

Form and Page Turning Function of 17th century Devanagari Manuscripts of Maharashtra (India)

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Abstract

This research paper examines features about functional book design process of 17th Century brahmanical *Devanagari* manuscripts available in Maharashtra with a focal point on 'Form and Function'. This is an inductive research. It investigates design aspects related to form, shape and page turning system of manuscripts. Traditional influence of art, culture, style borrowed from some other culture also considered as appropriation in manuscript format. Results show that brahmanical manuscripts have their own conventional system of page orientation and method of turning the pages in a particular way. Usability in design helps reader to see previous and current page at the same time without interrupting the flow of text. This is a completely a new and unique approach to examine manuscripts with usability orientated design perspective. Study adds a valuable contribution in the subject of history of publication design and its association with contemporary book design.

Keywords: Devanagari Manuscripts, Graphic Design, Form & Function, Publication Design, Visual Art

1. Introduction

Publication Design is one of the subset of Visual Communication. People of Maharashtra know book design work before 13th Century (Shubhada Nagarkar, 2003). These books designed in the form of '*pothi*'. Leaves of such *pothis* are not sewn but tied together using cord and various other techniques. While examining the form and function of these handwritten manuscripts, use of schematic design principles are easily noticed. According to Ackdeniz, design process is an expression of creativity and creativity depends upon the functionality and size of the product. In earlier days, designer's role was unnoticed, as people preferred function than the form. They were interested in completing their task. In modern days with the advent of technology, globalization, digital technology and higher level of thinking, people are interested in both the form and its function (Ackdeniz, 2014, pp. 3-5). Form and Function are the two major balanced factors of any graphic design. Main function of any publication design is to visually communicate

literature through appropriate design and help reader in finding/reading information easily. Attempt of this study is to understand more about particularly one design aspect i.e. page turning function related to form of 17th Century Devanagari manuscripts using contemporary utilitarian design principles and lexicons.

2. Review of Literature

Researcher has conducted an exhaustive interdisciplinary literature review through books, journals, and online sources. Researcher classified literature as:

- Devanagari Script
- Form and Conventions of Handwritten Manuscripts
- Form follows Function and Modern Graphic Design

2.1 *Devanagari Script*

Murthy stated Devanagari script fully developed by 10th -11th centuries A.D. Originally Devanagari known as 'Nagari-lipi' (Murthy R. S., 1996, pp. 13, 14). Devanagari is the widely used script in India and is the largest proportion among the different Indian scripts (Kumar, Committees and Commissions in India, 1947-73: 1977 (4 v.), 1975, p. 65). Script used to write Marathi, Sanskrit, Hindi and Nepali and more than 36 Indian languages (Bright, 1996, p. 384).

2.2 *Form and Conventions of Handwritten Manuscripts*

Murthy observed that manuscripts found in India are mostly oblong and square. The reason behind oblong size is all earlier manuscripts made of palm leaf, so the shape of manuscript oblong. Although the manuscripts available in various sizes but there is similarity between modern books design i.e. all the leaves of the one manuscript are of same size (Murthy R. S., 1996, pp. 36, 104). Satyendra described forms of stitched manuscript used in North India depending on their sizes and binding techniques are; *Pothi*, *Gutka* (Both are centre-stitched book while *Gutka* size - 6 in x 4.5 in), *Book-Pustika* (bigger in size around 21 in x 4.5 in), *Pustika* (size around 7.5 in x 5.25in), and *Panavali*. *Potho* size thickness is bigger than *Pothi*. This is stitched either centered or on side. *Panavali*, which is an oblong form of manuscript stitched at shorter side, also called as *pothi*. *Patra* is loose sheets type of book (Murthy R. S., 1996, pp. 103-104; Satyendra, 1978, p. 82). Banabhatta, in his literature 'Harshacharita' (Bana, Harshacharita, p.85f, as cited in Murthy, 1997) explained how to read or handle a manuscript. Just before the reading one should unwind the thread around it, otherwise it should be kept wounded. A low stool preferably made up of cane or reed (Sharashashoullaka-yantra) should be used to keep book on it. Use of bookmark made of leaf and lesser length than the book (antarampatram) advised. Few leaves suggested taking in hand while reading (Murthy R.

S., 1996, p. 104). According to Divya Bhargavi, sitting on the floor with crossed leg position for reading, writing, meditation, eating, etc. is an ancient tradition of India (Bhargavi, 2015).

2.3 *Form Follows Function and Modern Graphic Design*

Modernist approach of Bauhaus School in Germany influenced modern art, architecture and design during 1919 with the basic principle 'Form follows Function'. Their focus was on functional simplicity of design using schematic functions in design (A History of Design Systems, 2014). According to Golombisky and Hagen good design is the combination of 'Form' as an art and 'Function' as an utility (Golombisky & Hagen, 2010). Bear confirms, 'Form' can be a format of a publication design; double/tri-fold brochure and binding types. It is overall look and feel of the page, which includes arrangement of various graphic elements in eye catching and attractive manner. 'Function', deals with process of design and the purpose of design. It helps user to complete the task. Form supports function with the help of principles of design and rules of publication design (Bear, 2015). It is very essential to know what the function of design is, before conceptualizing ideas. Blogger suggest three main areas to consider; they are content, audience and medium of design. Content is big powerful force behind the design. Audience interacts with this content to access the information or message in visual design. Medium is another most important factor in terms of its material, dimensions, location; and where, when and how it can be used (Graphic design elements: Form follows function, 2013). Research conducted on text presented vertically or horizontally in lines, shows that reading vertical lines are more competent than horizontal line. Therefore, vertically arranged text does not have usability problems (Laarni, Simola, Kojo, & Risto, 2004).

3. Research Methodology

Total 157 Devanagari manuscripts of 17th Century screened from various libraries of Maharashtra. Data of sizes and orientation of text on page recorded. Collected information categorized under two main criterions; horizontal or vertical format. Visual thinking technique – practice based method used to explore and present research finding (Gray and Malins, 2008, pp 103-107). Computer-aided visualization through diagrams used as a tool. Visual references about the sitting posture of Indian and people from other cultures collected from internet and museum/library websites.

4. 4. Research Finding and Discussions

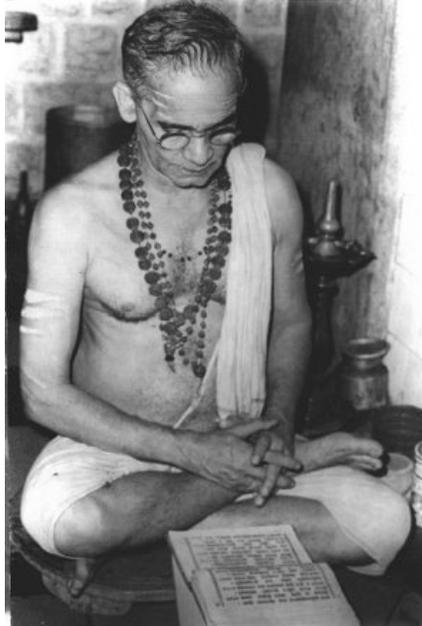
4.1 *Devanagari manuscripts of 17th Century screened from various libraries of Maharashtra.*

Resource Library and Total no. of MSS Screened	Horizontal Orientation	Vertical Orientation
Deccan College - 53	53	-
Vedic Samshodhan Mandal - 23	23	-
Anandashram - 12	12	-
Bhandarkar Oriental Research Institute - 30	30	-
Samarth Vagdevata Mandir - 24	23	1
Asiatic Society of Bombay - 15	15	-

Table 1: Statistics about manuscripts screened and their formats

Statistical information shown in Table 1 clearly suggests that the most popular and conventional size of paper used for writing manuscripts in 17th Century Maharashtra was horizontal. Very few manuscripts wrote in vertical format.

4.2 *Reading and Writing Posture of People from Various Cultures*



**Figure 1: Indian Reader - Courtesy:Kamat's Potpourri,
<http://www.kamat.com/kalranga/faces/3069.html>**



Figure 2: Indian Writer - A commemorative Postage Stamp on 'Panini' released by Indian Post Department in 2004



Figure 3: Mughal Reader - Cropped Image from 'School Courtyard with Boys Reading and Writing' manuscript produced in the court of Akbar. Folio 149v of the Akhlaq-e Nasiri (Ethics of Nasir) - See more at: <https://www.agakhanmuseum.org/collection/artifact/school-courtyard-boys-reading-and-writing#sthash.uobAoMfr.dpuf> Courtesy - Aga Khan Museum



Figure 4: European Scribe - Cropped Image from Harley MS 2820 f.78r, 11th Century Manuscript Gospels 'Cologne Gospels', Courtesy: British Library (http://www.bl.uk/manuscripts/Viewer.aspx?ref=harley_ms_2820_f5001r)

Figure 1 and Figure 2 shows traditional style of Indian people sitting on the floor with crossed or folded legs while reading and writing.

Figure 3 shows reading style of Mughal students and teachers, sitting on the floor and holding a book in the hands or use of book stand. Method used for Bookbinding – Coptic (Qaisar & Verma, 1996), (Jacobs, 2008).

Figure 4 Manuscript illustration indicates that European scribe sitting on a cushioned chair with a basic desk. Sometimes these desks were portable and moved to different places. European scribes also used lockable and portable chests to keep books for copying and reference purpose (Connolly & Mooney, 2008, p. 183).

4.3 Placement of flipped Folio

Study conducted using digital experiment to understand how much total space occupied if folios kept in different directions while reading; in horizontal direction or in vertical direction. Objectives to study these placements of pages were to understand flow of reading without any interruption and ergonomic convenience in handling folios.

Space Used When Folios Flipped Horizontally or Vertically While Reading

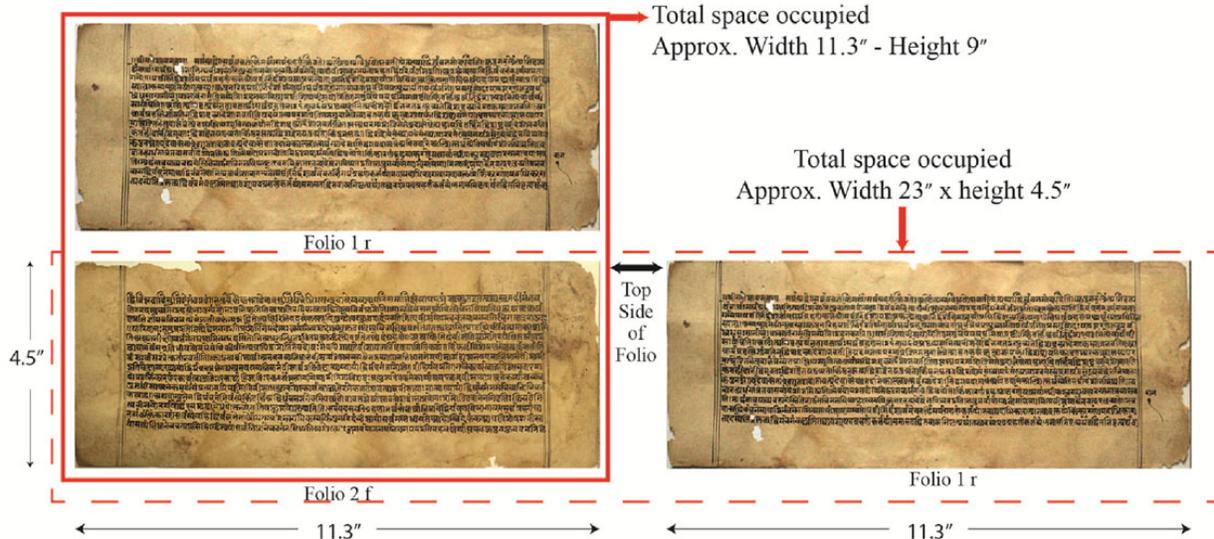


Figure 5: Graphical representation of space used when folio flipped horizontally or vertically. Courtesy:-Patanjali Mahabhasya, 1653 AD, Deccan College, Pune.

Tabular Representation of Width and Height of Representative Manuscript when Flipped

Size of Manuscript	Width 11.3" x Height 4.5"
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Ratio of Width and Height	Approx.2.5: 1
If pages Flipped in Horizontal direction	Approx. Width 23" x Height 4.5"
If pages Flipped in Vertical direction	Width 11.3" x Approx. Height 9"

Table 2: Outcome of digital experimentation of placement of flipped pages

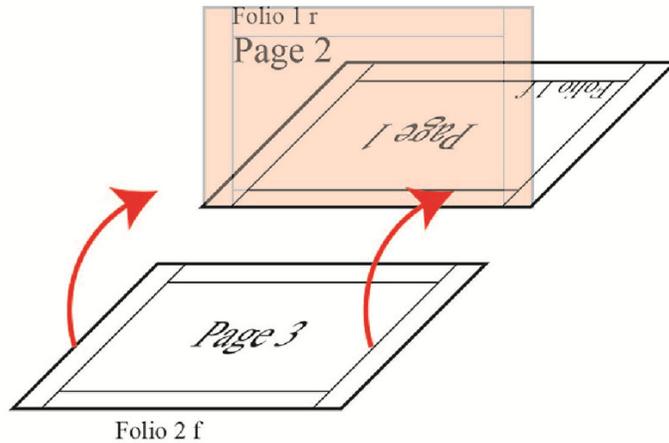


Figure 6: Lifting a folio with both the hands in vertical direction.

Lifting of Folio with Both the Hands in Vertical Direction

Considering the width of manuscript which is horizontally 2.5 times of height, ergonomically while handling the folio it is more convenient to place flipped folio in vertically upward direction using both the hands (Fig. 6) rather than putting it horizontally.

Placement of Folios and Eye Movement Directions While Reading

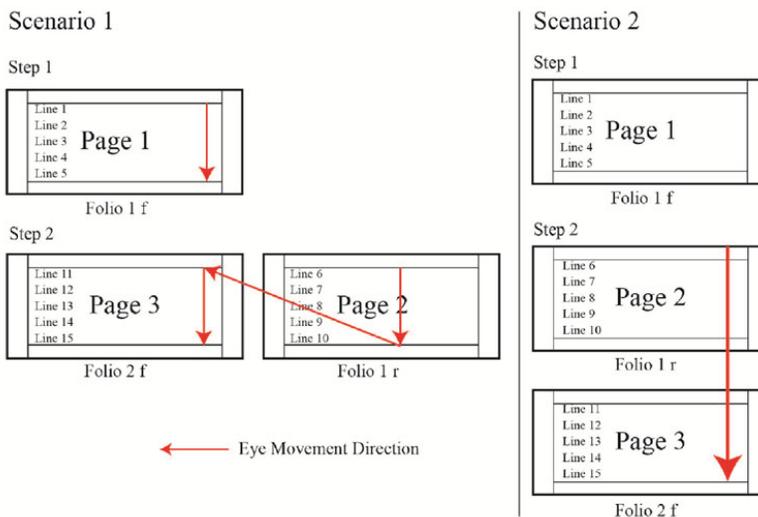


Figure 7: Placement of folios and Eye Movement Directions while reading previous and current page

Figure 7 -Scenario 1 - Step 2 shows challenging eye movement direction which is very problematic for the continuous reading, in case reader wants to refer to the text on previous page.

Figure 7 - Scenario 2 - Step 2 eye movement direction clearly demonstrates that arrangement of folios helps in the continuous reading, in case reader wants to refer to the text on previous page. Text flow is continuous in vertical arrangement of pages.

4.4 Contemporary Page Turning System

Today, depending upon the type of job to be published book designer chooses size and shape of book. In contemporary Publication Design, automatic stitching machines are in use for binding quires of book with large no. of pages but for book with small no. of pages center pinning is the most preferred type of binding.

Text Flow Direction for Previous and next Page



Figure 8: Sri Mahalaxmi Mahatmya, Centre Stitched Flipped Pages, Published by Mss. Aadarsh Vidhyarthi Prakashan, Pune 411 002 in 2013

Observations of Figure 8 - Page turning system and page orientation of text is as similar as in 17th Century Devanagari Manuscripts. Sheets of pages are center stitched when page nos. is small and quires used in case publication has large no. pages.

5. Conclusion

It is an ancient tradition of Indian readers and writers to sit on the floor with folded or crossed legs to perform activities like reading, writing, etc. In considerations at the oblong shapes of manuscripts and fragile nature of its material i.e. paper, readers of 17th century Maharashtra might not have been convenient to hold folios in their hands; so they kept it down on the floor or a desk. Use of separate leaves of manuscript is an appropriate method. Using this method folio sits flat on the floor or surface and reader need not have to bend pages manually for reading text near to inside margin as in Coptic book binding style. This type of publication design essentially related with user with the better functionality. Brahmanical Devanagari manuscripts have their own conventional patterns of design; form and structure are usable, functional and ergonomically suitable. Their features include orientation of text on both the sides of folio in opposite direction; system for turning the folio; and placement of turned folio in vertical upward direction with the continuity in text flow. Usability point of view it is the most appropriate position, which brings ease in reading and referring previous page. Cultural adaptation and appropriation practiced in design patterns of these manuscripts. It is a conceptual design, form which serves purpose of functional needs. This ethnic identity is meeting to

current design standards. Form and design patterns of 17th Century book design, accomplished in contemporary publication design until today.

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