing results which would be hard to discover through a conventional reading of the text.

The most noteworthy result of this computer-assisted analysis would be that the topic-modelling keywords that most frequently appear are used in association with the Brontës' literary career (14%). The second top category is "religion/morals" (10%), followed by the third "unhappiness" (8%), the fourth "health" (7%), and the fifth "personality" (6%).

The earliest reference to the Brontë sisters' "literary career" is their father's discovery of their talent "to invent and act little plays of their own" (*LCB* 47). In their infancy, Rev. Brontë's gift of "wooden soldiers" to Branwell (*LCB* 70) stimulated their imagination to create the Gondal/Anglia chronicles, and their devotion to the imaginary world continued even as late as their late 20s (Pykett 73). The narrator inserts young Charlotte's letter to the fictional editor of her magazine to emphasise "her powers of creation" (*LCB* 71). Their nightly walks in the parsonage room is "the time for discussing together the plots of their novels" (*LCB* 117). The following is a narratorial summary of the young Brontës' pursuit of a literary career: "They had tried their hands at story-writing, in their miniature magazine, long ago; they all of them 'made out' perpetually. They had likewise attempted to write poetry" (*LCB* 117). Charlotte's letter to Poet Laureate Robert Southey asking his opinion of her poems and Branwell's to William Wordsworth for a similar request (*LCB* 118) are also examples showing their literary ambition. When Charlotte was 30 years old, a collection of the sisters' poems was published.[8] Notwithstanding "the ill-success of their poems—the three sisters were trying that other literary venture [i.e. publication of prose works]" (*LCB* 244). In 1847, Charlotte made her debut as a novelist at the age of 31, Emily at 29, and Anne 27 (*LCB* xxxv-xxxvi). Sometime around the publication of Jane Eyre, Charlotte began to associate with celebrities such as literary critic G. H. Lewes (*LCB* 266-67), novelist W. M. Thackeray (*LCB* 326),

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[8] "During the whole **time** that the volume of poems was in the course of preparation and publication, no word was written telling anyone, out of the household circle, what was in progress" (*LCB* 162). This is another instance of "time" being used in the context of "literary career."

social theologist Harriet Martineau (*LCB* 327), publisher George Smith (*LCB* 259), her reader W. S. Williams (*LCB* 258), and Elizabeth Gaskell (*LCB* 352).[9] Expansion of Charlotte's literary career is implied when she took extreme pains with the creation of her third novel Shirley, as "the fame she had acquired imposed upon her a double responsibility" (*LCB* 315). Publication of her fourth novel *Villette* (*LCB* 423) was another sign of her burgeoning career as a novelist with an established reputation. The brief survey above brings to light the fact that narratorial references to the Brontës' "literary career" are scattered from the beginning of the text to its end.

4.2. Previous Studies

Few previous studies have pointed out this aspect of the biographical fiction—"literary career" as its key subject—since critics proceed with their analyses principally in line with the Gaskell construct's fundamental plan of writing—i.e. to achieve her two ultimate goals by means of two policies, or to emphasise Charlotte's domesticity and piety through the depiction of her circumstances and quotations of her own words.

Her first and foremost purpose for writing this book was to focus on Charlotte Brontë as a domestic woman rather than a professional novelist. She confessed in her often-quoted letter to George Smith, a publisher, dated 31 May 1856, that her object was to make the world honour Charlotte Brontë the woman as much as they admired Currer Bell the writer (*Letters* 345).[10] The Gaskell construct's distinction between Charlotte's public life as a novelist and her private life as a domestic woman is made explicit when she narrates, "Henceforward Charlotte Brontë's existence becomes divided into two parallel currents—her life as Currer Bell, the author; her life as Charlotte Brontë, the woman" (*LCB* 271). Acknowledging this principal object of the biography, Alan Shelston observes that it "is Charlotte Brontë the suffering woman rather than Currer Bell the successful author who had attracted Mrs. Gaskell's attention from the start" (24). Jenny Uglow remarks that the central theme of Gaskell's memoir is "the conflicting yet converging lives of woman and artist" (*EG* 407). Easson also makes the following statement in line with Gaskell's distinction between woman and novelist: "Charlotte had suffered doubly as a woman. In her personal life, she knew deprivation and loss, while in her artistic life, despite her fame, she had been taunted as coarse and had none of the advantages that a man might take for granted" (introd., *LCB* xxi). Even the feminist readings by Deirdre d'Albertis (43) and Pamela Corpron Parker (73, 80) are affected by this distinction; in summary of the latter's argument, S. V. Gallagher observes "By publishing the details of Brontë's private life, Gaskell also publicised the dilemma of the female author, torn between the conflicting demands of domestic life and professional ambition" (9).

The Gaskell construct's second goal was to spotlight her friend's Christian integrity, forbearance, and sense of duty; or, to quote her own words, to "show what a noble, true, and tender woman Charlotte Brontë really was" (*LCB* 419). Gaskell's impression of Charlotte's virtuous personality was confirmed after she read a bunch of her letters sent by Ellen Nussey, Charlotte's old friend: "she

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[9] Recollecting her first visit to Haworth, Gaskell writes, "We were so happy together; we were so full of interest in each other's subjects. The day seemed only too short for what we had to say and to hear. I understood her **life** the better for seeing the place where it had been spent—where she had loved and suffered" (*LCB* 440). This instance including "life" as its node is categorised into the "literary career" group as it describes Charlotte's friendship with Gaskell.

[10] This letter is quoted, for instance, in Duthie, *EG* 105; Ganz 187; Uglow, *EG* 309; and Wright 149.

was one to study the path of duty well, and, having ascertained what it was right to do, to follow out her idea strictly" (*Letters* 370). The Gaskell construct's concern in the depiction of her friend's selflessness is shown in her quotation from Charlotte's friend Mary Taylor's summary of her life:

> She thought much of her duty, and had loftier and clearer notions of it than most people, and held fast to them with more success. [. . .] All her life was but labour and pain; and she never threw down the burden for the sake of present pleasure. (*LCB* 457)

"Reading Mary's letter," Easson remarks, "Gaskell found no new insight, rather a confirmation, but she seized on it as one more witness to the justice she tried for" (*EG* 142). Valerie Sanders affirms that one of the things Harriet Martineau most admired about Charlotte Brontë was "her integrity of character" (73).

This second purpose has stimulated the keen concern of critics. For instance, the observation that Charlotte's femininity was emphasised (Fraser 268-69, 353; Hopkins 198), her not being "coarse" (Bick 135; Easson, *EG* 150; Easson, "Getting It Right" 2; Hopkins 198; McVeagh 25; "Gaskell emphasises duty not only because it was an esteemed Victorian virtue, but also because it helped to disprove charges that the author of *Jane Eyre* was 'unwomanly' and 'unchristian' [Peterson 63]; Stoneman 39; Uglow, introd. xii), her outstanding personality (Bick 129-30; Bonaparte 243; Brodetsky 79; Chadwick 242; Colloms 2; Duthie 137; Easson, EGCH 390; Fraser x, 491; Ganz 187; Gérin, *CB* 574; Lansbury 155; McVeagh 25, 29; Pollard 146; Shelston 36), her Christian goodness (Bick 118, 119; Chadwick 242; Easson, *EG* 148, 155; Easson, *EGCH* 380; Hopkins 198, Pollard 159), and her faithful performance of filial and familial duties (Duthie 129; Peterson 63; Rubenius 59-60; Spencer 17-18, 71). Some critics point out that the Gaskell construct's stress on Charlotte's Christian integrity comes from her wish to vindicate her friend from the charge of coarseness and unwomanliness levelled at her by reviewers (Gérin, *EG* 164, 194; Gérin, introd. vii; Hopkins 198; Spencer 69).

These two goals were to be attained by two means—first, by stressing the leading role of her environment in forming her character, and second, by making the best use of Charlotte's own words to narrate her life.

The first policy is expressed in her letter to George Smith dated 4 June 1855: "I could describe the wild bleakness of Haworth & speaking of the love & honour in which she was held there" (*Letters* 348). It is suggested also in her letter to the same correspondent dated 18 June 1855: "her home, and the circumstances . . . must have had so much to do in forming her character" (*Letters* 349), in her letter to Ellen Nussey dated 24 July 1855: "the circumstances . . . made her what she was" (*Letters* 361), in her letter to an unknown correspondent dated 23 Aug 1855: "I want to know all I can respecting the character of the population she lived amongst,—the character of the individuals amongst whom she was known" (*Letters* 369), and in her letter to Ellen Nussey dated 9 July 1856: "truth and the desire of doing justice to her compelled me to state the domestic peculiarities of her childhood, which (as in all cases) contribute so much to make her what she was" (*Letters* 396). In her letter dated autumn 1856, one of Gaskell's reasons for focusing on Haworth and Yorkshire is elucidated: "in her [Charlotte's] case more visibly than in most her circumstances made her faults, while her virtues were her own" (*Letters* 416).

This first policy of writing is hinted at in the book as well. For example, at the beginning of Chapter 2 of *LCB*, the narrator explains:

> For a right understanding of the life of my dear friend, Charlotte Brontë, it appears to me more necessary in her case than in most others, that the reader should be made acquainted with the peculiar forms of population and society amidst which her earliest years were passed, and from which both her own and her sisters' first impressions of human life must have been received. I shall endeavour, therefore, before proceeding further with my work, to present some idea of the character of the people of Haworth, and the surrounding districts. (15)

It is also implied in her recollection of her first visit to Haworth: "I understood her [Charlotte's] life the better for seeing the place where it had been spent—where she had loved and suffered" (*LCB* 440).[11]

Indeed, descriptions of Yorkshire, including Haworth, are sprinkled throughout the biography. The narrative opens with the change of scenery from Keighley to Haworth and ends with Haworth mourners' visits to Charlotte's grave. This setting of Yorkshire as the background of Charlotte's life has been acknowledged by some critics (for instance, Chadwick 252; Easson, *EG* 132; Pollard 152; Yamawaki 227). Easson explains that the reason for Gaskell's insertion of the topic-modelling keywords associated with Yorkshire, or "the world of Haworth and the West Riding," into the text is "partly to show that it was not Charlotte's nature but her environment that was rude and wild" (introd., *LCB* ix). So does Pollard in insisting that Gaskell indicates "the possible influence of environment upon character" (153), and that "Mrs Gaskell considered that Haworth and Charlotte's home exercised an influence both strong and baneful" (159). At one time Haworth becomes a place of comfort ("The strong yearning to go home came upon her" [*LCB* 205]), and at others that of pain ("Nothing happens at Haworth; nothing, at least, of a pleasant kind" [*LCB* 249])— this feature is also pointed out by certain critics (Brodetsky 28; Hopkins 174; Lansbury 140, 146).

The significance of the Haworth descriptions in the *LCB* text is proven one way or another by our statistical analysis, in which the group of keywords associated with Yorkshire is ranked seventh (see Table 10 and Fig. 3). This result provides an objective piece of evidence to verify the correctness of the above critics' subjective readings, and the appropriateness of our computer-assisted approach as well, because it also provides a correspondence between the qualitative and quantitative interpretations of the text.

The second policy of writing—to narrate Charlotte's life in her own words—is articulated in her reply to Ellen Nussey dated 6 Sept 1855: "I am sure the more fully she—Charlotte Brontë—the friend, the daughter, the sister, the wife, is known, and known where need be in her own words, the more highly will she be appreciated" (*Letters* 370).[12]

In short, the Gaskell construct's principle of drawing Charlotte Brontë's life is to appeal her Christian integrity—her perseverance, her goodness as a dutiful daughter—to the public by means of attributing the coarseness of her works to the environment which fostered her life. This principle is elucidated in Gaskell's letter to John M. F. Ludlow, a Christian socialist (Chapple and

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[11] Gaskell's perception of the circumstantial influence of Haworth on Charlotte's life in her first visit to the village is summarised by Haldane: "The silence and calm of the simple, ordered life at the Haworth parsonage made a deep impression on the woman used to bustle and action" (149).

[12] Gaskell's second policy of writing is pointed out by the following critics: Chadwick 221, 223; "spectator narrator" (Duthie 108, 189); Eifrig 71; Haldane 166; "Everywhere respect is shown for primary documents" (Hopkins 199); Lansbury 136; McVeagh 25, 27; Sanders, G. D. 92; Uglow, introd. xv; Wright 151.

KEYWORD / DIVISION: CONTEXT/CONNOTATION/ASSOCIATION (IDs 1–4) and CONTEXT/CONNOTATION/ASSOCIATION (ID 5)

ID	1 "home"			2 "time"			3 "life"			4 "great"			5 "letter"		
	CATEGORY	FREQ	%	CATEGORY	FREQ	%	CONTEXT	FREQ	%	CONTEXT	FREQ	%	CONTEXT	FREQ	%
	unhappiness	31	14.486	literary career	81	16.364	literary career	46	14.791	literary career	34	13.655	literary career	76	30.769
	health	28	13.084	health	40	8.081	unhappiness	44	14.148	religion/morals	23	9.237	friendship	26	10.526
	duty	23	10.748	religion/morals	39	7.879	religion/morals	41	13.183	book reading	21	8.434	literature	14	5.668
	happiness	19	8.879	education	36	7.273	personality	26	8.36	personality	19	7.631	religion/morals	13	5.263
	friendship	12	5.607	unhappiness	36	7.273	book reading	21	6.752	Yorkshire	18	7.229	marriage	13	5.263
	personality	9	4.206	personality	30	6.061	death	12	3.859	London	15	6.024	personality	11	4.453
	literary career	8	3.738	domestic life	27	5.455	health	12	3.859	unhappiness	14	5.622	unhappiness	11	4.453
	Yorkshire	8	3.738	Yorkshire	27	5.455	marriage	12	3.859	education	10	4.016	Brussels life	10	4.049
	death	7	3.271	talent	24	4.848	Yorkshire	12	3.859	health	10	4.016	health	9	3.644
	education	6	2.804	friendship	21	4.242	biography	11	3.537	nature	10	4.016	governess	7	2.834
	marriage	6	2.804	visiting	23	4.646	duty	9	2.894	friendship	9	3.614	visiting	7	2.834
	visiting	6	2.804	letter writing	17	3.434	education	9	2.894	human beings	9	3.614	death	6	2.429
	nature	5	2.336	death	16	3.232	narratorial comment	9	2.894	talent	8	3.213	letter writing	5	2.024
	school plan	5	2.336	happiness	15	3.03	career	7	2.251	building	7	2.811	duty	4	1.619
	affection	4	1.869	governess	14	2.828	friendship	6	1.929	happiness	6	2.41	education	4	1.619
	Brussels life	4	1.869	career	12	2.424	Brussels life	5	1.608	social problems	6	2.41	happiness	4	1.619
	career	4	1.869	marriage	10	2.02	governess	5	1.608	death	5	2.008	politics	4	1.619
	domestic life	4	1.869	Brussels life	8	1.616	letter writing	5	1.608	literature	5	2.008	affection	3	1.215
	London	4	1.869	duty	7	1.414	happiness	4	1.286	duty	4	1.606	book reading	3	1.215
	evils	3	1.402	imagination	2	0.404	literature	3	0.965	school plan	3	1.205	London	3	1.215
	family	3	1.402	Mama's letters	2	0.404	domestic life	2	0.643	Brussels life	2	0.803	school plan	3	1.215
	governess	3	1.402	nature	3	0.606	social problems	2	0.643	evils	2	0.803	domestic life	2	0.81
	politics	3	1.402	politics	2	0.404	talent	2	0.643	feminism	2	0.803	money	2	0.81
	religion/morals	3	1.402	book reading	1	0.202	affection	1	0.322	marriage	2	0.803	Yorkshire	2	0.81
	literature	2	0.935	feminism	1	0.202	feminism	1	0.322	politics	2	0.803	building	1	0.405
	book reading	1	0.467	mesmerism	1	0.202	human beings	1	0.322	career	1	0.402	evils	1	0.405
	building	1	0.467	TOTAL	495	100	London	1	0.322	family	1	0.402	freedom	1	0.405
	letter writing	1	0.467				money	1	0.322	narratorial comment	1	0.402	social problems	1	0.405
	Penzance	1	0.467				nature	1	0.322	TOTAL	249	100	talent	1	0.405
	TOTAL	214	100				TOTAL	311	100.01				TOTAL	247	100

6			7			8			9			10			11		
"day"			"made"			"good"			"long"			"thought"			"house"		
CATEGORY	FREQ	%	CATEGORY	FREQ	%	CONTEXT	FREQ	%	CONTEXT	FREQ	%	CONTEXT	FREQ	%	CONTEXT	FREQ	%
unhappiness	32	13.008	literary career	24	10.714	religion/morals	81	37.327	health	22	10.28	literary career	37	19.27	literary career	27	14.52
literary career	29	11.789	personality	20	8.929	health	31	14.286	unhappiness	21	9.813	personality	24	12.5	Yorkshire	22	11.83
health	25	10.163	education	19	8.482	personality	13	5.991	literary career	16	7.477	book reading	19	9.896	visiting	13	6.989
Yorkshire	17	6.911	literature	16	7.143	friendship	11	5.069	religion/morals	16	7.477	religion/morals	19	9.896	friendship	11	5.914
friendship	15	6.098	religion/morals	14	6.25	greeting	8	3.687	friendship	15	7.009	friendship	11	5.729	education	10	5.376
religion/morals	17	6.911	friendship	13	5.804	literary career	8	3.687	Yorkshire	14	6.542	death	8	4.167	unhappiness	10	5.376
visiting	14	5.691	health	13	5.804	literature	7	3.226	education	10	4.673	health	8	4.167	health	9	4.839
death	12	4.878	visiting	13	5.804	book reading	5	2.304	personality	9	4.206	education	7	3.646	building	7	3.763
marriage	9	3.659	book reading	10	4.464	happiness	5	2.304	nature	8	3.738	literature	7	3.646	narratorial comment	7	3.763
Brussels life	7	2.846	unhappiness	9	4.018	Yorkshire	5	2.304	book reading	7	3.271	unhappiness	7	3.646	personality	7	3.763
education	7	2.846	marriage	7	3.125	building	4	1.843	building	7	3.271	school plan	5	2.604	school plan	7	3.763
nature	7	2.846	affection	6	2.679	education	4	1.843	death	7	3.271	Brussels life	4	2.083	death	5	2.688
personality	6	2.439	Brussels life	6	2.679	food	4	1.843	letter writing	7	3.271	happiness	4	2.083	governess	5	2.688
governess	6	2.439	evils	6	2.679	marriage	3	1.382	literature	6	2.804	evils	3	1.563	London	5	2.688
human beings	6	2.439	Yorkshire	6	2.679	money	3	1.382	affection	6	2.804	London	3	1.563	religion/morals	5	2.688
duty	5	2.033	duty	5	2.232	narratorial comment	3	1.382	visiting	6	2.804	marriage	3	1.563	evils	4	2.151
happiness	5	2.033	food	5	2.232	career	2	0.922	Brussels life	5	2.336	narratorial comment	3	1.563	marriage	4	2.151
literature	4	1.626	school plan	5	2.232	clothing	2	0.922	human beings	5	2.336	talent	3	1.563	social problems	4	2.151
letter writing	3	1.22	building	4	1.786	London	2	0.922	happiness	4	1.869	visiting	3	1.563	book reading	3	1.613
affection	3	1.22	clothing	4	1.786	politics	2	0.922	duty	3	1.402	governess	2	1.042	Brussels life	3	1.613
domestic life	3	1.22	governess	3	1.339	unhappiness	2	0.922	governess	3	1.402	nature	2	1.042	domestic life	3	1.613
evils	3	1.22	death	2	0.893	visiting	2	0.922	narratorial comment	3	1.402	social problems	2	1.042	duty	3	1.613
book reading	2	0.813	London	2	0.893	Brussels life	1	0.461	clothing	2	0.935	Yorkshire	2	1.042	happiness	2	1.075
school plan	2	0.813	narratorial comment	2	0.893	domestic life	1	0.461	London	2	0.935	affection	1	0.521	Penzance	2	1.075
talent	2	0.813	politics	2	0.893	duty	1	0.461	marriage	2	0.935	career	1	0.521	politics	2	1.075
clothing	2	0.813	social problems	2	0.893	feminism	1	0.461	school plan	2	0.935	duty	1	0.521	talent	2	1.075
London	1	0.407	career	1	0.446	governess	1	0.461	career	1	0.467	human beings	1	0.521	affection	1	0.538
social problems	1	0.407	happiness	1	0.446	human beings	1	0.461	domestic life	1	0.467	money	1	0.521	clothing	1	0.538
career	1	0.407	mesmerism	1	0.446	letter writing	1	0.461	evils	1	0.467	politics	1	0.521	family	1	0.538
			money	1	0.446	nature	1	0.461	politics	1	0.467				nature	1	0.538
			nature	1	0.446	school plan	1	0.461	social problems	1	0.467						
			talent	1	0.446	talent	1	0.461									
TOTAL	246	100.01	TOTAL	224	100	TOTAL	217	100	TOTAL	214	100	TOTAL	192	100	TOTAL	186	100

Table 11. Contextual Categorisation of the Total 2,795 Examples of the Top 11 Topic-Modelling Keywords

Shelston, *Further Letters*[13] 305), dated 7 June 1853, which is brimful with her compassion for her friend:

> I should like to tell you a good deal about Miss Brontë,—& her wild sad life,—and her utter want of any companionship[.] I mean literally *companionship*,—for she lives alone, (although in the house with an old blind father); the last of six children,—in ill-health; & after all she is so much better, & more faithful than her books. . . . She puts all her naughtiness into her books; when the suffering that falls so keenly on one of her passionate nature, pierces her too deeply 'sits by her bed & stabs her when she awakes' (to use her own words,) & when others could go to some friend, & claim sympathy & receive strength her only way of relieving herself is by writing out what she feels, & so getting quit of it. . . . she *does* cling to God, as to a father, in her life & in herself—but somehow she only writes at her morbid times. (*Further Letters* 90-91)

Previous critics of this memoir have offered their interpretations more or less in line with this general principle.[14] Therefore, what our corpus-stylistic analysis has disclosed—the Brontë sisters' pursuit of literary career as a hidden but prevalent theme—might be a modest discovery in the sense that it is a commonplace subject for a biography, but should be unique in having been highlighted through this topic-modelling analysis of the *LCB* text.

4.3. Religion/Morals

It is an intriguing result that categorisation of the top-ranked topic-modelling keywords identified by reasonably scientific means illustrates the group of "Religion/Morals" connotation/context as the second-largest category in *LCB*. This section focuses on this group to investigate the Gaskell construct's mode of description of Christianity.

For this purpose, classification of the 271 examples of the "Religion/ Morals" group according to the

ID	RELIGION or MORALS	NUMBER OF OCCURENCE	PERCENTAGE
1	goodness	113	41.697
2	faith	74	27.306
3	church	64	23.616
4	prayer	7	2.583
5	Christmas	5	1.845
6	Bible	3	1.107
7	charity	2	0.738
8	evilness	2	0.738
9	human lots	1	0.369
	TOTAL (Times)	271	100.00

Table 12. Categorisation of the 271 Examples of the "Religion/ Morals" group in the Topic-Modelling Analysis of *LCB*

connotations they bear or the contexts they create is carried out. The results shown in Table 12 and Fig. 4 demonstrate that the topic-modelling keywords in this group appear most frequently in the connotation or context of "goodness" (41.7%), followed by "faith" (27.3%), and "church" (23.6%), and, let us note, scarcely appear in that of "evilness" (0.7%).

For instance, the following extract narrates "goodness" of Rev. Brontë, who is nearly blind:

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[13] This source shall be abbreviated as *Further Letters* hereafter.

[14] As further instances, "As its author said, her aim was to 'show what a noble, true and tender woman Charlotte Brontë was.' This aim is intermingled with the continual indication of Mrs Gaskell's sorrow for Charlotte's lot and regret for what in better surrounding she might have become" (Pollard 159). Linda H. Peterson views the theme of the text as "Gaskell's presentation of Brontë as a gifted writer, plagued by poverty and ill health, but faithful to both her womanly duty and her literary gift" (68).

(a) Under his **great** sorrow he was always patient. As in times of far greater affliction, he enforced a quiet endurance of his woe upon himself. (*LCB* 241)

Another extract from the "goodness" sub-category explains Charlotte's integrity in her efforts to conceal her aversion to a gentleman:

(b) I hated to talk with him— hated to look at him; though as I was not certain that there was substantial reason for such a
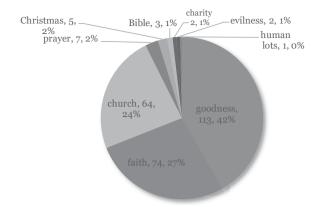

Fig. 4. Categorisation of the 271 Examples of the "Religion/ Morals" group in the Topic-Modelling Analysis of *LCB*

dislike, and **thought** it absurd to trust to mere instinct, I both concealed and repressed the feeling as much as I could; and, on all occasions, treated him with as much civility as I was mistress of. (*LCB* 156-57)

The servants' praise of Charlotte's "goodness" is the essence of the following quotation:

(c) They tell of one **long** series of kind and thoughtful actions from this early period to the last weeks of Charlotte Brontë's life. (*LCB* 47)

The purport of the citation below is Anne's "goodness":

(d) [It] was her custom to bear whatever was unpleasant with mild steady patience. She was a very sincere and practical Christian, but the tinge of religious melancholy communicated a sad shade to her brief blameless **life**. (*LCB* 281)

Acknowledging Charlotte's "absence of hope" (*LCB* 94) in her school-day letters, the narrator emphasises her fervent "faith":

(e) If her trust in God had been less strong, she would have given way to unbounded anxiety, at many a period of her **life**. As it was, we shall see, she **made** a **great** and successful effort to leave "her times in His hands." (*LCB* 94-95)

Charlotte's unwavering "faith" in God is demonstrated also in the extract below depicting one of the dreary winters she passed:

(f) Sleepless, I lay awake night after night, weak and unable to occupy myself. I sat in my chair day after day, the saddest memories my only company. It was a **time** I shall never forget; but God sent it, and it must have been for the best. (*LCB* 404)

So it is in Gaskell's citation of Charlotte replying in answer to her view of people's lots in life:

(g) She smiled, and shook her head, and said she was trying to school herself against ever anticipating any pleasure; that it was better to be brave and submit faithfully; there was some **good** reason, which we should know in **time**, why sorrow and disappointment were to be the lot of some on earth. It was better to acknowledge this, and face out the truth in a religious faith. (*LCB* 442)

Anne's letter to Ellen Nussey written prior to their departure to Scarborough records her abiding "faith" in God:

(h) Under these circumstances, I think there is no **time** to be lost. I have no horror of death: if

> I **thought** it inevitable, I think I could quietly resign myself to the prospect, in the hope that you, dear Miss—, would give as much of your company as you possibly could to Charlotte, and be a sister to her in my stead. (*LCB* 302)

The next example, which delineates Rev. Grimshaw's life, is classified in the "church" sub-group.

> (i)   [He] went to engage in religious exercises in the **house** of a parishioner, then **home** again to pray; thence, still fasting, to the church, where, as he was reading the second lesson, he fell down, and, on his partial recovery, had to be led from the church. (*LCB* 24)

The following is grouped in the "church" sub-category, as it describes Rev. Grimshaw's establishment of a chapel.

> (j)   He had built a chapel for the Wesleyan Methodists, and not very **long** after the Baptists established themselves in a place of worship. Indeed . . . the people of this district [Yorkshire] are "strong religionists." (*LCB* 25)

A further investigation into the characters who are associated with the "Religion/Morals" category indicates that 117 extracts out of the total 271 (43.2%) are associated with Charlotte, 15 (5.5%) with Anne, 14 (5.2%) with Rev. Grimshaw, a "curate of Haworth" (*LCB* 23), and 9 (3.3%) with Rev. Patrick Brontë (see Table 13 and Fig. 5). The method of investigation is simple. All 271 examples within the "Religion/ Morals" group were re-arranged in accordance with the central character drawn in each example. For instance, as for the ten quotations above, (a) is associated with Rev. Brontë, (b)(c)(e)(f)(g) with Charlotte, (d)(h) with Anne, and (i)(j) with Rev. Grimshaw. The results confirm that the Gaskell construct's principal concern is to delineate the goodness, integrity, faith, and piety of Charlotte Brontë.

Another intriguing feature of the Gaskell construct's description of her protagonist's Christianity is her stress on Charlotte's belief in eternal life. Out of 74 extracts from the sub-group of "faith" connotation, 62 examples (83.3%) are

ID	CHARACTERS	NUMBER OF OCCURRENCE	PERCENTAGE
1	Charlotte	117	43.173
2	Anne	15	5.535
3	Rev. Grimshaw	14	5.166
4	Rev. Brontë	9	3.321
5	M. Héger	5	1.845
6	Ellen Nussey	4	1.476
7	Brontë sisters	2	0.738
8	Harriet Martineau	2	0.738
9	Rev. Readhead	2	0.738
10	Rev. Robertson	2	0.738
11	Elizabeth Branwell	1	0.369
12	Emily	1	0.369
13	Rev. Whitfield	1	0.369
14	others	96	35.424
	TOTAL (Times)	271	99.999

Table 13: Characters Associated with Sub-Categories of the "Religion/Morals" Group in the Topic-Modelling Analysis of *LCB*
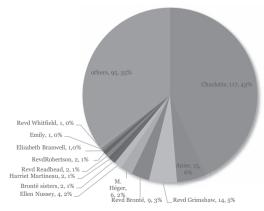

Fig. 5. Characters Associated with Sub-Categories of the "Religion/Moral" Group in the Topic-Modelling Analysis of *LCB*

associated with Charlotte, from which the description of her belief in the next world amounts to 16 examples (21.6%) (see Fig. 6). A few instances should suffice to signify Charlotte's Christian belief.

> I read Anne's **letter** to you; it was touching enough, as you say. If there were no hope beyond this world,—no eternity, no **life** to come,—Emily's fate, and that which threatens Anne, would be heart-breaking. (*LCB* 304)
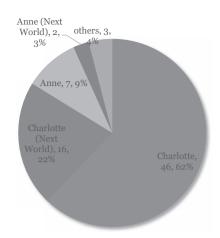
Fig. 6. Characters' Belief in the Next World Depicted in the "Faith" Sub-Category in the Contextual Analysis of the Top Topic-Modelling Keywords of *LCB*

The next is Charlotte's remark after Branwell's death:

> He is in God's hands now; and the All-Powerful is likewise the All-Merciful. A deep conviction that he rests at last—rests well, after his brief, erring, suffering, feverish **life**—fills and quiets my mind now. (*LCB* 289)

Charlotte's belief in the next world appears in her report of Emily's death to Ellen Nussey:

> We feel she is at peace. No need now to tremble for the hard frost and the keen wind. Emily does not feel them. She died in a **time** of promise. We saw her taken from **life** in its prime. But it is God's will, and the place where she is gone is better than that she has left. (*LCB* 293)

Anne's belief in eternal life is implied in the citation below explaining Charlotte's reason for burying Anne's body in Scarborough:

> [The] afflicted sister decided to lay the flower in the place where it had fallen. She believed that to do so would accord with the wishes of the departed. She had no preference for place. She **thought** not of the grave, for that is but the body's goal, but of all that is beyond it. (*LCB* 310)

In the extract below, Rev. Brontë is quoted as recollecting his childhood education for his daughters:

> Lastly, I asked the oldest [Maria] what was the best mode of spending **time**; she answered, "By laying it out in preparation for a happy eternity." (*LCB* 48)

These five extracts show the Brontës' firm belief in the immortality of the soul, one of the principal teachings of Christian doctrine. In recognition of this aspect of the Brontë sisters, Marianne Thormählen states, "The works, in poetry and fiction, of all three Brontë sisters reflect the conviction that the passion of love is never simply bounded by the span of human life on earth" (*Religion* 90).

Finally, a brief inspection of two examples of human beings' wickedness in the "Evilness" sub-category will conclude this contextual analysis of the top 11 topic-modelling keywords. The first example begins with Charlotte's introduction to a miserable pair of man and wife:

> You remember Mr. and Mrs.—? Mrs.— came here the other **day**, with a most melancholy tale of her wretched husband's drunken, extravagant, profligate habits. She asked Papa's advice; there was nothing she said but ruin before them. (*LCB* 156)

In the subsequent section of this letter, she expresses "instinctive aversion" (*LCB* 156) towards such a morally corrupt husband.

The second example of evilness consists of Charlotte's articulation of her bitter experience as a governess. Spotlighted are vices of honourable human nature:

> She said that none but those who had been in the position of a governess could ever realise the dark side of "respectable" human nature; under no **great** temptation to crime, but daily giving way to selfishness and ill-temper, till its conduct towards those dependent on it sometimes amounts to a tyranny of which one would rather be the victim than the inflicter. (*LCB* 135-36)

The Gaskell construct's uses of topic-modelling keywords with the "evilness" connotation amount to less than one percent of her total use of those of the "Religion/Morals" connotation/context group. That is, more than 99% of the total examples of the "Religion/Morals" category are not related to any "evilness" of human nature or activities. This implies her trust in the fundamental goodness of the human spirit. If so, her plan of writing corresponds to God's Plan of Salvation, according to which only good spirits are allowed to come to earth (Heb. 12.9; Rom. 8.16; Rev. 12:7–11).

5. Conclusion: Gaskell as a Christian Missionary

What has been clarified in our topic-modelling analysis of the *LCB* text can be summarised by the following nine points.

(a) Ten operations of MALLET on the *LCB* text disclose the top rank keywords are the following 19: "home," "miss," "mr," "Brontë," "charlotte," "letter," "day," "great," "made," "good," "haworth," "long," "de," "emily," "character," "time," "life," "thought," and "house"; this word set implies that the most dominant subject of this work is the life of the Brontë family—especially of Charlotte and Emily—in their Haworth home.

(b) A conventional search for semantic information on the topics yielded by the MALLET operations uncovers the centrality of the Brontë family in Haworth. Their visit to London could be another key topic.

(c) An AntConc scrutiny of the frequency of the names of Brontë family members and geographical places clarifies that Charlotte appears most often (539 times), followed by Emily (182 times), Anne (129 times), and Patrick Brontë (102 times), and that "Haworth" occurs most frequently, 210 times (23.9% of the total 878 geographical proper nouns), followed by "London 111 times (12.6%), "Brussels" 61 times (7.0%), and "Yorkshire" 50 times (5.7%).

(d) The MALLET and AntConc analyses of the *LCB* text throw light upon its prevailing structure of drawing Charlotte Brontë's life with Haworth as its background. This trite discovery is vital for three reasons. First, a mathematical confirmation of the central figure and stage is established. Second, the result of the computer-assisted analysis accords with conventional criticism of the text. Third, the result of the statistical exploration is in close accord with Gaskell's authorial meaning for writing this memoir. This third reason might constitute a piece of evidence refuting anti-intentionalist critics' relentless disparagement of the view of intentionalist hermeneuticists that the author construct's meaning for a text may be identified through careful examination of its structural design.

(e) The consequences of a contextual categorisation of the total 2,795 examples of the top 11 topic-modelling keywords (the eight words—"miss," "mr," "brontë," "charlotte," "Haworth," "de," "emily," and "character"—that do not appear in the Bible are excluded from the list, as an inquiry into the Gaskell construct's use of Christian vocabulary is one of our chief concerns) reveal that they are most frequently employed in association with the Brontës' literary career (14%), followed by "religion/morals" (10%), "unhappiness" (8%), "health" (7%), and "personality" (6%).

(f) A survey of the narratorial references to the Brontës' "literary career" confirms that they are scattered throughout the *LCB* text. The uniqueness of this discovery is verified through a review of previous studies conducted mostly in line with the Gaskell construct's paramount scheme of writing, i.e. to highlight Charlotte's domesticity and piety through the description of her circumstances and quotations of her own words.

(g) Classification of the 271 examples in the "Religion/Morals" group demonstrates that the topic-modelling keywords occur most persistently in the connotation/context of "goodness" (41.7%), followed by "faith" (27.3%), and "church" (23.6%), but scarcely occur in that of "evilness" (0.7%). That is, more than 99% of the total examples are not related to "evilness" of human nature or activities. The Gaskell construct's trust in the fundamental goodness of the human spirit may imply that her plan of writing corresponds to God's Plan of Salvation, according to which only good spirits are allowed to come to earth to receive physical bodies.

(h) An investigation into the topic-modelling keywords of the "Religion/Morals" category reveals that 117 extracts out of the total 271 (43.2%) are associated with Charlotte, 15 (5.5%) with Anne, 14 (5.2%) with Rev. Grimshaw, and 9 (3.3%) with Rev. Patrick Brontë. The result confirms that the Gaskell construct's principal concern is to delineate the goodness, integrity, faith, and piety of Charlotte Brontë.

(i) In addition, out of 74 extracts from the sub-category of the "faith" connotation/context under the "Religion/Morals" group, 62 examples (83.3%) are associated with Charlotte, of which descriptions of her belief in the next world amounts to 16 examples (21.6%). This survey hints not only at the Brontë family's firm belief in the immortality of the soul but also the Gaskell construct's emphasis on Charlotte's belief in eternal life.

In conclusion, this study's topic-modelling analysis of Christianity in *LCB* confirms the Gaskell construct's emphasis on Charlotte's staunch Christian faith. Deirdre d'Albertis proclaims that Gaskell's work was written to hasten the realisation of "a collective or social ideal of the coming 'Kingdom of God'" (30), and that she viewed "all work, domestic and literary, as . . . a charge from God to write for the use and service of others" (qtd. in Parker 79). This study substantively claims that the biographical fiction was written to accomplish this Christian mission.

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トピック・モデリングで解読する
「シャーロット・ブロンテの生涯」におけるキリスト信仰

大 野 龍 浩

　MALLET というソフトウェアを使って電子テキストを統計的に解析し、意味的に関連する単語を一つのグループ（topic）として機械的に絞り出すことによって、テキストの隠れた構造や主題を客観的に炙り出さんとする手法 topic modelling。これを Elizabeth Gaskell（1810-65）による Charlotte Brontë（1816-55）の伝記の分析に適用することによって、伝統的主観批評では発見できなかった構造を明らかにし、新しい解釈の可能性を探る。

　Topic modelling が明らかにする11の keywords は、故郷 Haworth で暮らすブロンテ家の生き様を描写することに物語の焦点があることを示唆する。この読みの妥当性を検証するために、① AntConc というソフトウェアでブロンテ家の構成員と地理的な場所に関する単語の表出頻度を調査すると同時に、②各々の keywords をその含意やそれが用いられている文脈によって分類した結果と照らし合わせた。その結果、11の keywords を内包する2,795の文例は、ブロンテ姉妹の "literary career"（14%）、"religion/morals"（10%）、"unhappiness"（ 8 %）、"health"（ 7 %）、そして "personality"（6%）に関連する範疇に分類できることがわかった。この発見の独自性を、 1 位の範疇についてはテキストを literary career に着目して読み直すことによって、 2 位の範疇については属する271の文例をさらに細かい範疇に分類することによって、検証した。その結果、ブロンテ姉妹の "literary career" への言及が伝記の作品の冒頭から結末に至るまでちりばめられていることが確認できた。また、"religion/morals" の範疇における topic-modelling keywords は、"goodness"（41.7%）、"faith"（27.3%）、そして "church"（23.6%）を含意するか、もしくはそれに類する文脈において用いられていることがわかった。合わせて、"evilness"（0.7%）の小範疇に分類できる文例は数少ないことも判明した。

　以上、客観分析で得た結果を主観分析で補完する方針でテキスト分析を試みた結果、この伝記で強調されている Charlotte Brontë の信仰は、人間の魂の善性や来世への希望などを含むキリスト教の根本思想である「神の救いの計画」（God's Plan of Salvation）と通底していることがわかった。このことを含む分析結果を 9 点に整理して、本稿の結論とした。