Thoughts on Enhancing Scientific Journal Quality Through Cover and Layout Design: Postprint

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Abstract

Scientific journals primarily publish academic papers. Owing to the scientific, academic, and serious nature of academic papers, it is objectively determined that scientific journals struggle to attract widespread interest from the general public and lack a broad readership base. This article addresses this issue by focusing on how to utilize the elements and techniques of cover design and layout design to enhance journal quality and reader interest.

Full Text

Abstract

Scientific journals primarily publish academic papers. Due to the scientific, academic, and serious nature of these papers, scientific journals objectively struggle to attract widespread interest from the general public and lack a broad readership base. This paper addresses this issue by focusing on how to utilize the elements and techniques of cover design and layout design to enhance journal quality and reader interest.

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As an independent media form, high-quality scientific journals should achieve mutual reinforcement and promotion between their internal academic standards and external cover and layout design. However, since scientific journals mainly publish academic papers, the scientific, academic, and serious nature of these

papers objectively makes it difficult for such journals to attract widespread interest from ordinary readers, resulting in a limited readership base. This requires art editors to possess considerable artistic skill and aesthetic awareness, and to employ cover and layout design techniques that harmoniously unify content and form, thereby enhancing both journal quality and reader interest. One of the most fundamental characteristics of a first-class scientific journal is establishing a consistent cover style, which necessitates breaking away from traditional stereotypes about scientific journals being overly serious, rigid, gloomy, and dull. Excellent scientific journals must have distinctive personalities, allowing readers to identify the publication even without seeing its name. Therefore, improving scientific journal quality requires unique approaches to cover and layout design.

1.1 Problems in Scientific Journal Cover Design

1.1.1 Gloomy Colors, Outdated Layouts, and Monotonous Design Color selection and coordination are crucial for cover design. As the most visually active element, color is a key component in scientific journal cover design. The symbolic meaning and communicative power of color directly affect the journal's ultimate visual impact. Therefore, color application should beautify the cover while maintaining academic rigor, considering the needs of the journal's content and using different color contrasts to express various themes and ideas—maintaining coordination within contrast and seeking development within unity. Scientific journal covers should avoid exaggerated colors and instead reflect academic seriousness while conforming to the aesthetic preferences of scholarly readers. The overall design should appear elegant and scholarly, creating a distinctive academic atmosphere. Furthermore, while the overall color tone should be 沉稳 (dignified), this does not mean dark or gray; the cover style should create a sense of series consistency with other issues throughout the year.

1.1.2 Incomplete Cover Labeling Items Based on a survey of 120 scientific journals, some art editors, in their attempt to enhance appeal, exaggerate designs without following standard requirements. Examples include using unrelated illustrations on covers; making English abbreviations of journal names overly prominent; making main titles smaller than subtitles or using identical font sizes; failing to write Chinese pinyin according to national standards that require word-based units; and still using traditional Chinese characters for journal names.

1.2 Key Elements of Scientific Journal Cover Design

As Gorky stated: "Beauty is an image that can affect both emotion and reason. These perfect images are created through the harmonious combination of rationality and perception, thought and emotion." Scientific journals possess high academic, professional, and authoritative characteristics. The journal cover (including front cover, inside front cover, inside back cover, back cover, and spine)

not only protects the journal but also reflects its editorial purpose and content. The cover should be generous and aesthetically pleasing, with dignified and bright patterns that emphasize the journal's content characteristics. Art editors should master three key elements: color, cover images, and cover text.

1.2.1 Color Color is the most active factor in visual communication and a vital element in scientific journal cover design. Cover design should achieve clear and striking aesthetic effects through color contrast. However, most scientific journal covers suffer from gloomy colors, outdated layouts, and lack appeal and affinity. Constrained by traditional concepts, some covers are monotonously designed, as if this were the only way to express "academic seriousness." A lack of aesthetic appeal in the cover, regardless of high academic quality, will affect the journal's image and status among readers. High-quality scientific journals require not only excellent content but also exquisite cover designs that match their content characteristics and are visually appealing, providing readers with comprehensive spiritual enjoyment.

1.2.2 Cover Images Cover images offer intuitive, clear, and visually impactful characteristics, making them essential design elements. The core of cover design is creating a distinctive graphic composition with a unique personality. Images include realistic and abstract graphics. The main image (photograph) should match the theme, capture attention, and be appropriately sized. Use concise, bright, and meaningful images to highlight the theme and express the external artistic image of the academic journal.

1.2.3 Cover Text Covers should accurately label journal information. The cover (including inside front cover) should indicate the journal name (including subtitle), volume, issue, and year, and may indicate editors when necessary. All numerals should use Arabic digits. Journals exceeding 6mm in thickness should repeat these items on the spine. Cover design forms should remain stable, with no advertisements on the front cover. The journal name should appear prominently using easily recognizable fonts. Indexed journals should indicate this on the cover. The front cover (including inside front cover) is not included in the journal's continuous pagination.

Regarding the printing location of Chinese standard serial numbers, national standards specify: for journals, the ISSN should be printed in the upper right corner of the front cover, and the CN number should be printed at the bottom of the back cover, in addition to the copyright page.

1.3 Other Considerations

1.3.1 Standardization The *Chinese Standard Serial Number* (GB/T9999-2001) clearly stipulates that journal covers should indicate: (1) journal name (including parallel titles and subtitles when applicable); (2) publication date, volume, and issue number; (3) responsible parties (including sponsors, editors,

or chief editors); (4) barcode of the Chinese standard serial number; (5) for single or bound issues exceeding certain thickness, the journal name, volume, issue, and publication date should be printed on the spine; and (6) numerals on the cover should use Arabic digits.

Chinese book and journal titles are generally written with each word as a unit, with the first letter of each word capitalized. All caps may be used for design purposes. The journal name should be concise and clear, conforming to the specific discipline and knowledge field covered by the publication. When using abbreviated titles, the principle should be intuitive and non-misleading. The unified name should be used wherever the journal title appears.

Fonts commonly used for journal titles fall into three categories: calligraphic, artistic, and typographic. Calligraphic fonts have strong artistic appeal and often benefit from celebrity authorship, creating a celebrity effect. Artistic fonts are most commonly used in journal title design and can be divided into regular and irregular artistic fonts. Typographic fonts inherit characteristics of regular artistic fonts and benefit from convenient computer processing, making them widely used in academic journals. Regardless of font choice, the title should stand out with bright colors that contrast sharply with the background. Between the main image and title font, dynamic combinations can be employed: an active image with stable fonts (such as bold Heiti or thick Songti) or a static image with dynamic fonts (such as Lishu or Weibei).

1.3.2 Artistry Scientific journal cover design should enhance aesthetic value consistent with journal content, creating distinctive artistic styles that reflect the journal's characteristics through blank space reservation, background division, composition forms, color coordination, and layout arrangement. Style represents personality. The journal cover is an image with unique visual effects closely related to the journal brand. It should display the journal's unique visual effects and cultural connotations with obvious artistic style, reflecting the discipline scope of the content and possessing symbolic significance.

Cover highlights (used by some magazines) must be outstanding. Titles are responsible for "catching the eye" throughout the layout, and creating effective titles is crucial for enhancing journal readability. Since readers first see the title before deciding whether to read the article, titles must stand out and function as "news eyes." Therefore, titles should be engaging factual headlines, thought-provoking suspenseful headlines, or enlightening philosophical headlines. Cover design should be concise, aesthetically pleasing, and generous, capable of being either abstract or concrete. Visual elements include the journal name, standard serial number, volume and issue numbers, text and numerals, background patterns of dots, lines, and planes, and other decorative symbols. With relatively few illustrations, scientific journal covers generally select images closely related to the content, fixed in the cover composition. Since high technology is inseparable from modernity, modern elements can be incorporated, such as adding contemporary patterns to background images or processing title fonts, back-

grounds, and colors with Photoshop—though these must be used appropriately to avoid counterproductive results.

1.3.3 Innovation Innovation is the soul of progress and the driving force for scientific journal development. To become a brand-name publication, journals must comprehensively pursue innovation in content, publishing methods, and cover design. Innovation in cover design primarily manifests as unique personality and characteristics that attract reader attention. Distinctiveness first appears in color and images, enabling readers to immediately find their favorite journals among numerous publications. Only then can cover design methods and concepts become more innovative.

2. Layout Design of Scientific Journals

Layout design emphasizes rich emotional expression—conveying feelings through layout language. Layout language consists of visual composition: first, layout means including characters, images, titles, lines, and colors; second, layout space including columns, sections, and white space. Only when all these "organs" work together can they form rich expressions to convey emotions and create unique appeal. Layout is the ultimate embodiment of the integrated publication, the concrete implementation of editorial philosophy, the packaging means to win readers, and the manifestation of form reacting upon content. While content is the essence of scientific journals, layout style serves as its clothing—only through meticulous content development and thoughtful layout design can form and content achieve unity and mutual enhancement.

Layout design includes text and image configuration, column division, title formats, font sizes and typefaces, and other layout factors. Academic journal pages mainly consist of body text, titles, author names, charts, page numbers, and headers. Additionally, blank space is also a crucial layout component. Due to their academic nature, scientific journals cannot use as lively fonts or flexible layouts as popular or literary journals, making it even more essential for art editors to skillfully apply aesthetic principles in layout design to increase reader pleasure and ease.

2.1 Use of Text

Due to their nature, scientific journals generally use Song typeface for body text and content design—a font that is dignified and generous, with balanced strength and moderate density. According to the *Format of Scientific and Technical Journals*, established printing standards should clearly mark manuscripts (English, Russian) with headers, titles, authors, affiliations, abstracts, keywords, body text, illustrations, tables, formulas, etc.

Since scientific journal articles are typically lengthy, improper arrangement can cause reader fatigue. Solutions include interspersing images (photographs) in

long articles; appropriately dividing sections and adding subheadings; and arranging articles of varying lengths throughout an issue, pairing long and short pieces. Short articles may use different fonts (such as Kaiti), and article title arrangements can be diversified: horizontal titles, vertical titles, double-line titles, centered titles, etc. Title fonts, single-column or double-column layout, and other factors can be selected based on content and title length. The space occupied by titles should maintain proper proportion to body text—excessive title space creates a top-heavy imbalance, while insufficient space produces a bottom-heavy 压迫感.

2.3 Handling of White Space

Some scientific journals contain no illustrations, and since published articles are generally lengthy, layout design must pay special attention to the relationship between printed text and white space. From an aesthetic perspective, white space holds equal importance to text and charts as an inseparable part of layout beauty. Pages filled completely with content feel suffocating and generate reading aversion. Experienced art editors of scientific journals pay special attention to this, pushing text blocks toward the middle and lower portions of pages (especially article starting pages), leaving appropriate white space at the top, gutter, and fore-edge, with suitable line spacing. This not only enhances layout aesthetics and reading interest but also provides space for readers who like to write notes. When achieved, the layout creates an aesthetic effect of "density within sparseness and sparseness within density," appearing clean, clear, and harmoniously beautiful—realizing the ancient concept of "not a single word, yet fully expressive." However, improper design with excessive white space can fragment the layout, making it appear empty and loose, wasting space without creating beauty.

2.4 Scaling of Illustrations

Photographs in articles are like windows opened on a flat page, displaying three-dimensionality and depth. In today's "image-reading era," photography has evolved from merely beautifying pages to becoming an independent element for illustrating and strengthening themes. Illustrations also balance the layout, pairing with titles, interspersing through text, or echoing titles vertically and horizontally. Ideally, images should vary in orientation and size, creating rhythmic pleasure when properly arranged. Therefore, mastering scaling proportions and 合理安排插图位置 is crucial in layout design. The scaling principle: simple content requires greater reduction, complex content requires less reduction. Due to space limitations, most images are reduced, though some require enlargement before reduction. Accurate scaling perfectly displays image content, avoiding issues such as overly reduced complex diagrams or insufficiently reduced simple diagrams, or misaligning half-column and full-column images.

Second, image positions should be 合理安排 to coordinate with text. Half-column images with similar heights and widths can be arranged side-by-side;

half-column images smaller than 9cm can be wrapped by text; images exceeding 9cm should be full-column. If a page contains two half-column images of different sizes, one should be placed at the fore-edge and the other at the gutter regardless of page side; with three images, they should follow fore-edge, gutter, fore-edge sequence. These are general principles, and actual editing should remain flexible based on specific circumstances.

2.5 Formula Layout

Scientific journals contain numerous formulas, and arranging them properly according to rules is essential for layout quality. Mathematical formulas sometimes require multiple line breaks, which must follow specific rules: priority breaking at "=", "≥", "≤", ">", "<" symbols, followed by "×", "÷", "+", "-" symbols, which remain at line ends. When necessary, breaks may occur before operators like " ", " ", " " and abbreviations like "lim", "exp". If the expression after " " or " " cannot fit in one line, breaks may occur at "+" or "-" signs or appropriate multiplication factors. For independently arranged formulas, following these rules effectively controls layout. More problematic are formulas appearing within text lines, where foreign symbols and Chinese characters occupy different widths, easily leaving operators at line beginnings or splitting numerical values. In such cases, text must be adjusted or foreign symbols and operators forced to fill the line, moving operators to line ends or moving foreign symbols together with operators to line beginnings while keeping numerical values intact.

3. Conclusion

In summary, a culturally distinctive and tasteful journal should possess its own unique style different from other publications. To establish brand status, scientific journals must pursue progress that keeps pace with the times, both in content and external form, meeting aesthetic expectations that align with reader psychology and social requirements. This requires clear, pleasing, standardized, and rational cover and layout design that manifests the unfolding beauty of content and form, meets publishing design requirements, maximally embodies editorial aesthetic consciousness, and satisfies authors' and readers' visual 审美要求 and practical scientific needs. Only then can more readers approach scientific journals, absorb more scientific knowledge and information, and enable scientific journals to fully realize their social effectiveness.

[1] 陈浩元. 数理公式. 王立名编. 科学技术期刊编辑教程. 北京：人民军医出版社，1995.

Note: Figure translations are in progress. See original paper for figures.