Making the Bhagavad Gītā accessible: Enabling sense-making through synthesis and visualization

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Abstract. *Libraries and archives across the world have played a vital role in enabling access to information to a large number of people. The advent of the Internet and mobile computing has helped accelerate this process of democratization of information. The Bhagavad Gītā (Song of God) is considered the most important among the large pantheon of ancient Hindu scriptures and has influenced people ranging from Gandhi to Thoreau to Einstein. However, just as the problem for most Internet users is no longer one of access, one wouldn't need to try too hard to access the Gītā. A large number of commentaries have been written on it. The text and many e-books are freely available online. The difficulty lies in comprehension and sense-making, being able to connect-the-dots, turning information into knowledge and application. Drawing upon the literature on accessibility and the sense-making theory, this paper will report work-in-progress in synthesizing different commentaries of the Gītā and bringing out key messages using simplification and visualization techniques. The work should help the Facebook generation make sense of the key messages and life lessons from the Gītā. Also, a reader would be able to make an informed judgment rather than relying on any one commentary. The 8-step methodology explained should also be useful in synthesizing the commentaries on the holy texts of other major religions of the world.*

Keywords. Accessibility, sense-making, Bhagavad Gītā, synthesis, visualization.

Introduction and Background

Libraries and archives across the world have played a vital role in enabling access to information to a large number of people (see e.g. Murray, 2009; Tolzmann, Hessel and Peiss, 2001; Harris, 1999; Marshall, 1986; Hessel, 1955 for the role and history of libraries through the ages). The advent of the Internet, the World Wide Web and search engines further helped in increasing both the production and access of huge amounts of information (see Table 1).

A study conducted in the year 2000 and 2003 at the University of California at Berkeley to determine how much information is created each year (Lyman and Varian, 2003) found that print, film, magnetic and optical storage media produced about 5 exabytes of new information in 2002, and that 92% of the new information was stored mostly in hard disks. 1 gigabyte is as big as a pickup truck filled with books (Lyman and Varian, 2003). 1 terabyte is a 1000 times a gigabyte and is as big as 50,000 trees made into paper and printed. 1 exabyte is 1000 x 1000 times a terabyte. 5 exabytes is equivalent to all words ever spoken by human beings (Lyman and Varian, 2003), and this was 10 years ago when we hadn't even taken to tweets (twitter.com), blogs and Facebook (facebook.com) messages.

Table 1 Huge amounts of information being produced

The process of the democratization of information is continuing to accelerate. The rise of Web 2.0, blogs, digital libraries, social networking websites and mobile computing has continued to produce and make accessible enormous amounts of data to anyone with internet access. It's now possible to find paid and free e-books, magazines, newspapers and audiobooks online and transfer them to our digital devices such as e-readers, tablets, mobiles and more (Kuipers, 2012). The local library has a web presence and is accessible at home and on the go (Kuipers, 2012). Efforts such as the Digital Public Library of America (DPLA) are working to further increase accessibility by breaking silos in the digital collection made accessible by universities, public libraries, and other public-spirited organizations, and trying to find a solution to disparate technical standards, disorganized and incomplete metadata, and a host of legal issues (Digital Public Library of America, n.d.). Similarly, the Open Access Movement is another big movement in the quest towards breaking silos and monopoly of paid subscriptions to research literature. The very phrase, *open access* is central to the idea of increased, open and barrier-free accessibility. The digital library and open access phenomena will be discussed in greater detail under Literature Review.

The Bhagavad Gitā (Song of God) is considered the most important among the large pantheon of ancient Hindu scriptures (see Table 2).

Ancient Hindu scriptures include the 4 Vedas – Rig (one of the oldest extant texts in any Indo-European language), Yajur, Sama and Atharva, each with its various divisions; the 1000 over Upanishads; the 4 Upa Vedas – Ayurveda, Dhanurveda, Gandharva Veda and Arthashashtra; the Vedangas e.g. Jyotisha; the Smriti – law books e.g. by Manu, history and great poems – the Ramayana and the Mahabharata, the 18 puranas, the agamas and the darshanas, among others (Shivananda, n.d.; Knapp, n.d.).

Table 2 Hindu scriptures

"Just as the Upanishads contain the cream of the Vedas, so does the Gitā contain the cream of the Upanishads" (Shivananda, n.d.). Originally part of the Mahabharata, it has been separated into an independent text. The Gitā has not only influenced prominent

Indians such as Gandhi, Nehru or Vivekananda but many great minds across the world such as Huxley, Thoreau and Einstein. Table 3 shows a few among the numerous quotes written in praise of the Gitā (Das, n.d.).

Aldous Huxley (1894-1963) English writer and a modern thought leader	The Bhagavad-Gitā is the most systematic statement of spiritual evolution of endowing value to mankind. It is one of the most clear and comprehensive summaries of perennial philosophy ever revealed; hence its enduring value is subject not only to India but to all of humanity.
Mahatma Gandhi (1869- 1948) Indian political and spiritual leader	When doubts haunt me, when disappointments stare me in the face, and I see not one ray of hope on the horizon, I turn to Bhagavad-Gitā and find a verse to comfort me; and I immediately begin to smile in the midst of overwhelming sorrow. Those who meditate on the Gitā will derive fresh joy and new meanings from it every day.
Herman Hesse (1877-1962) German-Swiss poet, novelist and painter	The marvel of the Bhagavad-Gitā is its truly beautiful revelation of life's wisdom which enables philosophy to blossom into religion.
Henry Thoreau (1817-1862) American author, naturalist and philosopher	In the morning I bathe my intellect in the stupendous and cosmogonal philosophy of the Bhagavad-Gitā, in comparison with which our modern world and its literature seems puny and trivial.

Table 3 Select quotes in praise of Gitā

Over the centuries, a large number of commentaries and treatises have been written on the Gitā. Depending on one's intellectual and spiritual inclination, the Gitā has been interpreted in different ways 1) from the *Vaishnava* perspective of considering Krishna as the supreme God (e.g. Prabhupada, 1983) versus the general Hindu perspective of Krishna as one of the forms of the same God; 2) holding one of the paths as supreme – that of *karma* or work (e.g. Tilak, 1915/1936), *gyana* or knowledge, or *bhakti* or knowledge or devotion (e.g. Ramsukhdas, 2008; Prabhupada, 1983); 3) from the *Vedantic* perspective of *adwaita* or oneness – everything/everyone is potentially God (Vivekananda, 1963/2002) or the *bhakti* or devotional perspective of *dwaita* or duality – surrendering oneself as a child/servant of God (e.g. Ramsukhdas, 2008; Prabhupada, 1983); 4) using Krishna and Arjuna and the battlefield as metaphors/allegorys and applying the findings to the modern world. Till date, no single work has tried to reconcile the interpretations of the different commentaries.

Also, just as the problem for most Internet users is no longer one of access, one wouldn't need to try too hard to access the Gitā. The text and many e-books are freely available online. Despite being the most important of the various scriptures in Hinduism, and despite its importance to India and the world, very few Indians would have actually read any version of the Gitā cover-to-cover, or engaged in a process of comprehension and critical thinking based on its contents. However, most would be familiar with a few well-known verses.   While the Gitā is supposed to teach you how to live your life, many

choose to postpone its reading until old age, which never really happens. The difficulty lies in comprehension and sense-making, being able to connect-the-dots, turning information into knowledge and application. The Sanskrit verses are difficult to comprehend, and despite the translations, deciphering the meanings and applying it to one's life requires a high degree of motivation and expertise. As Singh (2006) says, it is "one of the hardest books to interpret, which accounts for the numerous commentaries on it – each differing from the rest in an essential point or the other" (pp.54-55).

This paper will report work-in-progress in synthesizing different commentaries of the Gitā and bringing out key messages using simplification and visualization techniques. The work should help the Facebook generation make sense of the key messages and life lessons from the Gitā. Also, a reader would be able to make an informed judgment from a synthesis of various commentaries rather than relying on any one commentary.

Before that, let us look at the literature on accessibility (including digital libraries and open access), as well as a brief overview of the sense-making theory.

Literature Review and Theoretical Lens

The literature review will focus on two phenomena – that of accessibility and sense-making, which have guided this work.

Accessibility

Two theories are useful (Agarwal, Xu and Poo, 2011) when it comes to the understanding of accessibility. First is the Zipf (1949)'s *principle of least effort*. It says that each individual will adopt a course of action that will involve the expenditure of the probable least average (least effort) of his work (Case, 2007). "People may simply take the path of least resistance" (Durrance, 1988, p.161). While the Principle of Least Effort claims to be a *descriptive* principle that applies across many aspects of human behavior (whether goal-oriented or not), the second theory i.e. the *cost-benefit framework* is more *normative* in its assumptions, and is applied towards conscious decisions regarding the expenditure of effort to achieve some goal (Case 2007). The cost-benefit paradigm proposes that people seek information in a highly rational manner. They select information sources based on their expected benefits (from obtaining the most complete and accurate information) weighed against likely costs (Hardy 1982). While the cost-benefit principle emphasizes a careful calculation of benefits versus costs, the least effort principle predicts that seekers

will choose to minimize effort even if it means accepting a lower quality or quantity of information (Case, 2007).

Agarwal, Xu and Poo (2011) define *access difficulty* as the time and effort required and the difficulty encountered (or the cost incurred) in accessing (reaching) a particular information source, i.e., the cost of establishing (but before using) the channel of communication with the source. See Agarwal (2011) for a detailed discussion on sources and channels. Access difficulty, or lack of accessibility, is one of the cost factors in the cost-benefit framework in a person's choice of information source. Fidel and Green (2004), in their interviews with 32 engineers, found 19 aspects mentioned under the general term of source accessibility, highlighting that information seekers themselves are unclear about what access cost is.

Accessibility has been studied from several perspectives such as physical distance or *physical proximity* (Agarwal, Xu and Poo, 2011) (cost pertaining to access to the source – Gerstenberger and Allen, 1968; Chakrabarti, *et al.* 1983; Culnan, 1983; McCreadie and Rice, 1999; Fidel and Green, 2004; Xu, Tan and Yang, 2006), social and cognitive availability (e.g. Zmud, Lind and Young, 1990; Zimmer and Henry 2007) or *understandability*, which can be seen as source cost, rather than the cost of accessing the source (Xu, Tan and Yang, 2006).

Past literature (e.g. Chakrabarti *et al.*, 1983; Fidel and Green, 2004) has also considered availability of source as one of the dimensions of accessibility, but it should be considered a prerequisite for source evaluation (Xu, Tan and Yang, 2006). In arguing that accessibility is perceptual and not physical, Zimmer, Henry and Butler (2008) say that 'accessible sources are not only those that can be reached but also those that are dependable and convenient' (p.302). According to the least effort principle, source accessibility is a dominant factor in source selection (Gerstberger and Allen, 1968; Kwasitsu, 2003; Yitzhaki and Hammershlag, 2004; Xu, Tan and Yang, 2006).

Over the last few decades, there have been major efforts to increase accessibility of materials available online, the pace of which has accelerated in the last few years. Let us look at some of the notable efforts in this direction.

Major digital library efforts. Project Gutenberg was founded in 1971 by Michael S. Hart. It is the oldest digital library and claims to offer over 38,000 free ebooks as of April 2012, which can be downloaded to devices or read online (Project Gutenberg, n.d.). The

Internet Archive is a non-profit digital library offering free universal access to books, movies & music, as well as 150-billion archived web pages (Internet Archive, n.d.). The HathiTrust digital library is a partnership of more than sixty major research institutions and libraries, with membership open to institutions worldwide, working to ensure that the cultural record is preserved and accessible long into the future (HathiTrust, n.d.). The Library of Congress Digital Collections "provides one of the largest bodies of noncommercial high-quality content on the Internet" (Library of Congress, n.d.).

In April 2009, the World Digital Library (WDL) was launched, with information about every member state of UNESCO – the United Nations Educational, Scientific and Cultural Organization (World Digital Library, n.d.). The WDL sought to counter the pitfalls of many digitization efforts across the world where the focus was often on quantity as opposed to quality (World Digital Library, n.d.). With significant investments in time and effort, the WDL is focusing on consistent metadata, description of each item, multilingualism and use of state-of-the-art tools and cataloging applications and a collaborative network. "The WDL emphasizes openness in all aspects of the project: access to content; technology transfer for capacity building; and partner, stakeholder, and user participation" (World Digital Library, n.d.).

To counter the problems of digital collections made accessible by universities, public libraries, and other public-spirited organizations often existing in silos, and disparate technical standards, disorganized and incomplete metadata, and a host of legal issues, an October 2010 meeting at the Radcliffe Institute for Advanced Study brought together over 40 representatives from foundations, research institutions, cultural organizations, government, and libraries to discuss best approaches to building a national digital library (Digital Public Library of America, n.d.). Since December 2010, Harvard's Berkman Center for Internet & Society, supported by the Alfred P. Sloan Foundation, has begun work on building the Digital Public Library of America (DPLA) as an effort towards creating a shared infrastructure to serve the public good (Digital Public Library of America, n.d.).

Apart from digital library efforts, the open access movement is another big push to help people gain easy access to sources and materials online.

The Open access movement. One of the big barriers to reading published literature is that only a small portion of all the research published each year can be read without either

having a subscription or paying to view an individual article. (Willinsky, 2006). Many researchers in developing countries are not able to pay for the huge subscription costs associated with many journal databases. Authors producing research, on many a occasion, sign off copyright of their works to publishers. There is no direct financial benefit to authors except for indirect benefits through the promotion and tenure process for faculty researchers. Also, many researchers are reluctant to publish in Open Access journals for fear of sufficient quality. Also, rising journal prices and increase in content, coupled with decreasing library budgets (Scudellari, 2010) has led to a status quo that is unsustainable. Scudellari (2010) quotes Robert Buckingham, Dean of the School of Public Health at the University of Saskatchewan, as saying that the "The lifeblood of a university is its library, and cutting library resources is like cutting off oxygen to the brain. Without this lifeblood, the university will falter and fail."

According to Peter Suber, Director of the Harvard Open Access project and a Faculty Fellow at the Berkman Center for Internet and Society, Open Access (OA) literature is digital, online, free of charge i.e. any sort of price barriers such as subscripions, licensing fees and pay-per-view fees. It is also free of any sort of permission barriers such as most copyright and licensing restrictions (Suber, 2012). See Suber (2012) for a good overview of Open Access. Also worth looking is the OA Directory hosted by the Graduate School of Library and Information Science at Simmons College, Boston and supervised by an independent editorial board (OAD, 2012). Other important resources are the directory of OA repositories (OpenDOAR, 2010) and the directory of OA journals (DOAJ, 2012). SherpaRomeo (2012) lists the copyright and archiving policies of different publishers, and is useful for authors to check before self-archiving individual publications and making them accessible for open access.

The Bhagavad Gitā and its various commentaries have benefitted largely from the openness of the internet as well as freely available digital libraries. A large number of e-books, PDFs as well as audio versions of the Gitā can be found on the World Wide Web.

Other costs and Sense-making

While accessibility is important, it is only the cost associated in *reaching* an information source (Agarwal, Xu and Poo, 2011). Once the user gains access to an information source, there are other costs associated with information use as per the seeker's cost-benefit calculus in using an information source. These costs could be attributes of the source such

as the difficulty in communicating with the source (Agarwal, Xu and Poo, 2011), or attributes of the seeker-source relationship (Xu et al., 2006) such as the user's inherent lack of comfort in using an information source (Agarwal, Xu and Poo, 2011). Dervin's sense-making theory would be important in helping understand a user's process of comprehending information, once the issue of accessibility has been resolved i.e. a user has access to the information.

Sense-making methodology. "Some people call sense making a theory, others a set of methods, others a methodology, others a body of findings" (Dervin, 1992, p.61). Sense-making proposes that information is not 'something that exists apart from human behavioral activity.' Rather, it is 'created at a specific moment in time-space by one or more humans' (Dervin, 1992, p.63). Unlike other approaches to information seeking that see information as something 'out there' that is transmitted to people (as Dervin says, an information 'brick' that is put into a human 'bucket'), sense-making sees information as construed internally in order to address gaps or discontinuities (Case, 2007, p.158). "Sense-Making is proposed as a generalizable approach to thinking about and studying human sense making and sense unmaking in its variant forms." (Dervin, 2005, p.26). It is focused primarily on information seeking and use but has also been applied to other fields. (Dervin, 2005).

When talking about the Gitā, simply treating the Bhagavad Gitā and its contents as information that is 'out there' that can be transmitted to people (via internet and digital libraries) or printed books is not enough. A careful process of comprehension, critical thinking and sense-making is required to be able to help people engage in active reading and drawing out the essence from the multi-layered verses of the Gitā. The real success would happen when a person is able to apply some of the lessons learned to one's life amid a myriad of situations. The process of sensemaking of the Gitā would involve a person reading a verse and then construing it internally in order to address gaps or discontinuities in dealing with various issues in one's life. As new questions arise, the reader would need to dig deeper into other verses to address the new gaps that come in and continue this process of sense-making.

Making the Bhagavad Gitā accessible: Enabling sense-making through Synthesis and Visualization

The Bhagavad Gitā is a conversation between Krishna, the embodiment of God on earth, in the role of a charioteer and his close friend and disciple Arjuna in a battlefield. In the

war with his own cousins and close relatives, Arjuna gets into a dilemma and refuses to pick up arms for battle. In a dialogue spanning 18 chapters and 745 Sanskrit verses, Krishna answers all queries of Arjuna (who engages in a process of sensemaking through his series of queries upon each set of explanations by Krishna). Through his explanations, Krishna makes Arjuna realize the purpose of life and the three primary paths to reach God – through *karma* or work, through *gyana* or knowledge and through *bhakti* or devotion (see Table 4).

Karma (work)	"To action alone hast thou a right and never at all to its fruits; let not the fruits of action be thy motive; neither let there be in thee any attachment to inaction"(2.47) (translation by Radhakrishnan, 1993, p.119)
	"Fixed in yoga, do thy work, O Winner of wealth (Arjuna), abandoning attachment, with an even mind in success and failure, for evenness of mind is called yoga"(2.48) (translation by Radhakrishnan, 1993, p.120)
Gyana (knowledge)	"When a sensible man ceases to see different identities due to different material bodies and he sees how beings are expanded everywhere, he attains to the Brahman conception." (13.31) (translation by Prabhupada, 1983)
	"Those who see with eyes of knowledge the difference between the body and the knower of the body, and can also understand the process of liberation from bondage in material nature, attain to the supreme goal." (13.35) (translation by Prabhupada, 1983)
Bhakti (devotion)	"Abandon all varieties of religion and just surrender unto Me. I shall deliver you from all sinful reactions. Do not fear." (18.66) (translation by Prabhupada, 1983).
	Prabhupada uses this verse to explain how Krishna, towards the end of the last chapter, asks Arjuna to let go of the varieties of *dharma* or duty he has talked about thus far, and to just surrender himself to the Lord. Through this argument, Prabhupada seeks to justifying the supremacy of *bhakti* or devotion in the Gitā.

Table 4 Select verses from the Gitā on different types of Yoga

Out of the 745 verses, only 1 verse is by the blind king Dhritarashtra who wants to know what's happening in the battlefield. 67 verses are by Sanjaya, who has been bestowed with remote vision and is narrating the battlefield conversation to the king. There are 57 verses in the form of queries posed by Arjuna (human queries) to Krishna in the course of the dialogue. 620 verses are by Krishna, the Lord himself (Ramsukhdas, 1990). Ramsukhdas (1990) provides an excellent analysis of various interesting aspects of the Gitā.

Though we have discussed the 3 major types of Yoga (or paths to find God) in Table 4, the Gitā discusses Yogas of other kinds as well. Table 5 gives a chapter-by-chapter break down of the number of verses in the Gitā, as well as the focus of each chapter.

Chapter Number	Number of verses	Focus of the chapter
1	47	Arjuna's sorrow
2	72	Sankhya Yoga and Buddhi Yoga
3	43	Karma Yoga
4	42	Gyana Karma Sanyas Yoga
5	29	Karma Sanyas Yoga
6	47	Atma Samyam Yoga
7	30	Gyan and Vigyan Yoga
8	28	Akshar Brahma Yoga
9	34	Rajvidya Rajguhya Yoga
10	42	Vibhuti Yoga
11	55	Vishwaroop Darshan Yoga
12	20	Bhakti Yoga
13	34	Kshetra Kshetragya Vibhag Yoga
14	27	Gunatraya Vibhag Yoga
15	20	Purushottam Yoga
16	24	Divine and Demoniac Yoga
17	28	Shraddhatraya Yoga
18	78	Mokshasanyas Yoga

Table 5 Number of verses and focus of each of the 18 chapters

As discussed thus far, the Gitā has a large number of commentaries which are difficult to reconcile, and the multi-layered verses difficult to comprehend (though accessibility has ceased to be a major issue for most people).

To aid in this process of sense-making and to minimize the costs in a reader's cost-benefit calculus in actively reading the Gitā, the author began work on synthesizing various commentaries of the Gitā. The series of steps followed on this work-in-progress are discussed below:

1. **Prerequisites.** The author felt confident in taking up this large project owing to an understanding of the essence of the Gitā. This is because he grew up as a Hindu and had formative years in India. Also, he was exposed to both the duality and oneness schools of thought (and is able to appreciate and identify with the *knowledge*, *work* and *devotion* approaches) – along with training in research and scientific reasoning. A knowledge of Sanskrit is desirable, or at the minimum, a good grasp of written Hindi. The author is fluent in the latter and is able to read and write the former.

2. **Gaining access to various commentaries.** Upon making the decision to undertake the project, the next step was gathering various commentaries of the Gitā – either physical or digital copies or both. The author had one or two

commentaries in his collection, including the Bhagavad Gitā As It Is (Prabhupada, 1983). Others had to be sourced from book stores in Vrindavan, Uttar Pradesh, India – a holy city associated with the pastimes of Krishna. These commentaries included Sadhak Sanjivini by Swami Ramsukhdas (Ramsukhdas, 2008), Gitā Rahasya by Bal Gangadhar Tilak (Tilak, 1915/1936), Tatva-Vivechani (Goyandka, 2008), and commentaries by Sarvapalli Radhakrishnan (Radhakrishnan, 2004) and Vinoba Bhave (Bhave, 1951/2006), as well as small pocket books e.g. Vireswarananda (2000). Commentaries were also available at the author's home in India in the family's personal collection, including a 1937 translation (Goyandka, 1937) of the famous Gitā Bhashya by Shankaracharya who lived in the 8th - 9th century A.D. Other classical commentaries have included those by Ramanujacharya (Sampatkumaran,1985), Madhvacharya, who wrote two commentaries - Bhashya and Tatparya, among others. Modern commentators have included Swami Chinmayananda, Paramhansa Yogananda, Mahatma Gandhi, Sri Aurobindo and Swami Vivekananda (1963/2002). Apart from these, there are other commentaries and translations, which includes those by scholars as well e.g. Chidbhavananda (1997); Easwaran (1975, 1979, 1984, 2007); Gambhirananda (1998); Miller (1986); Sargeant (2009); Sivananda (1995); Tapasyananda (1990); Zaehner (1969); Wood (1954); etc.

3. **Romanizing the text.** The next step was to be well-versed in the International Alphabet of Sanskrit Transliteration (IAST), which allows lossless mapping from the Sanskrit Devanagari script to the Roman alphabet. It is based on a standard established by the International Congress of Orientalists at Geneva in 1894, and has been the standard for academic work since 1912 (Ager, n.d.; ALA-LC Romanization, n.d.). However, the Tibetan and Himalayan Library (n.d.) laments that the "romanization uses diacritic characters that are often difficult to enter or else not found in some common Latin fonts" "In addition, the pronunciation of some diacritic marks is not widely known so that only specialists can properly pronounce the Sanskrit words. To date, a standard, easily readable, phonetic transcription of Sanskrit has not been developed. Such a transcription would in fact simply be a simplification of the transliterated form which eliminates diacritic marks by removing the macron

indicating long vowels, or converts ś into "sh" and so forth" (Tibetan and Himalayan Library, n.d.). However, despite the concerns raised, the author decided to work with IAST as it is lossless and provides an exact pronunciation for deciphering the complex verses of the Gitā. Using IAST, the word Sanskrit (devanagri संस्कृत) can be mapped in a lossless manner to Saṃskṛt.

4. **Simplifying joined words.** The Sanskrit verses in the Gitā are often long and joined together, making them difficult to read and comprehend even if one has a good grasp of Hindi. The next step was to work on the process of simplification by breaking down long Sanskrit verses into one that is easier to pronounce and read quickly. This step is largely for those who can read Hindi/Devanagri (as texts in IAST or Romanized letters typically add hyphens between long Sanskrit words and phrases). E.g. Figure 1 shows the original Sanskrit verse 2.8 in the Devanagri script. The long joined words are difficult to read, even if one has a good knowledge of Hindi.

न हि प्रपश्यामि ममापनुद्याद् यच्छोकमुच्छोषणमिन्द्रियाणाम् ।
अवाप्य भूमावसपत्नमृद्धं राज्यं सुराणामपि चाधिपत्यम् ॥२-८॥

Figure 1 Verse 2.8 in the Devanagri script

To simplify the verse and make it easier to read, the author broke down the long joined words and phrases into separate words (in brackets and marked in grey in Figure 2 below). The figure also shows the corresponding Romanized IAST next to it for readers who have not been taught to read the Devanagri script.

2.8

Devanagari	IAST
न हि प्रपश्यामि (न हि प्रपश् यामि)	na hi prapaś-yāmi
ममापनुद्याद् (मम आपनुद्याद्)	mam-ā-panudyād
यच्छोकमुच्छोषणमिन्द्रियाणाम् (यच् छोकम् उच्छोषणम् इन्द्रिया णाम्) ।	yac chokam ucchoṣaṇam indriyā-ṇām
अवाप्य भूमावसपत्नमृद्धं (अवाप्य भूमाव् असपत्नम् ऋद्धं)	avāpya bhūmāv asapatnam ṛddham
राज्यं सुराणामपि (राज्यं सुराणाम् अपि)	rājyaṃ surāṇām api
चाधिपत्यम् (च् आधि पत्यम्) ॥२-८॥	c-ādhipatyam

Figure 2 Simplifying the long Devanagri phrases and adding corresponding IAST characters

5. **Numbering the translation.** The next step was to add the word-by-word English translation of the Sanskrit words. A number was attached to each word such that reading the numbered words in sequence made sense as an English sentence. Based on this, a reader would be able to form an English translation while also getting a word-by-word view. Other commentaries provide an overall translation of the verse, but it is not always easy to make a connection between the overall translation and the word- by-word translation. Figure 3 shows the original Devanagri for Verse 1.4 while Figure 4 shows the corresponding representation with words broken down, the IAST, and the translation added and numbered to form a complete sentence in English.

संजय उवाच

एवमुक्तो हृषीकेशो गुडाकेशेन भारत ।
सेनयोरुभयोर्मध्ये स्थापयित्वा रथोत्तमम् ॥१-२४॥

Figure 3 Verse 1.4 in the Devanagri script

1.24 Lord Kṛṣṇa places the chariot between the two armies

Devanagari	Transliteration	Translation
संजय	sañjaya	1. *Sañjaya* (sañjayaḥ)
उवाच	uvāca	2. *said*
एवमुक्तो	evam ukt-o	4. *thus, addressed* (uktaḥ)
हृषीकेशो	hṛṣīkeś-o	6. *the controller of sensory desires* (hṛṣīka) *[Lord Kṛṣṇa]* (hṛṣīkeśaḥ)
गुडाकेशन	guḍāk-e-śena	5. *by the conquerer of sleep* (guḍākā) *[Arjuna]* (guḍākeśena)
भारत ।	bhārata	3. *O descendant of Bharata [King Dhṛtarāṣṭra]*
सेनयोरुभयोर्मध्ये (सेनयोर् उभयोर् मध्ये)	senayo-r ubhayo-r madhye	10. *of the armies* (senayoḥ) 9. *the two* (ubhayoḥ), *in the middle of*
स्थापयित्वा (स्था पयि त्वा)	sthāpayitvā	7. *stationed*
रथोत्तमम् (रथ्ऒत्तमम्) ॥१-२४॥	rath-o-ttamam	8. *the finest chariot* (ratha-uttamam)

Sañjaya[1] *said*[2]: *O descendant of Bharata [King Dhṛtarāṣṭra]*[3], *thus addressed*[4] *by the conquerer of sleep (guḍākā) [Arjuna]*[5], *the controller of sensory desires (hṛṣīka) [Lord Kṛṣṇa]*[6] *stationed*[7] *the finest chariot*[8] *in the middle of the two*[9] *armies*[10].

Figure 4 Verse 1.4 after word-by-word and overall translation

6. **Adding a description for each verse.** To aid in comprehension, a short title or description was added for each verse. For example, the verse 1.4 (Figure 4) is about Lord Krishna placing the chariot between the two armies.

7. **Synthesizing the commentaries.** A literature review of various commentaries would then be done for each verse to try and reconcile and/or put forth the various ways of interpreting the same verse – whether from the point of view of oneness or duality, literally or as an allegory, and so on. The purpose would be to put forth what the different commentaries are saying about that verse to the reader, rather than making the claim of making the only true translation or commentary, as some of the commentaries and treatises have done.

8. **Visualization for sense-making.** The final step would to help a reader think critically and bring out the essence contained in multiple verses using simple visual diagrams. Figure 5 synthesizes from 4 verses to explain what *tyaga* or renunciation is and what it is not. Similarly, Figure 6 and Figure 7 are simple visual diagrams used to simplify and explain complex concepts in the Gitā.

What is Tyāga (renunciation)?

Giving up all activities?	✗	Impossible (18.11)
Giving up results of all activities?	✓	(18.2)
Give up acts of sacrifice, charity and penance?	✗	They purify even the great souls (18.5) but perform them as a matter of duty without any attachment or expectation of result (18.6)

Figure 5 Explaining what renunciation is (and what it is not) by synthesizing from 4 verses

In Mode of Goodness — Performing prescribed duties because it ought to be done, and renouncing all material associations and all attachement to the fruit (18.9). Neither hateful of inauspicious work, nor attached to auspicious work (18.10) ✓

In Mode of Passion — Renouncing prescribed duties as troublesome or out of fear of bodily discomfort (18.8) ✗

In Mode of Ignorance — Renouncing prescribed duties because of illusion (18.7) ✗

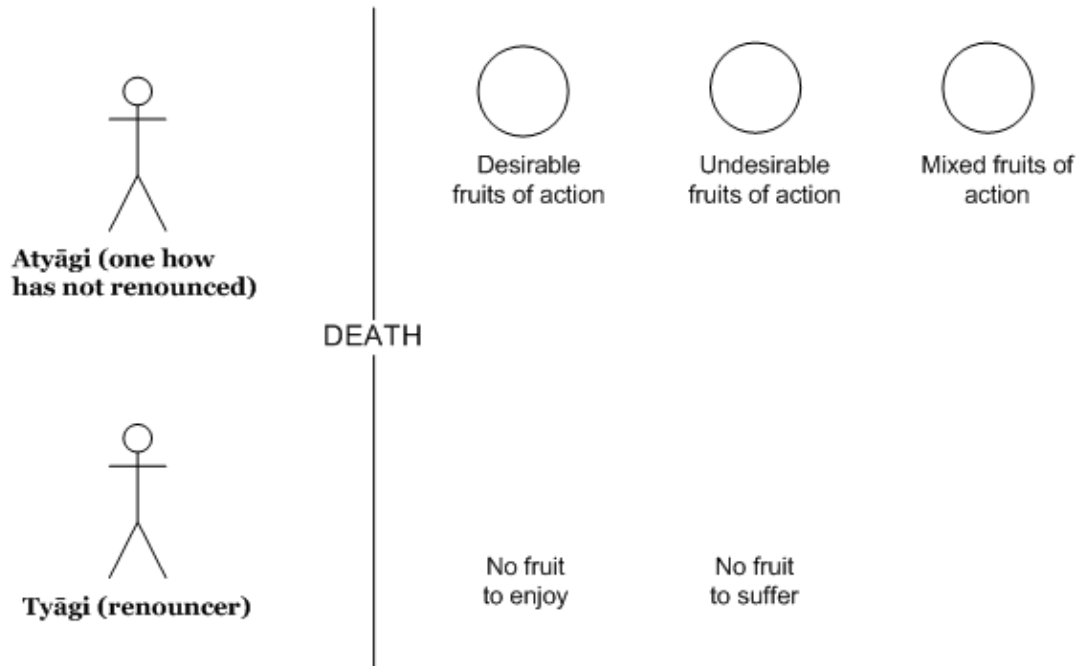*Figure 6 Explaining relationship of duties to 3 modes of nature*

Figure 7 Explaining what happens upon death to one who has and who has not renounced

Conclusions and Implications

What the author has presented in the series of 8 steps is to take a complex religious text of 745 verses written in an ancient language and simplify it with the help of visualizations. The purpose is to make the layered text easier for a reader to comprehend and understand.

As we've seen from the literature on accessibility and the Principle of Least Effort, a reader would not want to expend time and effort in reaching or getting hold of a particular source. With various commentaries written on the Bhagavad Gitā, and the advent of the internet and digital libraries, accessibility is not a real issue. A reader would either be able to get a physical copy of the Gitā from a personal collection or neighboring library or simplify go online and get access to various translations and commentaries on the Gitā.

However, solving the accessibility issue will only solve *one* of the cost components in a reader's cost-benefit calculus when trying to read the Gitā. The difficulties of understandability, comprehension, connecting the dots and sensemaking would still remain, and are major barriers apart from accessibility.

The 8-step process of simplifying can be a simple and effective way of getting rid of some of these cost components and removing the barriers in a person's sensemaking when reading the Bhagavad Gitā.

Making it easier to comprehend might encourage more young people to read the Gitā and benefit from its timeless wisdom in learning to be happy and to reduce the many burdens we take upon ourselves in a constantly connected world.

The methodology proposed in the study might also be viewed as a Digital Humanities project and be applied to the study and comprehension of religious books of some of the other major religions of the world.

It would also be useful in the study of comparative religion where after drawing insights from the texts within one religion, analysis could spread to comparing texts from different religions. Such a process would enable one to identify the basic essence of life and living common to all religions.

Future work will involve continuing to synthesizing the commentaries on the Bhagavad Gitā and visualizing the essence and teachings from different verses.

References

Agarwal, N.K. (2011). Information Source and its Relationship with the Context of Information Seeking Behavior. In *Proceedings of iConference 2011* (Seattle, WA, Feb 8-11). ACM Digital Library, 48-55. Retrieved April 29, 2012 from http://portal.acm.org/citation.cfm?id=1940768

Agarwal, N.K., Xu, Y.(C.) and Poo, D.C.C. (2011). A Context-Based Investigation into Source use by Information Seekers. *Journal of the American Society for Information Science and Technology*, 62(6): 1087-1104.

Ager, S. (n.d.) Sanskrit. *Omniglot: the online encyclopedia of writing systems and languages.* Retrieved April 30, 2012 from http://www.omniglot.com/writing/sanskrit.htm

ALA-LC romanization (n.d.) Sanskrit and Prakrit (in Devanagari script). *The US Library of Congress and the American Library Association transcription scheme for Sanskrit and Prakrit.* Retrieved April 30, 2012 from http://www.loc.gov/catdir/cpso/romanization/sanskrit.pdf

Bhave, V. (2006) *Geeta-Pravachan* (Hindi) (translated by Haribhao Upadhaya). Varanasi, India: Sarva Sewa Sangh Prakashak (original work published 1951).

Case, D.O. (2007). *Looking for information: A Survey of Research on Information Seeking, Needs and Behavior* (Second Edition). Oxford, UK: Academic Press.

Chakrabarti, A.K., Feineman, S. and Fuentevilla, W. (1983). Characteristics of source, channels, and contents for scientific and technical information systems in industrial R&D. *IEEE Transactions on Engineering Management*, 30, 83-88.

Chidbhavananda, S. (1997). *The Bhagavad Gitā*, Sri Ramakrishna Tapovanam.

Culnan, M.J. (1983). Environmental Scanning: The effects of task complexity and source accessibility on information gathering behavior. *Decision Sciences*, 14(2), 194-206.

Das, S. (n.d.). In Praise of the Bhagavad Gitā: Great Comments by Great People. *About.com: Hinduism*. Retrieved April 30, 2012 from http://hinduism.about.com/od/thegita/a/famousquotes.htm

Dervin, B. (1992). From the mind's eye of the user: The sense-making qualitative-quantitative methodology. In J.D. Glazier and R.R. Powell (Eds.), *Qualitative research in information management*, Englewood, CO: Libraries Unlimited, 61-84.

Dervin, B. (2005). What Methodology Does to Theory: Sense-Making Methodology as Examplar (Chapter 2). In K.E. Fisher, S. Erdelez and L. McKechnie (Eds.). *Theories of Information Behavior*. ASIS&T Monograph Series. Medford, NJ: Information Today.

Digital Public Library of America (n.d.) *About – Digital Public Library of America*. Retrieved April 24, 2012, from http://dp.la/about/

DOAJ (2012). *DOAJ - Directory of Open Access Journals*. Retrieved April 26, 2012 from http://www.doaj.org

Durrance, J.C. (1988). Information needs: Old song, new tune. In *Rethinking the library in the information age: A summary of issues in library research*, Washington, D.C.: Office of Library Programs, Office of Educational Research and Improvement, US Department of Education, 159-178.

Easwaran, Eknath (1975). *The Bhagavad Gitā for Daily Living Volume 1*, Berkeley, California: The Blue Mountain Center of Meditation

Easwaran, Eknath (1979). *The Bhagavad Gitā for Daily Living Volume 2*, Berkeley, California: The Blue Mountain Center of Meditation

Easwaran, Eknath (1984). *The Bhagavad Gitā for Daily Living Volume 3*, Berkeley, California: The Blue Mountain Center of Meditation

Easwaran, Eknath (2007). *The Bhagavad Gitā*, Nilgiri Press

Fidel, R. and Green, M. (2004). The many faces of accessibility: Engineers' perception of information sources. *Information Processing and Management*, 40, 563–581.

Gambhirananda, S. (1998). *Madhusudana Sarasvati Bhagavad Gitā: With the annotation Gūḍhārtha Dīpikā*, Calcutta: Advaita Ashrama

Gerstenberger, P.G. and Allen, T.J. (1968). Criteria used by research and development engineers in selection of an information source. *Journal of Applied Psychology*, 52(4), 272-279.

Goyandka, J.D. (2008). *Śrīmadbhagavadgītā Tatva-Vivechani Hindi-Teeka* (commentary in Hindi). Gorakhpur, India: Gitā Press

Goyandka, S.H.K.D. (1937). *Śrīmadbhagavadgītā Shankarabhashya* (Hindi translation). Gorakhpur, India: Gitā Press

Hardy, A.P. (1982). The selection of channels when seeking information: Cost/benefit vs. least-effort. *Information Processing & Management*, 18 (6), 289-293.

Harris, M. H. (1999). *History of Libraries of the Western World* (4th ed.). Scarecrow Press.

HathiTrust (n.d.). *Hathi Trust*. Retrieved April 24, 2012, from http://www.hathitrust.org/

Hessel, A. (1955). *A History of Libraries*. Washington: Scarecrow Press

Internet Archive (n.d.) *Internet Archive: Digital Library of Free Books, Movies, Music & Wayback Machine*. Retrieved April 24, 2012, from http://archive.org/index.php

Knapp, S. (n.d.). *A Complete Review of Vedic Literature and the Knowledge Within* (E-book) Retrieved April 30, 2012 from http://www.stephen-knapp.com/complete_review_of_vedic_literature.htm

Kuipers, L. (2012). *The 21st Century Digital Library*: A Guide to Finding Free E-books, Magazines, Newspapers and Audiobooks and Transferring them to your digital devices [Kindle Edition], Northwest Digital Publishing.

Kwasitsu, L. (2003). Information-seeking behavior of design, process, and manufacturing engineers. *Library and Information Science Research*, 25, 459–476.

Library of Congress (n.d.) *About Digital Collections*. Retrieved April 25, 2012, from http://www.loc.gov/library/about-digital.html

Lyman, P. and Varian, H.R. (2003) *How much Information 2003?* School of Information Management and Systems, University of California at Berkeley, Retrieved April 24, 2012 from http://www2.sims.berkeley.edu/research/projects/how-much-info-2003/

Marshall, D. N. (1986). *History of Libraries: Ancient and Mediaeval*. South Asia Books.

McCreadie, M. and Rice, R.E. (1999). Trends in analyzing access to information. Part II. Unique and integrating conceptualizations. *Information Processing and Management*, 35, 77-99.

Miller, B.S. (1986). *The Bhagavad Gitā*, Columbia University Press.

Murray, S.A.P. (2009). *The Library: An Illustrated History*. American Library Association Editions, Skyhorse Publishing Inc.

OAD (2012). *OAD - Open Access Directory*. Retrieved April 26, 2012 from http://oad.simmons.edu/oadwiki/Main_Page

OpenDOAR (2010). *The Directory of Open Access Repositories - OpenDOAR*. Retrieved April 26, 2012 from http://www.opendoar.org

Prabhupada, A.C.B.S. (1983). *Bhagavad-Gitā As It Is* (Eighth printing 2001). International Society for Krishna Consciousness, Botany, Australia: McPherson's Printing Group.

Project Gutenberg (n.d.) *Project Gutenberg*. Retrieved April 26, 2012 from http://www.gutenberg.org/

Radhakrishnan, S. (2004). *Bhagavadgītā (commentary in Hindi)*. New Delhi, India: Hindi Pocket Books

Ramsukhdas, S. (1990). *Gitā Darpan* (4th Edition - Hindi). Gorakhpur, India: Gitā Press.

Ramsukhdas, S. (2008). *Śrīmadbhagavadgītā Sādhaka-Saṃjīvanī* (commentary in Hindi). Gorakhpur, India: Gitā Press

Sampatkumaran, M.R. (1985). *The Gītābhāṣya of Rāmānuja*, Bombay: Ananthacharya Indological Research Institute

Sargeant, W. (2009). *The Bhagavad Gītā: Twenty-fifth Anniversary Edition*, Albany: State University of New York Press

Scudellari, M. (2010). *Library cuts threaten research*. September 28, 2010. Retrieved April 26, 2012 from http://classic.the-scientist.com/news/print/57728/

SherpaRomeo (2012). *Sherpa/Romeo - Publisher copyright policies & self-archiving*. Univeristy of Nottingham. Retrieved April 26, 2012 from http://www.sherpa.ac.uk/romeo/

Shivananda, S. (n.d.). *Hindu Scriptures (Part 1)*, The Divine Life Society, Rishikesh. Retrieved April 29, 2012 from www.hinduism.co.za/vedas-.htm

Singh, R.R. (2006). *Bhakti and Philosophy*. Lanham, MD: Lexington Books.

Sivananda, S. (1995). *The Bhagavad Gitā*, The Divine Life Society.

Suber, P. (2012). *Open Access Overview*. Retrieved April 26, 2012 from http://www.earlham.edu/~peters/fos/overview.htm

Tapasyananda, S. (1990). *Śrīmad Bhagavad Gītā*, Sri Ramakrishna Math.

Tibetan and Himalayan Library (n.d.) *The Transliteration & Transcription of Sanskrit and Prakrit*. Transliteration & Transcription Schemes, Tibetan Scripts, Fonts & Related Issues, THDL Toolbox. Retrieved April 30, 2012 from

https://collab.itc.virginia.edu/wiki/tibetan-script/Sanskrit%20and%20Prakrit%20Transliteration%20%26%20Transcription.html

Tilak, B.G.D. (1936) *Srimad BhagavadGita Rahasya or Karma-Yoga-Shastra* Volume II, First Edition (B.S. Sukthankar, Trans.). Poona (now Pune), India: Tilak brothers (Original work published 1915). Retrieved April 29, 2012 from http://ia600503.us.archive.org/8/items/SrimadBhagavadGitaRahasya-BgTilak-Volumes1And2/SrimadBhagavadGitaRahasya-BgTilak-Vol2_text.pdf

Tolzmann, D.H., Hessel, A. and Peiss, R. (2001). *The Memory of Mankind: The Story of Libraries since the Dawn of History*. Oak Knoll Press.

Vireswarananda, S. (2000). *Shrimad Bhagavad Gitā*. Madras (now Chennai), India: Sri Ramakrishna Math Publication Department.

Vivekananda, S. (2002). *Thoughts on the Gitā*, Delhi: Advaita Ashrama (originally published in 1963).

Willinsky, J. (2006). Why Open Access to Research and scholarship? Commentary, The *Journal of Neuroscience*, September 6, 2006.

Wood, E. (1954). *The Bhagavad Gītā Explained. With a New and Literal Translation*, Los Angeles: New Century Foundation Press

World Digital Library. (n.d.). *About – World Digital Library*. Retrieved April 24, 2012, from http://www.wdl.org/en/background/

Xu, Y. (C.), Tan, C.Y. (B.) and Yang, L. (2006). Who Will You Ask? An Empirical Study of Interpersonal Task Information Seeking. *Journal of the American Society for Information Science and Technology*, 57(12), 1666-1677.

Yitzhaki, M. and Hammershlag, G. (Jul 2004). Accessibility and use of information sources among computer scientists and software engineers in Israel: Academy versus industry. *Journal of the American Society for Information Science and Technology*, 55(9), 832–842.

Zaehner, R. C. (1969). *The Bhagavad Gītā*, Oxford University Press.

Zimmer, J.C. and Henry, R.M. (2007). Antecedents to Relational and Nonrelational Source use: An Exploratory Investigation. In *Proceedings of the 40th International Conference on System Sciences (HICSS'07)* (Waikoloa, Hawaii, Jan 3-6).

Zimmer, J.C., Henry, R.M. and Butler, B.S. (2008). Determinants of the Use of Relational and Nonrelational Information Sources. *Journal of Management Information Systems*, 24(3), 297-331.

Zipf, G. (1949). *Human behavior and the principle of least effort: An introduction to human ecology*. New York: Addison-Wesley.

Zmud, R.W., Lind, M.R. and Young, F.W. (1990). An attribute space for organizational communication channels. *Information Systems Research*, 1(4), 440-457.

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