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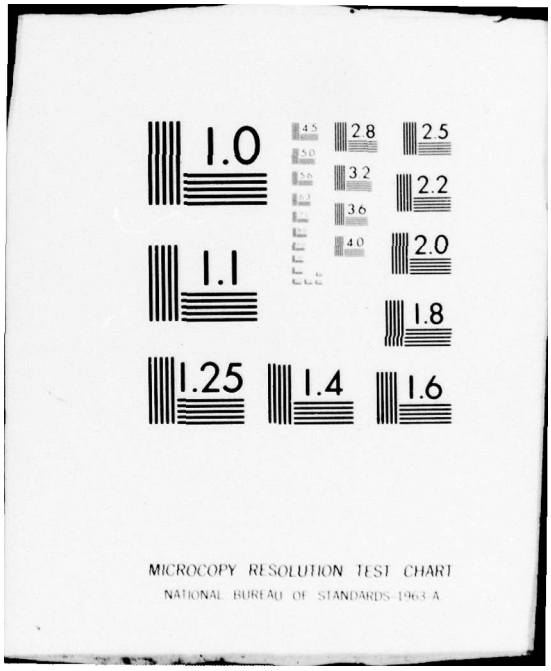
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The purpose of this study was to investigate the feasibility of graphic design analysis as an alternative method to frequency analysis of content by topic categories as an index of editorial emphasis. The proportionate usage of graphic design elements was analyzed to determine the influence of subject category on

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editorial choice in the use of design elements.

Ten content categories were derived from periodic readership surveys and annual subject indices used by the editors of 'Soldiers' magazine to describe content. The content categories expressed three principal subject classifications: management information, employee interest and general entertainment. The use of seven design elements was analyzed: four-color process color photographs, color photographs, text, display, white space, colored space and illustrations.

Overall results indicated the graphic design treatment was indicative of the graphical freedom afforded by article content. Emphasis in editorial treatment was indexed by the relative amounts of space used for article content and the relative design treatment of article content in each of the ten topical categories.

The findings indicated substantial editorial emphasis was committed to general entertainment articles such as "hobbies and recreation." In topical categories pertaining principally to employee interests, greater editorial emphasis was devoted to "personal affairs" and "personalities" than was given to topics such as "employee benefits." The least emphasized topical categories were those oriented toward management information. Articles related to "controversial issues," "policy," and "history" topics were indexed less than any other feature article category.

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Content Analysis of Design Elements in the Employee Publication: Toward a Stimulus-Response Theory of Internal Publication Readership
(Under the direction of Noel L. Griese)

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CONTENT ANALYSIS OF DESIGN ELEMENTS IN THE EMPLOYEE PUBLICATION: TOWARD A STIMULUS-RESPONSE THEORY OF INTERNAL PUBLICATION READERSHIP

by

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PHILLIP ANTHONY REIDINGER

B.S., St. Edwards University, 1969

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Phillip Anthony Reidinger
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Chapter I

INTRODUCTION

The topic of investigation presented in this study is the graphic design treatment in information presentation. Of the two predominant factors in print communication, visual form and subject matter, comparatively little research has been conducted concerning the impact of the visual form of editorial presentation in organizational publications.

This study is designed to investigate the feasibility of graphic design analysis as an alternative to frequency analysis of content by topic category to determine editorial emphasis. The primary interest of the investigation is the application of content analysis in examining the latent structure of content as a method of determining the intent of the communicator. A variation of communicator analysis is performed to discern whether editorial policy can be predicted based upon the influence of graphic design elements in content selection.

First, a basic subject matter analysis was conducted to group the content into categories. Second, a type of symbol coding was conducted to determine the degree of attention given to any particular design element. Trend analyses were also used to determine possible changes in the uses of design elements in relation to various topic categories. The stimulus to readership provided by graphic design elements and their use by editors

when indexing potential readership, then, can provide a measure which may be used to explain the impact and role of graphics in publications.

Management and Communications

One of management's functions is to get work done through the cooperation of employees. This task can be facilitated through an effective communication system (Lewis, 1975, 142). Communication is one of management's means of achieving desired results, but its role is more than directive. An effective communication system, regardless of the management approach, must be developed to enhance not only employee job efficiency but also job satisfaction. Employees deserve to know about goals, policies, personalities and events which affect them as members of the organization.

Management is placing more emphasis on corporate publications as the medium through which it can communicate accurately and effectively with its publics. Although internal communication is considered a management tool (Charlton, 1969, 16-17), few written policies govern this aspect of corporate public relations. The result of several surveys indicate planning and policy are not considered to any appreciable degree. Pikus (1977) found that 85 percent of the organizations she surveyed in 1976 had no established written editorial policy for publications. The situation does not appear to have improved significantly since. The results of a survey reported in Communication and Management (1979) of 151 organizations representing various sectors of industry suggested that the majority of organizations

surveyed still had no formal objectives for their publications.

An obvious disparity exists. Management by objectives is a standard procedure in many organizations. Darrow (1976, 18) suggests that both communicators and managers establish objectives to enhance the productivity of corporate communication efforts. Publications, then, will be designed to support and carry out the sponsoring organization's goals. Yet surveys suggest that editors either are not approaching management to determine what the corporate goals are or lack management cooperation. In either case, publications are not being programmed in the majority of cases specifically to aid management in achieving corporate objectives.

The problem may be explained as two-fold. Communications people are ambivalent about their roles--they identify with the profession of communicator and rarely see themselves as businessmen (D'Aprix, 1975, 2-6). This identity problem causes industrial journalists to emulate associates in the public media and fashion their efforts according to prevailing trends in journalism. Professional communications managers, according to D'Aprix (1975, 2-6), however, must understand the problems and requirements of the organization and develop programs tailored to needs. Second, the whole process of communication starts with goals and objectives (Stern, 1977). Despite this recognized need, the Communication and Management survey (1979) found that 70 percent of the organizations queried reported no formal written objectives. A survey of 50 corporate presidents and executive officers re-

vealed that more than one-third did not require written objectives in communication programs (Williams, 1978, 6-11). With the exception of utility companies and banks, organizations apparently place little significance on establishing goals and objectives for corporate communication (Communication and Management, 1979). Parkinson and Rowe (1978, 9), in fact, remark "What people say or write in print often means nothing at all and is not even meant to say anything." Corporations are communicating, but minimum consideration is given to the effectiveness of message delivery and content.

Since company publications are not printed for profit, they are expected to pay for themselves in less tangible ways. To survive, a publication must have a purpose, and both management and editors must know what they want to do and how they are going to go about it. Management should not expect a publication to do something for which it was not programmed. This means a human interest or pictorial magazine cannot be expected to present critical issues during a crisis simply because it has not been planned, designed and accepted as such. One group of authors critical of corporate communication contend there is a lot of wasted effort when managers try to "overmanage their investment" in communication. Messages are squeezed into communication channels and lose their effectiveness as the editor tries to become explanatory, corrective, and educational simultaneously (Parkinson and Rowe, 1979, 130, 148).

The primary weaknesses of magazines that fail are lack of editorial reason for existence and the lack of clear editorial pattern (Click and Baird, 1979, 118). Management no longer accepts the feasibility of a publication designed with abstract objectives, the impact of which cannot be measured. Discontinuance of company publications is not so much a symptom of

economics as disappointment (McCloskey, 1959, 2, 5). If a publication's intent is concrete, though, evaluation of its effectiveness can be highly objective and its worth measured (Silverman, 1973, 819-822).

Without clearly defined objectives, what has been the focus of the organizational publication? A variety of views exists concerning current trends. Organizations are using publications to focus increasingly on real world conditions, problems and employee dissatisfactions. Internal communication channels are being utilized to determine employee views, desires and needs (Stessen, 1977). However, Hall (1975, 558-561), criticizes organizational publications for failing to present corporate responses concerning critical social issues. He examined the content of 50 magazines for information relevant to current social issues such as employment, pensions, taxation and inflation, but found only three magazines which contained any articles directly or indirectly mentioning any of the issues.

The primary subject categories of organizational publications generally are benefits and compensation, organizational objectives and concerns and general company news. Labor relations and public issues as subjects, however, are not enthusiastically or actively covered. (Communication and Management, 1979). Although employee publications have been supported, little thought has consistently been given to continued development since Allison (1954, 56-59) contended that management needed to develop and to formalize programs to communicate pertinent information to employees.

The Reader

Regardless of the type of publication, the reader is the key to its survival. It behooves publishers, therefore, to pay heed to the interests and desires of a publication's readership (Woolsley, 1973, 4). Modern methods of communication, though, have produced such a constant media bombardment that intended publics have developed a more selective attention

span. Also, Baird and Turnbull (1961, 187) emphasize a loss of respect for printed matter caused by the cheapening of print as a commodity. Publications must compete for a reader's interest and time while the public's selectivity is continuously sharpened by the mass output of printed matter. A publication, therefore, must be attractive to win the initial interest of the reader and be readable to keep from losing reader interest.

To achieve readership the editor must know the intended audience (Peterfreund, 1976, 20-23). According to Charlton (1976, 12-14), business communicators must be aware of diversity in audiences. Heusser (1954, 423-427) and Reddick and Crowell (1962, 9) contend that two levels of readership and perhaps readers exist--the hurried or non-reader and the leisurely reader. The leisurely reader is more or less the editor's ideal audience. He or she reads between the lines and carefully gleans information from the text of the publication. The leisurely reader, however, is in the minority. The non-reader, on the other hand, is largely a product of the electronic age. The non-reader is accustomed to pictures and capsulized information, does not like to read and has a short attention span (Charlton, 1976, 12-14). He or she finds the essential facts by reading titles, pictures and cutlines. The hurried reader also concentrates on boldface inserts and summarizations in text material (Reddick and Crowell, 1962, 9).

The phenomenon of the non-reader is not a recent development. As early as 1954, Heusser (1954, 423-427) suggested that industrial journalists assume that a substantial portion of the employee audience did not read. She suggested that to reach the hurried reader, the editor must know reader interests and needs. Heusser (1954, 423-427) contended that non-readers read from the back to the front, looked at news of their departments, read the feature article headlines and, at most, the initial paragraph of

articles. They also look at the photographs, read the accompanying copy and framed general impressions about the publication based on its appearance.

Rather than distinguish types of readers, White (1976, 41) addresses the principle of two levels of readership. According to White, primary information should be printed in large, bold type so that it can be read easily and will be read first. Secondary or supportive information should be run in smaller, lighter type. The reader, therefore, will save time and effort by skimming the principal thrust and important ideas in article content, and subsequently return to read those articles of primary interest more leisurely.

Two factors--visual form and subject matter (Swanson, 1955, 411-421)--are predominant in readership, which is the ultimate objective of a publication. The literature cited thus far indicates management and editors have not placed significant emphasis on establishing goals and editorial policy to control the development and direction of topical treatment of editorial content. This void in policy establishment affects readership as it is compounded by the attempts of editors to keep content interesting and appealing.

The Organizational Publication

An increasing number of corporate chief executives and presidents use employee communication channels to educate workers as company spokespersons (Williams, 1978, 6-11). The most important channel for communicating information in

organizations is considered to be print (Parkinson and Rowe, 1978, 32). In fact, fewer than ten percent of employees react to organization publications as "public relations" devices, and most prefer to read company-related information in organization publications (Henderson, 1964, and Peterfreund, 1974, 20-23). Specifically, employees have been found to be interested in company plans, activities and product development (Peterfreund, 1974, 20-23) in addition to pay, benefits, company profits, consumer information and general news about employee activities (Griese, 1978, Report on Georgia Power's Citizen).

Employees want more from company publications than the past trends in birthdays, babies and hobbies (Stessen, 1977). Employee interests now are directed toward clear, fair and accurate descriptions of work-related activities, issues, problems and honest communication from management (D'Aprix, 1975, 2-6). Employees are telling management they want to be informed. Stern (1977) relates that organizations should place considerable emphasis on this aspect of corporate communication. A Chamber of Commerce survey (Anders, 1977) measuring employee information levels and attitudes found that communicating to employees makes a difference. Better-informed employees have a better opinion of the company, are more open and have a more positive attitude over a wide range of subjects concerning company business. More importantly, they related their attitudes to the general public.

Corporate publications must speak to their readers, not at them. Parkinson and Rowe (1978, 15) contend the challenge for corporate communication or the "missing link between business and the public" is for business to overcome its own reticence to communicate. A great deal of disparity exists between communication ideals of managers and communication practices. The publication must have a purpose, character and policy which the reader must detect to attract his or her attention and elicit a response (Ferguson, 1976, 12-13).

The corporate communicator is an advocate--an idea manager. He or she offers a point of view to his or her readers, the employees. His or her job is not only to convey information accurately and fairly, but to elicit approval and understanding (Kaufman, 1966, 11-13). Eliciting desired response is a distinct function that industrial editors do not always accept or recognize. The greatest need is for communicators to focus concentrated effort on the problems involving the complex concepts and ideas their audiences must deal with daily. Communicators must have something to say, say it effectively, select the best way to get the message across to their audience and evaluate the receptiveness to messages in the responses of the readers (Lesley, 1971, 156-158).

Employees should realize that the publication is communication from management (Werth, 1967, 21-22). What message to send, however, is confused. Companies do not seem to know what the message should be. So much emphasis

is placed on technique that little emphasis is placed on content. Management, too, likes to see tangible results. Managers are insisting on facts and figures which measure the effectiveness of communication programs, but few are thinking about objectives from which measurements can be obtained (Hall, 1975, 558-561).

Managers no longer should visualize themselves as the center of attention in communication. They must compete with crowded and competitive media. The manager must deliver his or her message as effectively and efficiently as possible rather than rely on position and voice in the company (Lesley, 1971, 154). Surveys show a popular acceptance of management views when management is willing to give the views and speak on issues involving the company (Hall, 1975, 558-561).

Goals or objectives are paramount. Werth (1967, 21-22) suggests managers get employees into the act by featuring them at work and relating their activities to issues and problems which require attention. Heusser (1954, 423-427) questioned the priority of treatment of management and employees in articles and accompanying illustrations. Stern (1977) advises that corporate communicators should participate with management in goal setting. Information programs can then readily be designed to key on objectives and translate goals into specific, measurable indices.

The problem in organizational communication is putting together a combination or editorial mix to match corporate communication goals with the interests of a heterogeneous audience (Haskins, 1965, 557-562). In this regard, there

is a continuing trend in companies to utilize a newspaper or newsletter for local information. The corporate magazine is then reserved as a national voice for corporate policy, goals and the humanization of the organization (Click and Baird, 1979, 40).

Current trends necessitate more than ever the establishment of editorial policy and objective. The publication must give readers what they want, but it must go beyond and give readers what they want before they know they want it. The editor must plan to have the right article at the most opportune time. He or she must be able to translate designated corporate objectives into specific articles, fashioning the approach and the topic to interest the reader. (Click and Baird, 1979, 57-59).

Employee magazines are the most numerous of the five recognized classes of corporate publications (Click and Baird, 1979, 57-59). They are more than employee entertainment. They should be designed to inform, explain and interpret actions and programs in a manner which improves corporate efficiency. The by-product is employee loyalty and pride resulting from improved communication exchange and increased understanding of corporate goals.

Chapter II

GRAPHICS - SERVANT OR SUBJECT

Editorial balance begins with the description of the major purpose of a publication. Objectives are designated and kept in balance by the editorial formula--the pattern which determines what is written or otherwise presented in the publication (Breth, 1952, 491-493). Considerable evidence has been presented, however, to support doubts that editorial patterns are derived from established and clearly defined goals. Industrial journalists generally are not trained in business administration, and, as previously discussed, may fall prey to emulation of practices in the public press. Of the two predominant factors in print communication, visual form and subject matter, comparatively little research has been conducted concerning the impact of the visual form of editorial presentation in organizational publications. Generally, content and design have been isolated and investigated separately, neglecting the possibility of interaction between the two components.

A great deal of criticism is presented in many texts and articles concerning excessive attention to graphics at the expense of content. Form should follow content. The planning of graphic design begins with the planning of the

story (Essman, 1972, 6-9), and should be thought of as a "shoe in which the editorial content fits" (White, 1976, 1). As the editor lays out pages of a magazine he supposedly considers the editorial "why" to keep design within the limits of function.

If editors are not bound by objectives and policies which control and direct content from issue to issue, design emphasis can overwhelm the process of editorial choice. Graphics then does not become the outward manifestation of content. Graphics, as an organizing element, does not grow out of the editorial product or the thought process involved. Graphics becomes the focus; it becomes the subject, not the servant.

The purpose of an organizational publication is not to be "pretty." It is to serve as a medium for messages from management. The organizational publication is an advocate channel, fairly and accurately communicating management messages, goals and policies to the corporate employee. The graphic design of a publication is much too important a factor in this regard to be overlooked or misused. How the communicator encodes his messages may be as important as the message content.

Two paramount factors are involved in message preparation --perception and readership. Findings from decoding studies (Fosdick and Tannenbaum, 1964, 175-182) support the concept that the manner of message preparation or form has an effect on the receiver's perception of the message. Stated simply,

the stylistic elements relate the communicator's intentions or objectives. Second, display has been found to be a better predictor of readership than readability. A high correlation exists between prominence of display or design elements and readership interest in subject content. Due to the indexing of potential readership by editors, display explains between 30 and 75 percent of variance whereas readability explains less than ten percent (Powers and Kearl, 1968, 117-118).

The intention of design is to get stories off the printed page and into the reader's head (Root, 1966, 89). Management, however, not the editor, should dictate which messages are paramount and, therefore, which messages should be afforded corresponding design treatment. Without editorial policy and clearly defined objectives, there is no guarantee that editorial choice in design treatment will be directed toward achieving maximum readership of content relevant to the essential issues.

Baird and Turnbull (1961, 200) state that functionalism is the key word in layout. Every element should be directed toward achieving the communicator's goals. These goals, however, should be carefully designed and understood before any publication is likely to achieve its maximum effect. Bluntly, management must insure that editors are indexing content to achieve expected readership and desired results. The combination of the two elements, visual and verbal, represents the key to success (Click and Baird, 1979, 115).

The Elements of Design

Although employed for a variety of reasons, the basic function of design is to use photographs, illustrations, titles, color and text to enhance visually what the writer says with words (Essman, 1972, 6-9). Use of design to enhance readability and readership is not new. The newspaper industry has conducted continuing studies measuring reader response to design content such as typeface size and style and photograph size (Woodburn, 1947, 197-201). Since the basic visual elements of magazines and newspapers are the same (Baird and Turnbull, 1961, 328), studies involving both print media channels will be considered in this study.

The use of design is also based on psychological perceptions of stimulus-response models. In this sense, design elements are used to attract and hold reader interest and attention (McCombs and Mauro, 1977, 49). In addition to influencing connotative meaning (Essman, 1972, 6-9), the simple balance of graphic presentation adds to the attention-getting process, enjoyment and comprehension of content (Culbertson, 1974, 79-86). The use, efficiency and relative power of the most common design considerations will be discussed to familiarize the reader with their role and influence in print.

White Space and Margins

White space frames the printed page, and serves a variety of purposes in design (Click and Baird, 1979, 185). It serves as the most efficient means to separate columns

and lines of type and enhances the optical symmetry of the page. As a readership stimulus it improves appeal by enhancing legibility (Smith and McCombs, 1971, 134-136). Baird and Turnbull (1961, 190) state that the reader actually sees only the white space since the appeal of the layout is contingent upon the amount and location of weight deposited on the white page. The distribution of the weight, therefore, affects the eye movement, causing the eyes to sweep the page accordingly (Root, 1966, 95). Color and type density affect the weight distribution to the greatest extent (Baird and Turnbull, 1961, 190), and will be discussed later.

White space is a vital separating device. Margins keep the reader's eyes on track by establishing page unity. There are no general rules, but the consensus is that margins should be large enough to serve as an adequate "fence" to keep the eye from wandering off the page as it tracks from left to right. Column margins should be only wide enough to stop the eye but not so wide as to split the page into segments. Baird and Turnbull (1961, 192) recommend 1.5 picas as sufficient column separation and three picas for column breaks.

Progressive page margins, commonly called book margins, decrease in size as the eye circles the page starting at the bottom. This serves two purposes. Excess white space is distributed to the outside of the page limiting distraction to eye movement which might be caused by excess interior white space. Secondly, the distribution of white space in the margins moves the center of the layout from the geometric to

the optical center, which is above the geometric center, thus balancing the page (Click and Baird, 1979, 185 and Baird and Turnbull, 1961, 192-193).

As a key element in design, white space initiates the visual syntax which determines the pattern of eye movement. Starting at the upper left, the creation of lines through placement of design elements on the page directs the reader to the principal elements on the page. Each succeeding design element, as it is added to the page, plays on the symmetry and depth initiated by the distribution of white space. This causes the page to be visually appealing which attracts the reader's attention. As a general measure, Root (1966, 91) recommends that each page or spread be opened flat and examined at a distance of eight feet to evaluate the optical pattern for desired effect.

Illustrations and Photographs

Prior to discussion of the influence of photographs and illustrations, it is appropriate to emphasize caution in this area of design treatment. The creation of "impact" in graphic art design combines use of titles, illustrations, typographical arrangement and color to register an impression of the idea expressed by an article at first glance (Reddick and Crowell, 1962, 9). While there can be little quarrel with the contention that illustrations and photographs have a great impact, there is also a degree of truth in the generalization " . . . that words are the only means we have for intelligent formulation and communication of thought" (McCloskey, 1959, 13).

Pictures and illustrations usually must be translated into words by the reader before they mean anything. There are, therefore, sharp limitations which exist in what can be told by pictures and illustrations. They are not a cure-all or substitute for ineffective or poorly composed text. Words, pictures and illustrations in combination provide the greatest information gain (Severin, 1967, 386-401).

Photographs are the most commonly used device for getting reader attention (Root, 1966, 93). They provide visual impact for an article, but they should have a purpose (Essman, 1972, 6-9). The editor must balance the use of pictures in conjunction with purpose. Studies show that a large percentage of pictures enhances reader attention but concommitantly lowers remembrance (Breth, 1952, 491-493). Generally, photographs serve the following purposes: they provide impact by quickly gaining the reader's attention, establish mood by making pages more alluring, add information to the content by illustrating a point made in the text material and provide visual relief (Click and Baird, 1979, 151 and Ferguson, 1976, 85).

The size and shape of photographs are important considerations. Research of newspaper readership indicates three times as many men and four times as many women look at the average one-column photograph as read the average news story. A complete breakdown is provided in an article by Woodburn (1947, 197-201).

Photograph size	Notation by men	Photograph size	Notation by women
one column	37%	one column	45%
two columns	49%	two columns	61%
three columns	62%	three columns	67%
four columns	64%	four columns	73%

Readership surveys also indicate that newspaper photographs stop readers, and notation of photographs is higher in comparison to other elements of graphic design in newspapers (Woodburn, 1947, 197-201). For example, studies indicate that in most cases picture overlines are not even seen by readers if the reader is first attracted to the photograph. This occurs since the normal eye movement path is either down or to the right and down (Baird and Turnbull, 1961, 195).

Although photographs are more effective in attracting reader attention than illustrations or sketches (Click and Baird, 1979, 90), the latter are still important attention-getting devices and aid in information interpretation and memory (Spaulding, 1955, 35-45). Charts, line drawings, sketches, schematics and other illustrative devices are used heavily in business and organizational publications. They make information delivery more interesting and forceful by eliminating clutter in text material.

Other devices such as rulers are used as decoration or to organize space. They provide visual fences which emphasize and frame various design elements in layout (White, 1976, XI).

Color and Text Type

Text type and color are related. The editor must consider that any change in the background from the traditional white presents an optical problem for the reader which then becomes an obstacle to readability and readership (Baird and Turnbull, 1961, 188, 200). The problem for the industrial editor is that the body copy is, or should be, the primary focus of the publication. Since body or text type is of little significance in terms of impact value, every effort should be made to insure that text is as legible as possible. Design elements, then, must serve to attract reader attention and draw it to the body copy. Design, therefore, should never be so distracting or so powerful that it dominates a layout (Baird and Turnbull, 1961, 188, 190, 200). Design must be the servant and not the subject of the publication. The selection and arrangement of design elements should be appropriate to the text message.

Text type selection is critical and related to the selection of other design elements. Its selection is based on editorial policy, but it must be harmonious with other graphic devices utilized throughout the publication to allow maximum freedom in editorial choice (Click and Baird, 1979, 189). Ten-point and eleven-point type are considered optimum for legibility, and allow line lengths of from 13 to 22 picas which are standard in magazines. A general rule observed in legibility studies is that line length in picas should not be less than one and a half times the type size in points or longer than two

times the type size (Click and Baird, 1979, 189). Italic, boldface and sans serif are all considered to lessen readability. Click and Baird (1979, 90) indicate that readers are reluctant to read in excess of four lines of italic type. Departures from standard text types, however, can be used to achieve a desired effect such as motion with italic faces and femininity with script faces. Layouts which are heavily weighted in the use of design elements also will accommodate bolder type faces (Baird and Turnbull, 1961, 202-203). A considerable amount of information is available concerning the legibility and use of various type faces and styles in texts devoted solely to this subject. However, the primary purpose of this section is to summarize the principal influences on type selection as a design element.

Design, weight, style, size and length of line are the primary factors in readability of type. Body text is an important consideration in layout which often is overlooked but is fundamental to design simplicity and balance in the treatment of content (Baird and Turnbull, 1961, 203-204). In addition to line length, the length of the article also should be considered. Publications consisting of a few articles of considerable length are as upsetting to readers as publications with a great many short articles. Breth (1952, 491-493) argues that a balance between the two types must be maintained.

Color can extend the effect of design elements by providing accent, variety and interest to layout. The purpose

of color is not mere decoration. According to Hoebl (1968, 20-21) it connotes meaning. Color can be used to highlight text material, create a mood, add interest to charts and diagrams and act as a keying device to direct reader attention.

Color is more effective than black and white in gaining reader interest (Spaulding, 1955, 35-45). In regard to photographs, readers prefer four-color art, but black and white halftones are rated second ahead of duotones in preference (Click and Stempel, 1976, 736-738 and Click and Baird, 1979, 89). However, the predominant color in publications is grey. Text material is seen as grey by the reader. It is this "sea of grey" that design elements are intended to reduce. Bolder, black elements dominate layout. Titles, bylines, drawings, subtitles and rules comprise a significant portion of overall layout content (Root, 1966, 90-91).

Color devices such as tint blocks are commonly used as accents--for example, as framing or as relief on unillustrated pages. Strong colors should be used for tint blocks. Pastels are not recommended since they tend to weaken the appearance of the page (Ferguson, 1976, 118). An exception to the use of pastels is observed in overprints or surprinting.

As mentioned previously, departures from the traditional white background in text are visually disturbing to the reader who might avoid such copy blocks. Generally, the text type must contrast strongly with the tint block, and type which begins on a tint block should be contained within it

(Baird and Turnbull, 1961, 200). The same principle applies to surprinted photographs. An effort must be made to insure that design devices do not obstruct legibility and result in loss of readership.

Display

The amount of space dedicated to titles and headlines indicates emphasis. It is impressionistic (Tannenbaum and Lynch, 1960, 381-392). Titles surrounded by white space stop the reader as he scans. Along with photographs, titles are the primary tool for attracting reader attention. In conjunction with subtitles, they carry the responsibility for directing the reader into the text material (Baird and Turnbull, 1961, 195 and Click and Baird, 1979, 133). Because of the impact of photographs, however, for titles to be effective in the lead position of any layout they must be surrounded by ample white space.

Readers prefer titles which are descriptive and are printed in simple type faces between 36 and 48 points high. Cryptic or unclear titles tend to irritate the reader who generally dislikes being tricked or deceived into reading text material (Click and Baird, 1979, 89). Subtitles, subheads and blurbs must be used to retain reader interest and assist in reader transition from the article title to the smaller copy block type (Root, 1966, 93). This aspect of transition is also emphasized by Baird and Turnbull (1961, 189) who note that while legibility is desirable for

titles, it is secondary. The desired effect is to attract attention more than concern for reading speed of title material.

Subheads and blurbs also assist in breaking up large columns of text. Care, however, is advised in the use of such devices to relate critical information. Hvistendahl (1968, 123-124) noted that while subheads provided visual relief, they conveyed little information to the reader because they were read little or so casually that comprehension levels among readers were low.

The principal goal of the title is to attract the reader's attention. His or her interest is maintained or enhanced through the use of subtitles and subheads which provide transition into the text material. The overall requirement for display is to persuade the reader to stop as he skims the content of the publication, and direct his attention to other design elements in the layout which will influence him to read the text of the article (Click and Baird, 1979, 146).

Chapter III

METHODOLOGY

The topic of investigation proposed in this study is the graphic design treatment in information presentation. The study is seeking to answer the question posed by Murray (1967, 8-10): "Is the treatment emphasis indicative of the graphical and pictorial freedom afforded by content subjects or is the graphic design treatment used to balance and to enhance overall reader interest in editorial presentation?" Murray observed that editors tended to "worship at the altar of graphics" and were overwhelmed with the misconception that pictures were the only way to communicate. He cited a trend in newspapers which indicated a significant reduction in the space devoted to news, and a corresponding increase in the number and size of photographs in newspapers since 1940. A concern for content, according to Murray, has been overwhelmed by interest in the means and tools of communication. As mentioned in the previous chapter, the stimulus to readership provided by graphic design elements and their use by editors when indexing potential readership combine to form a powerful explanation of the impact and role of graphics in publications.

The lack of coordination between management and editorial staffs in determining the policy, goals and direction of

corporate publications creates a void. Without mandates from management concerning editorial objectives, issues of significant impact which affect corporate goals could indeed suffer in presentation (Peterfreund, 1974, 20-23). If critical management messages are not indexed as such by editors and lack interesting visual treatment, they will certainly not be read. The format will be dull, visually unattractive and less appealing than other articles in a given issue which might be less important (Hall, 1975, 558-561).

Management, after a time, will perceive that the publication or even the entire communication program is failing to support organizational objectives, and will consider the effort a failure (Allison, 1954, 56-59 and Hall, 1975, 558-561). Attempts to convey messages will continue to be frustrated unless the differences between merely transmitting information and actively communicating are understood. The basic question in communication is always "What are we trying to do--and why?" (Parkinson and Rowe, 1978, 3). Unless this question is understood and answered any attempt at communication will be a waste of time.

The majority of content analysis research in the print medium has concentrated on establishing the frequency of articles pertaining to a particular subject. This has been the traditional measure of editorial focus (Nafziger and Wilkerson, 1949, 96-97). A simple count of articles or measure of space devoted to a particular subject may be misleading. No inference is made concerning the effect on

readership. Editors themselves, or in conjunction with art directors, consciously package content to achieve an appearance which will attract readers (Click and Baird, 1979, 176). As an editorial component, design consequently impacts directly on content readability and readership. The efforts of the editorial staff, therefore, to improve the readership stimulus potency of an article indicate emphasis by indexing readership through the space devoted to design treatment.

How the communicator encodes his message may be as important to effects as what the message is about (Fosdick and Tannenbaum, 1964, 175-182). The decision to read an article may be based finally on the reader's perception of the apparent content. Design elements, however, say something to the reader about the article (Stevenson, 1973, 690-696).

Further, topic categories may vary widely among publications. Comparisons based solely on the analysis of subject content become difficult, if not impossible (Wilson, 1978, 40-42). The inability to equate specific categories suggests another approach or set of variables for comparison and statistical correlation.

Graphic design is a nonspecific formula component, and can be used as a measure to analyze and compare the editorial emphasis of any number of publications. By investigating the form or design emphasis by topic for any publication, an analyst should be able to detect the editorial focus of a publication (Janis, 1943, 293-296). A variation of communicator

analysis is performed to discern whether editorial policy can be predicted based upon the influence of graphic design elements in content selection.

The rationale for using content analysis is noted by Janowitz (1976, 10-21). He states that it is a valuable tool for unobtrusive investigation of both message trends and communicator goals, intent and strategy. A conscious choice is made in the selection of symbols and arrangement of content in the use of space to stress any portion of content in a publication (Stewart, 1943, 286-293). Since there is a limited amount of space in a publication, this choice in the use of space and content elements indicates emphasis. It expresses the editor's intentions as he encodes the connotative aspects of messages, such as importance, which he wants to convey to readers.

As a research method, content analysis can provide reliable observations about the frequency with which content characteristics occur by themselves or in conjunction with one another (Pool, 1959, 8). Unlike survey research, content analysis provides a measure of what possible respondents do, not what they might say they would do. The possibility of response biases does not affect data collection. Content analysis is unobtrusive and not limited by time. It gives an investigator the means to identify issues as they begin to emerge. There is, therefore, a potential for response to issues rather than mere reaction (Deweese, 1976, 92-100). Survey research, however, frequently investigates issues

after the fact. No one method is ideal--each has its own limitations. Content analysis, however, is an excellent investigative method which complements survey and other research methods (Nafziger and Wilkerson, 1949, 86).

The selection of Soldiers magazine as the sample publication for this study is based on several desirable factors. First, Soldiers, the official magazine of the U.S. Army, is published for a heterogeneous audience--consisting of Active Army, National Guard, Army Reserve and Department of the Army civilians. A circulation of more than 200,000 copies per issue makes it one of the largest internal employee magazines in America. Second, typical of organizational publications, Soldiers is published without formalized written objectives. The objectives of the magazine are noted in the masthead as follows:

> " . . . to provide timely factual information on policies, plans, operations and technical developments of the Department of the Army and other information on topics of interest . . . It also conveys views of the Secretary of the Army and the Army Chief of Staff on topics of professional interest to Army members and assists in achieving information objectives of the Army." (Soldiers, 1979)

Third, confining the research to one publication over a relatively short period of time lessens the danger of unequal treatment of material (Budd, et al., 1967, 3). Fourth, the methods and findings of this study will contribute to the application of graphic design analysis which has been a somewhat neglected area in content analysis research (Click and Baird, 1979, 98).

Objectives

This study is designed to investigate the feasibility of graphic design analysis as an alternative to frequency analysis of content by topic categories to determine editorial emphasis. In the absence of formalized editorial objectives for Soldiers, can an analysis of design content indicate trends in editorial emphasis and direction? What is the relationship between design analysis of content and the more "traditional" forms of content emphasis measures?

Of the three principal approaches (Nafziger and Wilkerson, 1949, 89), this investigation involved first a basic subject matter analysis to group the content into categories. Second, a type of symbol coding was conducted to determine the degree of attention given to any particular design element. Seven fundamental design elements were analyzed, all of which have been found to be the most powerful or influential design considerations (Baird and Turnbull, 1961; Ferguson, 1976; White, 1976). Trend analyses were then conducted to determine possible changes in the use of design elements in relation to various topic categories. Also analyses were conducted to measure the relationship in the proportionate use of the selected design elements.

The primary interest of the investigation was the applicability of content analysis in examining the latent structure of content as a method of determining the intent of the communicator. "Instead of observing people's behavior directly, or asking them to respond to scales, or interviewing

them, the investigator takes the communication that people have produced and asks questions of the communicator" (Budd and Thorpe, 1963, 1).

Research Questions

Form refers to the organization, arrangement, style and structure of the various elements in a message. It is important in terms of possible effects on the transmission and perception of the content. However, a message consists of two parts, form and content, and an investigation of one without including the other is invalid. Barcus (1959, 15) states "Whereas the study of the form can be isolated from other aspects of the communication process, the study of content is meaningless without reference to those aspects which contribute to its formation."

An analysis of topic content is required to measure the impact of design space usage. The form may be important enough to encourage or prevent readership, but content alone may be perceived by the reader as sufficiently important to influence readership. Barcus (1959, 24) proposed that "what" and "how much" have been over-emphasized and represent the major bias in problem selection in research. He contends that content analysis research should become more concerned with "how, why and with what effects."

The research questions and hypotheses in this study concern the "how much" to the extent required to answer "how" and "with what effect." Three questions are addressed (1)

What have been the trends in the graphic design of feature article content of Soldiers from 1971 to 1979? (2) Can an analysis of graphic design content indicate editorial focus, or, stated in other terms, does form follow content? (3) What are the implications for further study of other organizational publications?

The following assumptions were maintained throughout the conduct of the investigation:

1. The years 1971 to 1979 represent the life, to date, of Soldiers magazine.
2. Lacking formal editorial objectives, the purpose and scope of the publication are expressed in the masthead of Soldiers.
3. Editorial emphasis is indicated in terms of space usage (Stewart, 1943, 286-293).
4. Content which offers greater relative flexibility in graphic design represents the greater relative editorial choice in the use of design elements (Stewart, 1943, 286-293).
5. Editorial choice is reflected in feature article content.
6. A content analysis of graphic design elements will be systematic, objective and quantitative (Berelson, 1952, 18).

Hypotheses

"The derivation of hypotheses for a content analysis study is of central importance since the hypotheses determine the nature of the categories as well as the framework of the actual results" (Berelson, 1952, 162-168). The logic involved in the following hypotheses is based upon the consideration that graphic design plays an increasingly important role in information presentation and readership. Specifically, the

impact of graphic design is significant if certain topics are divorced from equivalent editorial consideration in the use of design elements in subject treatment.

The hypotheses are stated as follows:

1. There will be a trend toward a decrease in the amount of body text space and a trend toward an increase in the use of space devoted to graphic design elements over time. This hypothesis is intended to support the contention that increased emphasis, measured as a proportion of overall space usage, is given to the use of design elements by editors in the treatment of content. The editorial decision involved in the placement and the use of design elements is a significant factor, then, in the analysis.

2. There will be a trend toward greater use of color photograph space and away from body text space in the "sports" and "hobbies and recreation articles. The "sports" and "hobbies and recreation" content categories offer the greatest opportunity for use of four-color-process color photography. Feature article topics often concern people participating in exciting, interesting activities. Additionally, scenery and other background elements such as uniforms or costumes enhance the use of color photographs as a design element. Correspondingly, the use of body text in these categories will be minimal since the story will tend to be told by pictures.

Without the direction of formalized planning objectives to balance the use of a particular design element among the

content categories, a tendency toward "best fit" will operate. Color photograph space will predominate in those categories which afford the greatest opportunity for use.

3. There will be a trend toward greater use of nonprocess color photograph space and display text space in the "job information," "history," and "personalities articles. However, the content normally is less dramatic or visually impressive than topics in the "sports" and "hobbies and recreation" articles. Since text space is grey, a color element is required in addition to duotone or black-and-white photograph space.

The use of photograph space limits the employment of blocks of colored space and illustrations. Both tend to be rectangular and would be overwhelmed by the greater impact of the photograph which also tends to be rectangular. Display text, however, can add color and enhance the visual impact of page design without detracting from photographic space.

The greater relative use of photographic space results from its inherent capability to portray people and activity. The greater relative use of display text space results from the requirement to provide visual relief from blocks of grey space resulting from text material and duotones or black-and-white photograph space.

4. There will be a trend toward increased use of illustration and colored space in "employee benefits" and research and development articles. The content of these cate-

gories is suited to the use of greater illustration space for charts, diagrams and summarizations of large blocks of text material. Colored space is relative to the use of illustration space since it allows enhanced visual treatment of the page and can provide a background for illustrations. The greater use of colored space will be required to provide visual relief by decreasing the density of black space on the page.

5. There will be a trend toward increased use of white space and text space in articles about "personal affairs," "policy" and "controversial issues." These categories will predominantly feature text space. White space will be used to open the page design. The "policy" and "controversial issue" categories consist of conceptual topics. Therefore, the design treatment will tend to be austere because the subject matter is not easily susceptible to graphic design treatment.

If graphic design is the subject, not the servant, of editorial treatment, photographic space, for example, will be used in "sports" or a similar topic. The design is keyed on the subject matter, not on using design elements to attract readership by enhancing the visual display of the content.

The hypotheses test the relationship of the most appealing design elements with subjects which offer the greatest freedom of use. As the subject material becomes more information-oriented or instruction-oriented it begins to lose inherent design interest. These topics, such as "policy," are hypothetically matched with less visually attractive design elements.

For example, the "hobbies and recreation" category is hypothesized to contain the greater relative use of color photograph space. "Hobbies and recreation" or a similar topic is commonly used in employee publications in general interest articles. In contrast, articles concerning "policy" generally are concept-oriented and tend to be instructive. The greater relative use of text space is, therefore, hypothesized. However, "policy" articles are not required to be visually dull; they simply lack the quality of inherent visual interest of such topics as "hobbies and recreation."

Previous statements have suggested that editors may fail to direct emphasis properly due to the lack of editorial objectives. If the primary focus of an employee publication is to help inform readers about company policy and organizational activities, then these topics should receive preferential design treatment. The most powerful design elements should be employed to make articles concerning these topics aesthetically appealing. They should be purposely designed to attract and hold reader attention. Editors should index these topics as the primary focus. Editors should use design elements to enhance message readership.

Editorial objectives serve to establish priority in content treatment. Without a plan which can be used to blueprint presentation, the less visually interesting topics are emphasized less. The overall effectiveness of the publication to the organization is reduced since those topics which are

most important simply may not be noted or read because of inefficient design element display.

Sampling

Sample size and sample procedure influence the content and subsequently, the results of content analysis. Small sample sizes are considered correct if an analysis concerns general questions and coarse measurements are involved. If however, a large number of symbols or categories is involved, then the sample size must be large. This is required since some symbols and categories may occur so infrequently, yet are important to the study, that they would not be sufficiently represented in a small sample. The principle of randomization works better in larger samples (Budd, et al., 1967, 21). In addition, reliability depends upon the sample being representative of the population involved in the study (Budd and Thorpe, 1963, 4).

Barcus (1954, 34) states that sampling is not a difficult problem in content analysis methodology. Berelson (1952, 174) notes ". . . a small carefully chosen sample of the relevant content will produce just as good results as the analysis of a great deal . . . "

The sample size chosen for this study does account for fluctuations inherent in random sampling. In addition, the sampling methodology was designed to reduce the possibility that content categories or design elements would not be distributed representatively in the sample.

A rotating sampling method was used to select the issue of Soldiers studied. The method approximates that employed by Clark (1960, 40) and others which is explained by Budd and Thorpe (1963, 5-6). A composite year was formed from each year in the sample by randomly selecting one month as a starting point for the initial year of the time period. Each consecutive month, then, represented the issue to be studied for the following year. This process was repeated until three issues had been selected for each year. A total of 27 issues (or 28 percent of total universe) was selected for investigation.

The rotating sampling method to form a composite time period approximates a distribution which equitably represents the time period. If the sampling had been done merely by random selection of dates, the possibility existed that consecutive months in a given year would have overrepresented possible relationships or trends (Budd and Thorpe, 1963, 8). The issues selected for investigation are listed in Table A.

Categorization

Categorization is crucial to the proper conduct of content analysis. It is the conceptual scheme which links the problem to the theory. Researchers familiar with content analysis technique consistently remark that content analysis is no better than its categories (Budd et al., 1967, 36). The categories must be exhaustive, mutually exclusive and must answer the research questions.

Table A

ISSUES OF SOLDIERS MAGAZINE EXAMINED
1971 - 1979

1971	May, July, September
1972	June, August, October
1973	July, September, November
1974	August, October, December
1975	September, November, January
1976	October, December, February
1977	November, January, March
1978	December, February, April
1979	January, March, May

The common errors are to have too many or too few categories. Since categories can be more readily combined after coding, the worst situation is designation of too few categories (Budd et al., 1967, 44). However, the classification of content and category design must be discriminating to yield effectively the data required to satisfy research demands. In this regard, the miscellaneous category poses a common dilemma. Although recognized as necessary to insure the exhaustiveness of content classification, the category is often misused to the detriment of data collection. For this reason, a catalogue of all content classified as miscellaneous will be maintained and included in the text as verification of category reliability.

Budd and Thorpe (1963, 13) propose two basic types of categories--content and form. Content describes what is said, and form describes how it is said. This study considers both types since feature articles are analyzed by topic (content) to determine relationships in the use of design elements (form). The primary concern, though, is with form. The analysis of content by topic is necessary to test relationships proposed in the hypotheses. For this reason the feature article has been designated as the unit of analysis. As previously mentioned, content and form combine to produce the message. An analysis cannot ignore the former in an investigation of the latter.

The category definitions are listed in Table B. Berelson (1952, 63) notes "There are as many ways of describing publica-

Table B

CONTENT CATEGORY DEFINITIONS

Controversial Issues: Topical treatment of information debating the pro/con relevancy of concepts, actions or policy decisions which are considered to affect the status quo of the organization. Articles consider the management position, but may relate adverse comment in the logical development of the article theme in a neutral or informative discussion of an issue.

Subcategories include:

- environmental issues
- the draft
- women in society
- individual or minority rights
- the organization's role as a societal institution
- drug and alcohol abuse and other societal crises (perceived or actual)
- government and politics

Personal Affairs: Topical treatment of information relevant to the welfare of the individual and/or his/her dependents resulting from employment with an organization. This category includes feature articles which concern the living standard and lifestyle of the employee family in the community. Topics mainly deal with public and community relationships of the organization and/or employees at home and overseas.

Subcategories include:

- consumerism
- stories about employees' work as citizens and members of communities and community organizations
- stories about living in various communities, at home and abroad
- stories about organizational influence in communities
- stories concerning family activities and influence of organization
- citizenship

Research and Development/Expansion: Topical treatment of information pertaining to the technical improvement of equipment, improvement in the state of the art of management or the role of the employee collectively or individually in the organization. Story material also includes topical treatment of continued or renewed use of products and services resulting from research and continued development of facilities. As applied to profit and nonprofit organizations--includes what the organization has done to enhance the effectiveness, desirability and potential of its products and services. Also included in this category are profit and expansion subjects. In addition to such topics as improved products and services, budget and expansion of profits and role

Table B (continued)

resulting from merger, new construction and changes in organization structure are also included.

Subcategories include:
- budgets and earnings reports
- construction
- products and services
- success/failure stories
- automation
- systems design

Policy: Topical treatment of information concerning organization rules, regulation and administrative procedures.

Subcategories include:
- promotion criteria
- job qualification
- examination of existing policy or introduction of new policy
- absenteeism
- theft
- safety
- use/waste of resources
- compliance with industry and government standards

History: Topical treatment of archival information pertaining to past events, personalities or organizations relative to the organization.

Subcategories include:
- the birth of the organization
- main battles fought in the various wars in which U.S. forces have participated
- historical development of departments in the organization

Personalities: Topical treatment of information devoted solely to the life and specific achievements of a living employee or other individual whose actions relate to the activities of the institutions.

Subcategories include:
- profiles of successful management or on-line employees
- profiles of the Secretary of Defense
- profiles of employees with unusual employment backgrounds

Sports: Topical treatment of information pertaining to professional or amateur athletics, recreational or spectator, which are regulated and observe specific rules.

Subcategories include:
- sports information used primarily for employee entertainment
- information on professional sports popular within the organization's locale

Table B (continued)

Hobbies and Recreation: Topical treatment of information concerning activities, recreational or spectator, that are not regulated or organized.

Subcategories include:
- stories about the leisure-time activity of employees
- involvement of employees in amateur sports

Job Information: Topical treatment of information pertaining to the activities of persons, agencies and other official elements of the institution in the official conduct of the organization's activities.

Subcategories include:
- stories about the job activities of employees
- job satisfaction stories
- activities of various departments
- training exercises
- individual skill training

Employee Benefits: Topical treatment of information pertaining to pay and fringe benefits. Stories in this category include any topic which concerns the employee pocketbook.

Subcategories include:
- medical, dental, hospitalization benefits
- living allowances
- housing
- pay scales
- retirement and pension plans
- tax form preparation assistance
- profit sharing plans
- education

Miscellaneous: Topical treatment of information not generic to any of the ten principal categories.

tions as there are for wanting to know about them . . . " Rigid categories which define the symbol or content and all acceptable substitutes relevant to the investigation are required for reliability. A categorization, therefore, has been designed specifically for this study. However, the categories were developed to allow for expansion to describe or fit topics which are the most common in feature article content of industrial publications. No category system, though, can be totally inclusive. Bush (1961, 313-322), for example, has completed a list of 50 possible subject categories which have been used extensively by researchers. This list is more comprehensive than that adopted for the present study.

Coding procedure

Goode and Hatt (1952, 313) suggest that many investigators incorrectly infer rigor from application of mathematics in research. The true or fundamental questions concerning technique are " . . . how precise are observations, can observations be repeated, does the data satisfy the requirements of the problem and demonstrate the conclusions." Reliability and validity, therefore, hinge upon the ability to replicate and verify findings. Coding plays an important role in this aspect of the research methodology in content analysis.

The use of index cards or pads of paper during coding is recommended by Budd and Thorpe (1963, 25). The data is easily tabulated, and initial computations can be made directly on the cards or sheets of paper prior to conversion into

tables. The card file method was used in this study because two sets of data were recorded.

An index card file was constructed and divided into ten sections. The first card in each section was the content category or topic card. The frequency, by topic, of each content category was recorded by issue on these cards. A file card for each of the dependent variables was maintained, and a complete set (one for each of the dependent variables) was indexed for each of the ten category cards in the file. This method of recording allowed sorting and tabulation during data analysis and assisted in the transfer of data to computer program format.

Reliability and validity in content analysis are primarily involved with coding. Can the investigation be repeated with consistency in results, and do the measurements portray what was intended to be measured? A test was conducted to determine coder reliability. Since only one person was involved in coding, a "percent of perfect agreement" test was used. The test was based on the percent of coder's agreement with a majority of test coders on an item-by-item basis. In this procedure if the percent of perfect agreement is not equal to or greater than 85 percent in any item or category, it is recommended that the item be re-defined and retested. The percent of perfect agreement calculated for this study was 84.6. This figure was considered sufficiently close to the recommended level to preclude further definition and testing.

Stempel (1955, 449-455) considered reliability error to be particularly important. Since errors in reliability are random rather than constant, they don't affect the sample mean, but affect test confidence levels, and, therefore, the ability to predict. Since direct measurements were used in data collection and subsequent inference, validity was not considered a problem in this study (Budd and Thorpe, 1963, 26-27).

Quantification

The smallest component of content which is counted in content analysis is the coding or recording unit. Common coding units are space, time, themes, symbols and titles (Budd et al., 1967, 33). Coding units which are counted in this study are themes, time and space. The unit of measure for themes is frequency. It is a generally accepted measure as an indication of subject emphasis. The unit of measure for time is the year in which a given unit of measure (such as a feature article) appeared. The unit of measure for space is the squared pica. The use of squared inches or picas is recommended in content analysis of print media because column widths tend to vary among publications (Budd and Thorpe, 1963, 24). Raw measures (length and width) are rounded to the nearest 0.5 pica. A pica equals one-sixth of an inch.

Coder reliability was assumed for measurement of picas. A pica rule marked to the nearest one-half pica was used. This procedure has been found to be sufficiently rigorous

as a fractional measure in content analysis (Budd et al., 1967, 37).

Design

Ten topical categories were used similar to those employed by the editors of Soldiers in readership surveys. These categories served as the independent variables and are listed in Table B. An eleventh category, miscellaneous, was used in the event an article could not be included in one of the ten principal categories. An index was maintained for all articles included in the miscellaneous category to retain the assumption of exhaustive and mutually exclusive categorization of topical content. Additionally, an exception was made in any instance in which an article contained content relevant to more than one category (i.e., a policy which develops into a controversial issue). The dominant category was determined by an inspection of display and body text and coded accordingly (Janis, 1943, 293-296).

Time also operated as a variable. It was considered independent since predictions were made from rather than about the operation of time as a variable.

The following dependent variables were analyzed:

1. color photograph space
2. display text space
3. body text space
4. non-process color (black and white, duotone) space
5. illustration space
6. colored space
7. white space

As mentioned, these seven elements were selected from a

number of design considerations currently employed in the print medium. Stewart (1943, 286-293) lists ten elements generally mentioned in design texts which impact to varying degrees on text treatment.

Various tests were used to analyze data. A trend analysis was conducted for both the frequency of content by category and space usage. Feature articles were counted by year for each year in the sample.

The Spearman rank correlation coefficient was used to determine trend in content over time. This procedure has been used in content analyses of newspapers and is reviewed by Haskins (1966, 83-84). It is a good procedure to use with non-parametric data to describe time trends. It gives a good indication if any trend exists, trend direction and trend consistency. The trend is determined by the sign of the coefficients (plus or minus). This is accomplished by assigning the rank of "one" for the most recent time period and also for the largest frequency. Since this procedure does not indicate the magnitude or shape of a trend, scattergram plotting was used in conjunction with the Spearman rank correlation coefficient.

The overall trend in text space usage in proportion to design element space usage was also analyzed over time. The annual usage of each over the period of years in the sample was compared. This analysis was conducted to determine whether a trend existed toward a decrease in the amount of text space and increase in the amount of space devoted to

text space and increase in the amount of space devoted to graphic design elements.

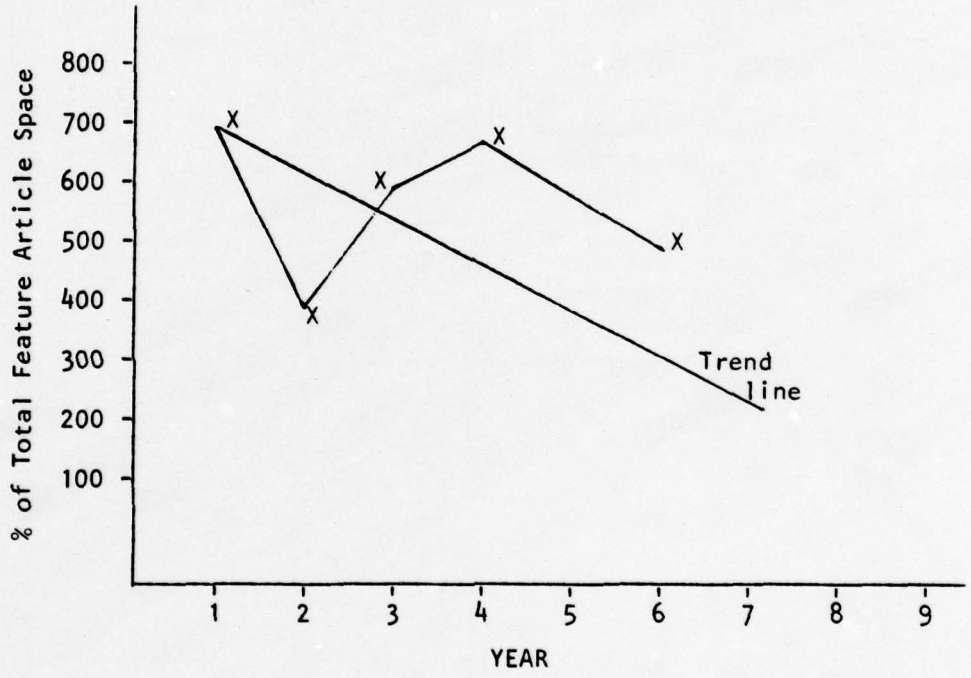
A trend analysis by content category was also conducted. Pearson's product-moment correlation coefficient (r) statistic was selected to analyze the data. The test design is illustrated in Table C. The dependent variables were plotted along the vertical (y) axis and time was plotted along the horizontal (x) axis. The dependent variable measure was proportionate space usage or the percentage of total feature article space used in each category by year. Time was represented by numerals one through nine (i.e., 1971 equals "1), 1972 equals "2", etc.). A trend line was then plotted and the variance explained computed as r^2. The procedure was repeated for each of the content categories.

Finally, an analysis of the usage of the various design elements was conducted. The direct measurement of space usage for each element was converted into figures which represent the proportionate use of each design element. Within the ten content categories, an annual analysis was conducted by dividing the amount of space dedicated to each design element in a particular category by the total amount of feature article space devoted to that category.

For example, the total annual feature article space used in the "employee benefits" category was calculated. The space devoted to each design element used in the "employee benefits" category was also calculated. The proportionate usage figure was derived as an expression of the space used

Table C

TREND ANALYSIS
CATEGORY
(POLICY)



for each design element divided by the total amount of space used in feature article presentation in that category. The tables in Appendix III illustrate the annual proportionate usage figures of each design element according to the content category.

Proportionate figures were also used in the scattergram plots illustrated in Appendix IV. Unlike the figures in Appendix III, these figures were derived as a proportion of the total annual amount of space used for a particular design element in relation to the total annual amount of feature article space.

The figures used in the scattergrams at Appendix IV, then, demonstrate the trend over time in usage of each design element. The data illustrated in Appendix III illustrate annual trends in proportionate design space usage relative to each content category. This methodology in data analysis allowed analysis of design trends over time and analysis of design trends relative to usage in each of the content categories.

Chapter IV

ANALYSIS OF TRENDS

Traditionally, form and content in employee and consumer periodicals have been isolated and investigated separately. For example, a great deal of information is available concerning the visual notation and subsequent influence of photographs and other design elements individually on readership. But, very little research addresses the use and potential readership influence of design elements relative to content categories.

Three separate measurements were used in this study to determine possible relationships and to test the suitability of space as a measuring device which could be applied to both form and content. First, the analysis of content categories was conducted in the traditional manner using frequencies. These results were compared with findings using space as the unit of measure.

The data obtained from the measurement of content by topical category are listed in Appendix I. The Spearman rank correlation was employed to determine whether upward or downward trends existed. This method was used due to its simplicity and predictive strength employing ordinal level data. Each table in Appendix I depicts the three measurements for each content category.

Figure A-1 in Appendix I represents the data collected from a simple count of frequency by article type according to content categories. Figure B-1 illustrates the raw space measured for that particular category in the sample issues for each year in the study. Figure C-1 depicts the space measurement converted to a decimal fraction. This fraction expresses the percentage of raw space in all issues measured dedicated to that particular category as a proportion of the total space used in feature article content in each of the issues measured.

Figures A-2 to C-2 (on frequencies for articles in personal affairs) through A-10 to C-10 (frequencies for articles in employee benefits) are also in Appendix I. These figures follow the same formats as Figures A-1 to C-1. As illustrated in Table D, the same amount of space was not used for feature article content every year. The data in Figures C-1 to C-10 are adjusted to compensate for fluctuations in total space for each year in the study. Therefore, a more accurate analysis of space usage is achieved. The total space figures in Table D are used throughout the study to arrive at proportionate figures, and will be referred to again.

Table E illustrates the variations which were obtained in the trend analysis of content over time. The data indicate that frequency may not be a true indicator of emphasis. For example, the trend in the "policy" article category reflects an increase (+0.563) in the number of articles concerning

Table D

INDEX OF ANNUAL TOTAL SPACE DEDICATED
TO FEATURE ARTICLE CONTENT

YEAR	TOTAL SPACE IN SQUARE PICAS
1971	537,600
1972	423,936
1973	417,792
1974	414,720
1975	384,000
1976	399,360
1977	393,216
1978	396,288
1979	402,432

Table E

TREND ANALYSIS

a Topic	b Frequency	c Raw Space	d % of Total Space
Controversial Issues	-0.675	-0.915	-0.900
Personal Affairs	+0.221	+0.496	+0.484
Research and Development	+0.567	+0.563	+0.605
Policy	+0.563	-0.250	-0.160
History	-0.330	-0.580	-0.604
Personalities	+0.367	-0.004	+0.280
Sports	+0.092	-0.250	+0.134
Hobbies and Recreation	-0.029	+0.200	+0.250
Job Information	-0.290	-0.360	+0.184
Employee Benefits	-0.480	-0.350	-0.179

policy subjects. However, a decreasing trend is indicated in the amount of space used (-0.160) in this category from 1971 to 1979. This trend remains after the raw space measurement (-0.250) is adjusted for annual fluctuations in total feature article space.

In the "personalities" and "sports" categories an increasing trend is indicated by analysis of frequency (+0.367 and +0.092, respectively). A decreasing trend is reflected in these same categories (-0.004 and -0.250, respectively) if the raw space measurement is used. When the raw space measurements are adjusted, however, to account for annual space fluctuations, an increasing trend is reflecced (+0.280 and 0.134, respectively). Conversely, the "hobbies and recreation" category data indicate a decreasing trend in the number of articles (-0.024), but an increasing trend in the amount of space dedicated to this topic (+0.250).

The differences in the trend analyses obtained from the three sets of data tend to corroborate the contention that neither frequency nor space alone appears to be an adequate indicator of editorial emphasis (Nafziger and Wilkerson, 1949). As a unit of measure, frequency does not account for variations in article length or variations in the amount of available article space. Frequency analysis assumes that all articles are the same length. The same value is assessed to a one-page story or a three-page story.

The length of articles is not an effective measure either. The number of articles and the lengths of articles

which are related to the total amount of space available are not accounted for. Therefore, space as a measure of trend is also invalid since the total amount of space dedicated to feature article content may fluctuate over time.

However, there is a limited amount of space in a publication, and the choice in the use of this space remains significant. Since the total amount of space influences its use, raw space measures must be converted to account for fluctuations in total space available. All measurements are then reduced to decimal proportions which may be converted to percentages to provide a standard unit for analysis. This insures equivalent representation of data and a more accurate assessment of significance. In this manner, space can be used as a practical unit of measure for small samples. Additionally, unlike frequency, it provides an interval level of measurement for analysis.

Trends in Feature Article Content

The Spearman rank correlation was used to compare frequency with space measurement. Figures A, B and C of each Table in Appendix I depict the variations in trend which were obtained using the three units of measure. The results of this analysis are summarized in Table E. The content trend graphs (D-1 to D-10) illustrated in Appendix II also are derived from the data listed in Figure C, column b, in Appendix I for each content category. The overall trend and statistical significance obtained from the Spearman rank

correlation and the proportionate space usage figures for each year are noted at the bottom of each graph.

The trend data in column d of Table E which are based on proportionate space usage figures are considered the most accurate statistically for the purposes of this study. The discussion of content trends is based on these figures. The only significant trend found was a decrease in the amount of space devoted to articles concerning controversial issues. Although not statistically significant, strong trends are also indicated in the increased space used in research and development topics and a decrease in space devoted to historical articles. Decreasing trends are indicated also in the "policy" and "employee benefits" categories. Increasing trends were indicated in all other categories.

The decreasing trend in the "policy," "controversial issues" and "employee benefits" categories correlate with Hall's contention (1975) that employee publications neglect these topics. Management's increasing willingness to discuss job related activities noted by Peterfreund (1974) and Stessen (1977) are reflected also in the increasing trend in the amount of space used in "job information" and "research and development" topics. The increased concern for the role of the company and employee as community members is reflected in the increasing trend in space devoted to "personal affairs" and "personalities" categories.

Chapter V

ANALYSIS OF DESIGN TRENDS

The manner and degree in which design elements are employed in content are strongly related to readership. For example, photographs have a powerful influence on readers. Further, color photographs have been shown to be more influential than black-and-white halftones or duotones. Material also may be abstracted from text and surprinted on tint blocks which attract reader attention and direct the reader's eyeflow patterns over the page. Selected information, then, can be highlighted by the use of design elements which affect readership and enhance reader notation of material.

However, the measurement of frequency and space does not reflect design influences. Therefore, a trend analysis of design element usage was conducted to determine possible relationships between design and content. Both content and form were then compared to describe the editorial focus in feature article composition.

Trends in design usage were analyzed using two separate measures. First, the overall trend in design element usage was analyzed employing Pearsonian correlation and scattergrams. This method was chosen to determine whether the overall space dedicated to any of the seven design elements

increased or decreased during the period of the study. Second, the overall trend in design usage was analyzed within content categories. The same statistical procedure was employed to determine whether increasing or decreasing trends were indicated in design in each of the ten categories. The results of the analyses are tabulated in the matrices in Appendix VI.

The design space usage diagrams in Appendix V depict the relative proportionate space usage during the years in the study. Both the individual and the composite graphs generated by the data indicate that design element usage is ranked respectively from body text, accounting for the most space through white space, nonprocess color photograph space, four-color process color photograph space colored space, illustration space and display text accounting for remaining space in that order.

The results of the design trend analyses indicate significant reduction in the proportion of white space used in article content. Further, a significant increase is indicated in the use of colored space over time. Also an increase is strongly supported in the use of illustration space, but the increase is not quite statistically significant.

The trend analysis in Appendix VI, of design element usage within content categories, also revealed significant changes in proportionate space usage. The results suggest significant reduction in space devoted to four-color process color photography ($p=.003$) and non-process color photography

(p=.075) in the "controversial issues" and "policy" categories. No significant trends were observed in display text usage. A strong trend, however, is indicated in the decreasing use of display text in the "personal affairs" category (p=.071). A significant decrease is evident in the use of body text space and a significant increase in the use of colored space likewise is evident in the "research and development" (p=.045 and .088, respectively) and "policy" (p=.071 and .057, respectively) categories. The data also suggest nearly significant trends in the reduction of white space in the "controversial issues," (p=.058) "research and development" (p=.055) and "job information" (p=.090) categories.

Research Questions

An annual index of design element usage by content category is presented in Appendix III. The tables in Appendix III list the decimal proportions of space dedicated to each design element for every content category. The annual composition of feature article content can be determined by inspecting the columns of each table. Table F is a simple cumulative index of the annual data presented in Appendix III. It demonstrates the indexing potential of design by indicating how space was used over the nine-year period studied. An analysis of the row figures illustrates how certain content categories contained a greater content percentage of a particular design element or group of elements.

Table F

CUMMULATIVE INDEX OF DESIGN ELEMENT USAGE BY CONTENT CATEGORY

	controversial issues	personal affairs	research/ development	policy	history	personalities	sports	hobbies/ recreation	job information	employee benefits
color photographs	.270	.807	.348	.058	.384	.311	1.34	2.17	.707	.193
display text	.381	.409	.398	.305	.283	.370	.257	.314	.312	.228
body text	3.074	2.954	2.782	3.070	2.407	2.681	1.987	2.611	2.735	.293
nonprocess color photographs	1.034	1.172	2.153	1.372	1.012	1.809	.808	.943	2.475	1.148
illustrations	.816	.827	.562	.780	.304	.198	.054	.223	.214	1.283
white space	1.769	1.667	2.396	2.314	1.664	2.050	2.446	2.219	2.039	2.129
colored space	.649	1.152	.354	.817	.369	.571	.075	.521	.511	.762

This table is a cummulative index of design element usage. The data in each cell of the matrix was derived by adding the data for each design element listed in Tables E-1 to E-9. Table F is designed to illustrate the diversity which existed in the amount of space dedicated to the various design elements in each content category.

The trends in the graphic design content of feature articles in Soldiers are consistent with contentions which have been presented. A definite pattern exists in the use of design elements according to content category. Each design element will be discussed from the perspective of its operation among the content categories.

Color Photograph Space

The tendency to use four-color process color photographs is predominant in the "sports" and "hobbies and recreation" categories. A year-by-year comparison also illustrates the "employee benefits," "policy" and "controversial issues" categories rarely contain color photograph space. The remaining categories fluctuate from zero to very low percentages of color photograph space.

The cummulative index figures portrayed in Table F show the prevalence of color photograph space throughout the period of the study. The variation in the use of this design element is illustrated by the differences between the figures associated with "sports" (1.34) and "hobbies and recreation" (2.17) and the other content categories. Particularly noteworthy are the comparatively low figures in the "controversial" issues" (0.270), "policy" (0.058) and "employee benefits" (0.193) categories. Concurrently, the trend analysis of four-color process color photograph space (Figure I-1, Appendix XI) also indicates a significantly decreasing

tendency to employ color photograph space in the "controversial issues" (p=.003) and "policy" (p=.063) categories.

Display Text

The proportion of space occupied by display text within the content categories tended to be more uniform throughout the years in the study than the proportionate usage of other design elements. No single category possessed a significantly disproportionate amount of display text space. No trend favoring use in a single category is indicated by the data in Appendix III.

The figures in Table F also indicate a somewhat equivalent treatment of content categories with display text. The lowest percentage of space was used for display text in the "employee benefits" category (0.288). Also, the "personal affairs," "controversial issues" and "research and development" categories contained relatively more display text space than the remaining categories.

Body Text

Text material comprises the largest proportion of design element space. Both the annual tables in Appendix III and Table F depict relatively greater space usage in certain categories. The data in Table F indicate that "sports" articles contain the least amount of text space (1.987). The "controversial issues," "personal affairs," "policy" and "employee benefits" categories all have greater amounts of space dedicated to text material.

It is apparent that certain categories are more susceptible to the "sea of grey" presentation. Coincidentally, they are also the content categories which tend to be oriented toward presentation of management or organization related information.

Nonprocess Color Photograph Space

This design element category includes space devoted to duotones and black-and-white halftones. As expected, Table F shows both the "sports" (0.808) and "hobbies and recreation" (0.943) categories contained relatively less nonprocess color photograph space due to the high proportion of process color photograph content. However, the trend analysis of nonprocess color photograph space (Figure I-4, Appendix XI) indicates a significantly increasing trend in the use of nonprocess color photograph space in the "sports" category ($p=.070$).

Among the remaining categories listed in Table F, "job information" (2.475), "personalities" (1.809) and "research and development" (2.153) articles had the highest amount of nonprocess color photograph space. Like the "sports" and "hobbies and recreation" categories they are also people or object oriented.

Illustration Space

The greatest amount of space used for illustrations appeared in the "employee benefits" category (1.283) in Table F. "Controversial issues," "personal affairs" and

"policy" articles also had a greater amount of illustration space than the remaining categories. The trend analysis (Figure I-5, Appendix XI) also indicated an increasing tendency in the use of illustrations in the "personal affairs" (p=.092) and "employee benefits" (p=.089) categories. This was expected since the type of information associated with these content categories is particularly suited to extraction from text and summarization in the form of charts and graphs.

In comparison, the "personalities," "sports" and "hobbies and recreation" categories concern topics with greater potential for photographic presentation. They contained the least amount of illustration space.

White Space

White space and text space are the most predominant design elements in terms of usage. Although text material occupies the greatest amount of space, white space is second in terms of overall usage. The measurement of white space included all portions of the page which did not contain any other design element. Since the total page was considered, white space included the page margins as well as space which divided other design elements such as blocks of text, display type and photographs.

White space is generally used as a fence or separating device in layout. Therefore, it was not surprising to find a relationship between its usage and other design elements. The figures in Table F indicate that a greater restriction

in the use of white space is evident in such categories as "controversial issues" (1.769) and "personal affairs" (1.667). These categories contained greater amounts of text space relative to other design elements. Those categories such as "sports" which contain a greater proportion of design elements such as photographs have a more open layout and use more white space (2.446).

The trend analysis of design element usage also indicated a significant reduction in the overall use of white space in Soldiers over time. The trend data also reflected a significant decrease in the proportionate amount of white space (Figure I-6, Appendix XI) used in "controversial issues" (p=.058), "research and development" (p=.055) and "job information" (p=.090) articles.

Colored Space

The data in Table F illustrates colored space was used more in the "personal affairs" (1.152), "employee benefits" (.762), "policy" (1.817) and "controversial issues" (.649) articles. These categories also contained more black space such as text material and nonprocess color photographs. Relatively less white space was used in these categories. Instead, colored space was used to provide visual relief. Additionally, an upward trend is also indicated in the use of colored space in the "policy" and "history categories.

Tint blocks were never found to be used singularly as a design element in Soldiers magazine. Illustrations or

text material were always surprinted over colored space. For this reason there is a correlation between illustration and colored space in those categories which contained a greater degree of illustration space.

Additionally, colored pages were used as a background for text material, particularly in the "controversial issues," "personal affairs," "employee benefits" and "policy" articles. An inspection of the data in Table F will indicate that these categories contained the greatest proportionate use of text material. But, these categories also contained relatively less photographic space. In these categories colored space was used to add visual dimension to the page due to the absence of the visual impact of photographic space.

Form and Content

Does form follow content? The data in Table F and the annual tables in Appendix III suggest that design elements were used differently. Thus far the various elements have been analyzed separately. The differences in the uses of each design element have been compared to determine possible distinctions in usage among the content categories. Whether content is indexed by form is clarified by the analysis of hypothesized design element usage.

Chapter VI

HYPOTHESIS FINDINGS

It has been shown in previous chapters that the relative proportion of space devoted to certain design elements differs among content categories. The following hypotheses test the relationship of design element usage and feature article content. They are based upon the premise that without clearly defined editorial objectives, design elements will be employed to the greatest extent within content categories which offer the greatest opportunity for their use.

Relationship between text space and design element usage

Hypothesis 1: There will be a trend toward a decrease in the amount of body text space and a trend toward an increase in the use of space devoted to graphic design elements.

This hypothesis was not supported. No significant trends were indicated in the usage of body text space, nonprocess color photograph space or display text space. However, analysis of trend data tabulated in Appendix IV does indicate strong or significant trends in the use of three design elements. There were statistically significant trends in the reduction of the use of white space ($p<.01$) and increased use of colored space ($p<.05$). There was a strong

trend toward increased use of color space ($p < .10$). Trends in use of display text ($p < .30$), nonprocess color photo space ($p < .25$) and process color photograph space ($p < .25$) were non-significant.

The findings suggest the overall use of various design elements is constant, but varies proportionately within content categories. For example, if a specific design element was favored more or less generally in all content categories, over a period of time its overall use would appear to increase or decrease. This relationship appears at a statistically significant level in the trend data in Appendix IV only in the case of white space and colored space.

Instead, overall design element usage appears to be balanced, but its proportionate use is shifted about among the topical categories. The trends that exist in the use of design elements within content categories are summarized in Appendix VI.

Operation of Design in Content

Hypothesis 1 establishes the operation of design element usage. If the overall use of design elements generally is stable, then the degree of diversity in design element usage within the ten content categories acts as an index of readership emphasis. The relative use of design elements, therefore, reflects the degree of probable reader notation and, presumably, readership.

The suggested decreasing trend in the use of white space and increase in the use of illustration and colored space is significant. It reflects the increasing trend in Soldiers to use design to enhance the aesthetic appeal of content. Additionally, the use of illustrative devices such as summarizations, charts and graphs simplifies presentation of material and increases type legibility and, presumably, comprehension.

Use of color photograph space and body text space

Hypothesis 2: There will be a trend toward greater use of color photograph space and away from body text space in the "sports" and "hobbies and recreation" articles.

Among the ten content categories examined, the greatest proportion of four-color process photograph space was found in the "sports" (1.34) and "hobbies and recreation" (2.17) categories. Further inspection of the data in Table F also indicates, among the ten categories, text material occupied the least amount of space in "sports" (1.98) and the fourth least in "hobbies and recreation" (2.61) categories.

However, in regard to the stated hypothesis, no statistically significant relationships were found. Results are reported in Figures I-1 and I-2 in Appendix VI. The trend was away from use of process photographs in sports articles ($p < .25$), rather than toward it as the hypothesis predicted. The trend was in the predicted direction in regard to use of process photos in the "hobbies and recreation" articles, but statistically nonsignificant ($p < .25$). Use of body text with sports

articles increased rather than decreased over time, although results were statistically nonsignificant ($p < .12$).

It is perhaps worth noting that relatively high proportion of white space was used in both the "sports" (2.446) and the "hobbies and recreation" (2.219) categories. Use of body text also increased over time in the "hobbies and recreation articles," although results were again statistically nonsignificant ($p < .18$). The effects of these two design elements are compounded by the low usage rates of text space in both categories.

Influence of Photographs

It has been noted in readership studies that photographs have a higher degree of notation than any other design element (Woodburn, 1947). The added element of white space frames photographic space and also enhances the visual syntax determining patterns of eye movement and notation (Root, 1966). The low proportion of text space also tends to create an open, more readable and visually attractive design.

Fosdick and Tannenbaum (1964) noted that the use of stylistic elements relates the communicator's emphasis. Powers and Kearl (1968) refer to this phenomenon as indexing. However, no mention is made to "sports" and "hobbies and recreation" as subject categories in the statement of objectives for Soldiers magazine. Nevertheless, Soldiers' editors have indexed these topics considerably by their use of design elements in the relative proportions indicated by

the data. The design treatment of these two topics provides substantial visual appeal and corresponding potential reader notation.

Nonprocess color photograph space and display text space

Hypothesis 3: There will be a trend toward greater use of nonprocess color photograph space and display text space in the "job information," "history," and "personalities" articles.

Both the "job information" and "personalities" categories contained nonprocess color photograph space in a proportion greater than that found in other categories. "Job information" articles contained the highest amount of nonprocess color photograph space (2.475) and the "personalities" category contained more nonprocess color photograph space (1.809) than all other categories except "research and development" (2.153). See Table F.

"Sports," "hobbies and recreation," "job information," "personalities" and "history" categories appear to be related. Article content in these categories most often centered on persons or people-related activity. The photograph tends to be the most conducive design element for information presentation in these categories. The data obtained substantiate this logic with the exception of the "history" category. The data revealed that line art or drawings were used to a greater extent in the "history" area (.304) than in "job information" (.214) and "personalities" (.198) articles. Therefore, photographic space was used less in "history" articles in Soldier content.

Despite these observations, no statistically significant trends were found in support of the hypothesis. (See Figures I-3 and I-4). The trend in use of display text in "personalities" articles was in the predicted direction, but at a statistically nonsignificant direction ($p<.28$). The trend in use of display test in "history" and "job information" articles was opposite the predicted direction at a statistically nonsignificant level ($p<.39$ and $p<.39$ respectively). The trend in use of nonprocess color space was in the predicted direction in the case of "personalities" and "job information" articles, but at a statistically nonsignificant level ($p<.45$ and $p<.21$ respectively). The trend in "history" articles was opposite the predicted direction in regard to nonprocess photo use but at a statistically nonsignificant level ($p<.28$).

Illustration and Colored Space

Hypothesis 4: There will be a trend toward increased use of illustration and colored space in "employee benefits" and "research and development" articles.

The "employee benefits" category did feature the greater relative use of illustration space (1.283) and ranked third among the ten categories in the use of colored space (.762). In addition to colored space, text material occupied the greatest proportion of space in this category.

The amount of feature article space devoted to "research and development" topics was not expected. The "research and development" trend chart in Appendix II shows an increase in

feature article content which approaches the level of significance (p .10). This is surprising since "research and development" topics are also addressed departmentally in Soldiers magazine.

No statistically significant support for the hypothesis was found. (See Figure I-5 and I-7.) Trends in the use of illustration space for the "employee benefits" and "research and development" articles were in the predicted direction but at statistically nonsignificant levels ($p<.09$ and $p<.43$ respectively). The trend in use of colored space in "research and development" articles was in the predicted direction but at a statistically nonsignificant level ($p<.09$). The trend in use of color space in "employee benefit" articles was opposite the predicted direction at a statistically nonsignificant level ($p<.49$).

White Space and Text Space

Hypothesis 5: There will be a trend toward increased use of white space and text space in articles about "personal affairs," "policy" and "controversial issues."

Although the "employee benefits" category featured the greatest use of text space (3.293), "personal affairs" (2.954), "policy" (3.070) and "controversial issues" (3.074) articles contained a greater relative use of text space in comparison to the remaining categories (Table F).

Examination of the data in Table F reveals a greater use of white space in "sports" (2.446) and "hobbies and recreation" (2.219) articles which contain a greater propor-

tion of photograph space. Similarly, the data indicate less use of white space in such categories as "controversial issues" (1.769) which are text oriented.

In regard to the hypothesis, no statistically significant support was found, although in three cases results were very close to statistical significance. Results are reported in Figures I-2 and I-6. Use of body text increased in the predicted direction in the case of "policy" articles ($p < .08$) and "controversial issues" categories ($p < .42$). In the case of "personal affairs" articles results were opposite the predicted direction ($p < .13$). In the case of use of white space, results were in the predicted direction only in the case of "personal affairs" articles ($p < .26$). Use of white space in "controversial issues" and "policy" articles was opposite the predicted direction ($p < .06$ and $p < .11$ respectively).

Summary

Comparison of the figures in Table F for each of the content category columns illustrates the nature of design element usage. In all content categories, the greatest proportion of space was used by text material and white space. However, in the "sports" and "hobbies and recreation" categories, photographic space was used to a greater extent than in other design elements. This observation also can be made in the "job information," "personalities" and "research and development" categories. These are the person, activity or object-oriented content categories. They are the most susceptible to pictorial presentation. The "history" category

also may belong to this group. However, in the Soldiers data artwork and line drawings were used to a greater degree (.304) which resulted in decreased use of photographic space.

Less white space and a greater proportion of illustration, body text and colored space were featured in the "employee benefits," "controversial issues," "personal affairs" and "policy" articles. In contrast to such topics as "sports," very little visual dimension was added to design. This is particularly evident since it has been noted that colored space was used principally as background either for pages of text or for charts and other illustrations.

Form should follow content. However, the hypotheses were stated to test the contention that content would follow form without clearly defined objectives to direct editorial focus. Greater relative four-color process color photograph space was predicted in the categories "sports" and "hobbies and recreation," which inherently tended to offer the greatest opportunity for such use. In contrast, greater relative use of text space and less relative use of photographic space was predicted in such categories as "policy" and "controversial issues" which are inherently prone to less visually stimulating design treatment.

Content should be designed intentionally to influence readership. The focus of design should be directed toward enhancing the aesthetic appeal, reader notation and readership of topical content related to the communication goals and objectives of the sponsoring organization.

Chapter VII

DISCUSSION OF FINDINGS

The objective statement quoted from Soldiers magazine in Chapter 2 stipulates that the intended editorial focus is information concerning policies, plans, operations and technical developments within the Army. In addition, material concerning management views and topics of employee interest are also listed as intended subjects for editorial treatment. Three sets of observations were made in this thesis to measure the degree to which feature article content conformed to goals outlined in the statement of editorial objectives.

Methodology

First, content was measured by an analysis of topical categories. Three units of measure were used--frequency, space and proportionate space usage. Comparison of the trend analyses summarized on Table E appears to indicate that frequency analysis and analysis of space usage do not reflect corresponding trends

Differences in the trends may result from the operation of frequency in small samples. Topical categories simply may not occur with sufficient frequency to accumulate required data levels for analysis. However, the differences

in the trends may demonstrate the significance of space as a unit of measure.

A given sample may contain five articles covering "policy," but these five articles may contain less space than two articles concerning "sports." Although analysis of topical frequency reflects editorial focus, it does not discriminate degrees of treatment or editorial emphasis in content.

Space can provide a more representative measure of a sample. Analysis of space usage depicts the degree of editorial treatment which reflects the level of editorial emphasis. Further, how the space was used can be analyzed as was done in this study.

Space and how it was employed may be used to compare content more readily than frequencies. Space is a measure which can be related to content. For example, the manner in which space is used in two or more publications can be analyzed, compared, and then related to general content categories. The researcher is freed from the inadequacies associated with first relating topical categories among publications prior to comparing editorial focus. Such analysis is not biased directly by overlap or dissimilarity in category content or topical treatment. Statistically, operations are conducted on the data obtained from measurements of space usage rather than on frequencies of topical categories which are not wholly comparable.

Following an analysis of space usage, the researcher can more readily group content categories to describe indirectly relationships involving editorial focus among publications based on similarity and variation in space usage data. For example, one publication may use the term "hobbies" to describe a topical category. Another may use "recreation." While the categories may not be similar enough in content to correlate them statistically, they may be sufficiently comparable to determine relationships based on the analysis of space usage data relative to other content categories in each publication.

Unlike frequency, space can be subdivided. A researcher can analyze how the space was used by investigating its components. Percentages of total space can be used to describe the degree of editorial coverage assigned to each content category. This provides an index or one measure of focus or emphasis. This measure of focus is form, the treatment of editorial material in each category. The researcher can determine which content categories appear to be emphasized and also how the material is indexed to influence potential readership.

Potential Readership Index

The varying degrees of aesthetic treatment given to article content may be presumed to affect readership. Photographs, color, illustrations and other design elements are tools the editor should use objectively to formulate visually

stimulating material. Design should be used to enhance the readership stimulus by providing aesthetic appeal.

Developments in annual reports illustrate the significance of using design treatment based upon an objective analysis of content and message priority. Historically, annual reports have been dull, prose-filled statements of organization objectives and achievements. However, current trends outlined by Beiswinger (1979) demonstrate that design elements may be used to enhance the aesthetic appeal of content and the significance of the material indexed. The reader perceives the packaging of the message as an index of its importance.

Form cannot follow content unless content objectives are planned. The editor must know what messages should receive priority before he or she can evaluate how the content is to be indexed. This should be a conscious process which regulates the use of design elements. The results of a survey of industrial editors (Culpepper, 1975) indicated that budget was only weakly associated with design treatment. Also, staff size and type of publication did not influence design. Editors noted that creativity and staff time were the principal considerations in developing appealing and interesting design treatment.

The design treatment of feature article content in Soldiers magazine illustrates the indexing process. The ten topical categories express three principal areas of interest --management, employee and entertainment--described in the

Soldiers objectives statement. Those topics which convey information related to the organization, its activity and managerial philosophy, goals and objectives are "controversial issues," "research and development," "history," "policy" and "job information." The editorial emphasis measured by space devoted to these categories indicates significantly decreasing trends in feature article space in the "controversial issues" and "history" categories. Although not statistically significant, the data analysis also indicates a strong trend in this direction in "policy" feature article content.

Similarly, the design treatment of these categories reflects a trend in decreasing editorial emphasis. Both the "controversial issues" and "policy" categories are characterized by greater relative use of text space, less relative use of other design elements and a decreasing trend in the use of both four-color process and nonprocess color photograph space. History articles generally ranked lowest in the relative use of all design elements.

Although significant trends exist in the increasing use of colored space in "policy" and "history" feature articles, the overall design treatment of these categories suggests minimal potential reader notation. The amount of space committed to "controversial issues," "policy" and "history" articles and the design treatment of article content suggests a relatively low index of editorial emphasis.

The strongest categories in the management-oriented topics area were "research and development" and "job

information." The trend analyses of both feature article space and the relative use of design elements indicate the "research and development" topic is emphasized to a greater degree than "job information." The increase in space committed to "research and development" topics is significantly higher than the space used for "job information." Additionally, there is a significant reduction in the use of body text space and corresponding increase in the proportionate use of colored space in "research and development" content. These trends are accompanied by a decreasing use of white space. However, the trend in reduced white space in "job information" articles is not offset by increased use of any other design element.

The findings indicate that in the management-oriented topic areas the "research and development" and "job information" categories are indexed to the greatest extent both in proportionate space usage and relative use of design elements. Relatively less space is used for text material and comparatively more space is used for four-color process and nonprocess color photographs. The increasing trend in the use of colored space in lieu of white space also enhances the reader notation index of "research and development" and "job information" article content.

The topical categories related principally to employee interests are "personal affairs," "employee benefits" and "personalities." The analysis of space devoted to these categories in feature article content did not indicate any

significant trends. Data analysis does indicate, however, an increasing tendency to devote more space to the "personalities" and "personal affairs" categories, but less space to "employee benefits." The analysis of trends in design elements usage suggests increasing use of illustrations in the "personal affairs" and "employee benefits" categories, but a reduction in colored space in the "personalities" category. This suggests that more material is being extracted from text to emphasize content.

Comparatively greater emphasis appears to be directed toward the "personal affairs" category. There is an increasing trend in space devoted to this topic. Additionally, four-color process and nonprocess color photograph space, display text space, and colored space are used to a greater degree than in the "personalities" and "employee benefits" categories.

"Employee benefits" articles are indexed the least. The greatest proportion of space is occupied by text material and illustrations. Only colored space provides visual relief from the grey or black blocks of type.

Finally, the "sports" and "hobbies and recreation" categories comprise the entertainment or general interest topical area. Among the ten content categories "sports" and "hobbies and recreation" articles were indexed to the greatest extent. They contained the greater relative usage of four-color process color photograph space, greater relative use of white space and the least relative use of text material. Further, the results of the trend analyses indicate a strong

trend in increased space devoted to nonprocess color photograph space in "sports" article content. The analysis of feature article content also suggests increasing trends in space committed to both topical categories.

The topical emphasis indexed by the relative amounts of space used for article content and the relative design treatment of article content indicate the editorial focus. The findings illustrate substantial editorial emphasis is committed to the "sports" and "hobbies and recreation" content categories. More editorial emphasis is focused on the "personal affairs" topic than is directed toward "personalities" and "employee benefits." Finally, the least emphasized topical categories are "controversial issues," "policy" and "history."

The findings corroborate common criticism of employee publication content. Publications must be programmed specifically to aid management in achieving its communication objectives. Without editorial policies derived from clearly defined objectives there is no guarantee that publication content will reflect or articulate organizational goals. Further, content will not be indexed to enhance reader notation and influence readership of pertinent material.

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CONTENT ANALYSIS OF DESIGN ELEMENTS IN THE EMPLOYEE PUBLICATION--ETC(U
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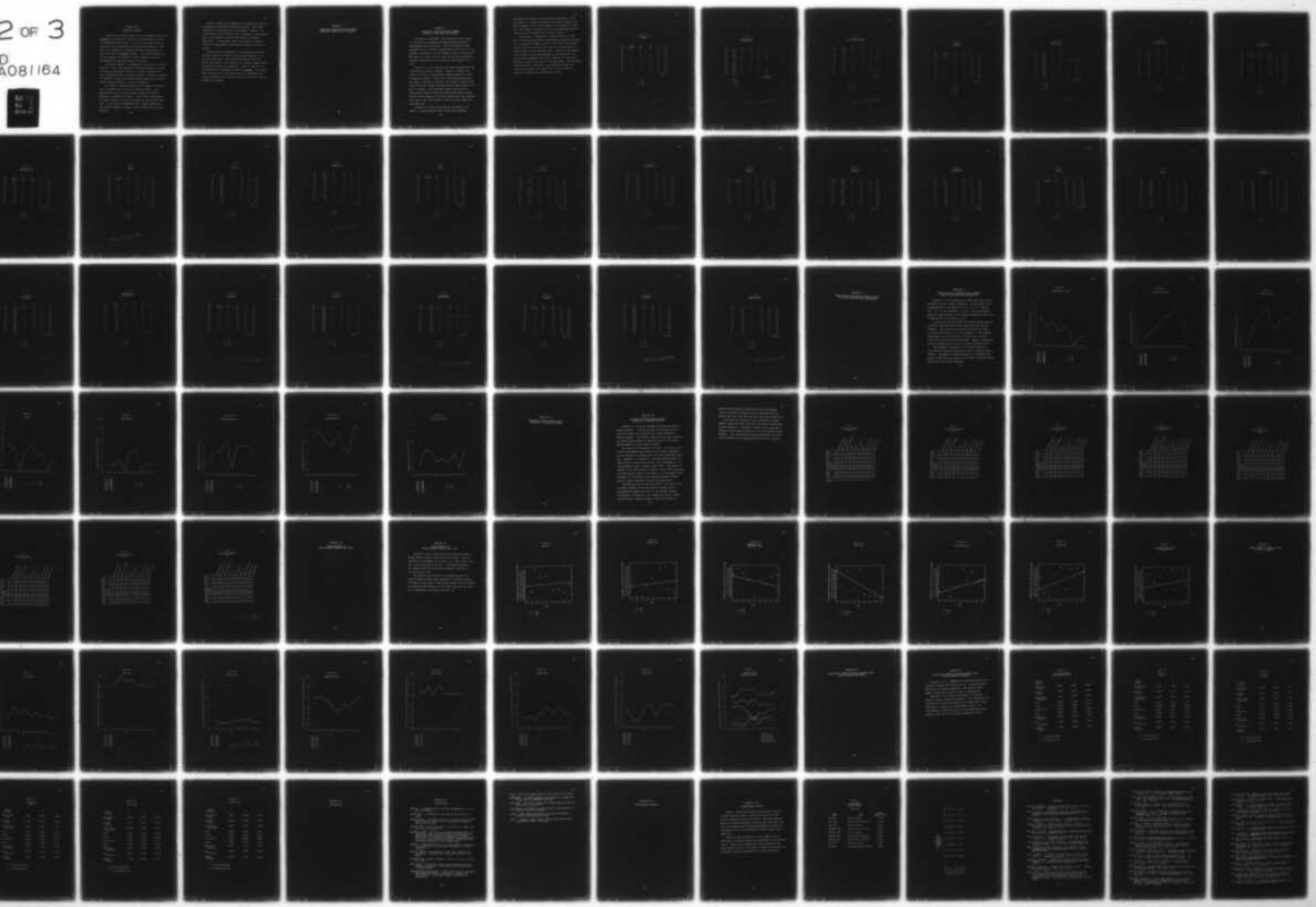

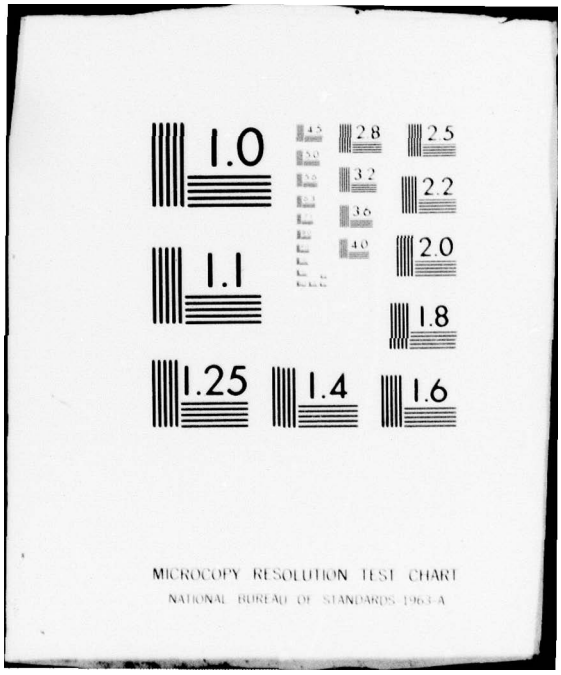
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NATIONAL BUREAU OF STANDARDS 1963-A

Chapter VIII

CONTINUED RESEARCH

Although this study concerns only one employee publication, Soldiers is directed at a large and diverse audience within the Department of the Army. It is also published without an editorial policy developed from formalized objectives. However, the statement of intended objectives delineates the editorial focus of Soldiers content. This study compared the use of frequency and space as content analytic tools and investigated the design treatment of content.

Continued research is recommended in two areas of content analysis. First, the influence of design treatment on reader notation and readership relative to content categories has been investigated only to a limited extent. Empirical research is required to index the reader notation influence of various design elements peculiar to topical categories.

For example, reader notation and the degree of readership can be analyzed for a particular content category. The proportionate use of certain design elements can then be adjusted to determine the effect. The relative performance of design elements then can be indexed for each content category. It can then be determined which design elements and the relative degree of usage in article content are the most effective.

Second, research is recommended to evaluate the influence of editorial objectives on form and content. This study attempted to investigate the relationship. However, the data concerns only one publication. A number of publications need to be examined, both with and without formalized objectives. A comparative study can be done to evaluate content and information presentation relative to editorial policy.

Finally and most importantly, the relationship between form and content and reader notation and readership is of critical importance. The correlation between editorial policy and content is one measure of successful communication. The ultimate measure is readership. The U.S. Army has conducted extensive readership studies of Soldiers. The logical next step would be to correlate trends in readership with trends outlined in this thesis relative to the form in which messages are encoded.

Appendix I

ANALYSIS OF FEATURE ARTICLE CONTENT COMPARING THREE UNITS OF MEASURE

Appendix I

ANALYSIS OF FEATURE ARTICLE CONTENT COMPARING THREE UNITS OF MEASURE

The figures in Appendix I are included in this thesis to illustrate the ranking discrepancies which occurred in the Spearman rank correlation. Since the critical value assigned to the .05 level of significance (CR) is ± 0.683, the Spearman correlation (r_s) must exceed ± 0.683 to be significant. The alpha (α) level, critical value (CR) and the calculated Spearman correlation (r_s) are noted on each figure (A-1 to C-10).

Figures A-1 to C-1 describe the rank correlation for the "controversial issues" category. Figure A-1 depicts the trend, over time, of calculations using frequency as a unit of measure; Figure A-2 depicts the trend calculation using raw space as the unit of measure; and Figure A-3 depicts the trend calculation using the proportionate space usage as the unit of measure. The difference between raw space and proportionate space is that the proportionate space measure results from dividing the raw space measure for that category each year by the total amount of feature article space for that same year.

Column (a) in each figure depicts the years in the sample. In the procedure used to derive the Spearman

correlation the years in the study were ranked one to nine in column (c). Column (d) depicts the relative rank of each unit of measure, one to nine, based on the figures in column (b). The figures in column (b) are the calculations derived from each unit of measure for the year indicated.

For example, in Figure B-1, reading across the "1979" row, column (b) relates that 12,288 square picas were measured for "controversial issues" topics in that year which ranked eighth (column d) relative to the amount of space devoted to this category in the remaining years. Column (c) represents the difference in the rank assigned to the particular year and the rank assighed to the unit of measure for that year. Figures A-1 and C-1 are read in the same manner. The Spearman rank correlation coefficient (r_s) determines whether the correlation between time (year) and the unit of measure reflects a significant relationship or trend.

Figure A-1

CONTROVERSIAL ISSUES
FREQUENCY

a x YEAR	b y FREQUENCY	c x RANK	d y RANK	e d	f d^2
1979	1	1	7.0	-6.0	36.00
1978	1	2	7.0	-5.0	25.00
1977	0	3	9.0	-6.0	36.00
1976	2	4	4.5	- .5	.25
1975	3	5	2.5	2.5	6.25
1974	1	6	7.0	-1.0	1.00
1973	3	7	2.5	4.5	20.25
1972	2	8	4.5	3.5	12.25
1971	6	9	1.0	8.0	64.00
					$\Sigma d^2 = 201.0$

$\alpha = 0.05$

CR = 0.683

$r_s = -0.675$

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Figure B-1

CONTROVERSIAL ISSUES
TOTAL ROW SPACE

a x YEAR	b y SPACE	c x RANK	d y RANK	e d	f d^2
1979	12288	1	8	-7	49
1978	10368	2	7	-5	25
1977	-0-	3	9	-6	36
1976	21504	4	6	-2	4
1975	33792	5	4	1	1
1974	24576	6	5	1	1
1973	57463	7	2	5	25
1972	40248	8	3	5	25
1971	86016	9	1	8	64
					$\Sigma d^2 = 230$

$\alpha = 0.05$

CR = 0.683

$r_s = -0.915$

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Figure C-1

CONTROVERSIAL ISSUE
INDEX OF PROPORTIONATE SPACE

a x YEAR	b y X/TOTAL X	c x RANK	d y RANK	e d	f d^2
1979	.030	1	7	-6	36
1978	.026	2	8	-6	36
1977	.000	3	9	-6	36
1976	.054	4	6	-2	4
1975	.088	5	4	1	1
1974	.059	6	5	1	1
1973	.137	7	2	5	25
1972	.095	8	3	5	25
1971	.160	9	1	8	64
					$\Sigma d^2 = 228$

$\alpha = 0.05$

CR = 0.683

$r_s = -0.900$

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Figure A-2

PERSONAL AFFAIRS
FREQUENCY

a x YEAR	b y FREQUENCY	c x RANK	d y RANK	e d	f d^2
1979	7	1	3.5	-2.5	6.25
1978	5	2	5.0	-3.0	9.00
1977	7	3	3.5	- .5	.25
1976	4	4	7.0	-3.0	9.00
1975	4	5	7.0	-2.0	4.00
1974	9	6	2.0	4.0	16.00
1973	4	7	7.0	0.0	0.00
1972	10	8	1.0	7.0	49.00
1971	3	9	9.0	0.0	0.00
					$\Sigma d^2 = 93.5$

$\alpha = 0.05$

CR = 0.683

$r_s = +0.221$

Figure B-2

PERSONAL AFFAIRS
TOTAL ROW SPACE

a x YEAR	b y SPACE	c x RANK	d y RANK	e d	f d^2
1979	89088	1	2	-1	1
1978	73728	2	4.5	-2.5	6.25
1977	73728	3	4.5	-1.5	7.25
1976	43008	4	7	-3	9
1975	46086	5	6	-1	1
1974	105984	6	1	5	25
1973	79815	7	3	4	16
1972	39936	8	8	-0-	-0-
1971	12096	9	9	-0-	-0-
					$\Sigma d^2 = 60.5$

$\alpha = 0.05$

CR = 0.683

$r_s = 0.496$

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Figure C-2

PERSONAL AFFAIRS
INDEX OF PROPORTIONATE SPACE

a x YEAR	b y X/TOTAL X	c x RANK	d y RANK	e d	f d^2
1979	.221	1	2	-1	1
1978	.186	2	5	-3	9
1977	.187	3	4	-1	1
1976	.107	4	7	-3	9
1975	.120	5	6	-1	1
1974	.255	6	1	5	25
1973	.191	7	3	4	16
1972	.094	8	8	0	0
1971	.022	9	9	0	0
					$\Sigma d^2 = 62$

$\alpha = 0.05$

$CR = 0.683$

$r_s = 0.484$

Figure A-3

RESEARCH/DEVELOPMENT
FREQUENCY

a x YEAR	b y FREQUENCY	c x RANK	d y RANK	e d	f d^2
1979	2	1	6.5	-5.5	30.25
1978	4	2	4.0	-2.0	4.00
1977	7	3	1.0	2.0	4.00
1976	5	4	2.0	2.0	4.00
1975	4	5	4.0	1.0	1.00
1974	4	6	4.0	2.0	4.00
1973	2	7	6.5	1.5	2.25
1972	1	8	8.5	- .5	.25
1971	1	9	8.5	-1.5	2.25
					$\Sigma d^2 = 52.0$

$\alpha = 0.05$

CR = 0.683

$r_s = 0.567$

Figure B-3

RESEARCH/DEVELOPMENT
TOTAL ROW SPACE

a x YEAR	b y SPACE	c x RANK	d Y RANK	e d	f d^2
1979	18432	1	6	-5	25
1978	30720	2	4	-2	4
1977	61440	3	1	2	4
1976	55296	4	2	2	4
1975	40080	5	3	2	4
1974	12288	6	8.5	-2.5	60.25
1973	24098	7	5	2	4
1972	12384	8	7	1	1
1971	12288	9	8.5	.5	.25
					$\Sigma d^2 = 57.5$

$\alpha = 0.05$

CR = 0.683

$r_s = 0.563$

Figure C-3

RESEARCH/DEVELOPMENT
PROPORTIONATE SPACE

a x YEAR	b y X/TOTAL X	c x RANK	d y RANK	e d	f d^2
1979	.046	1	6.0	-5.0	25.00
1978	.077	2	4.0	-2.0	4.00
1977	.156	3	1.0	2.0	4.00
1976	.138	4	2.0	2.0	4.00
1975	.120	5	3.0	2.0	4.00
1974	.029	6	7.5	-1.5	2.25
1973	.057	7	5.0	2.0	4.00
1972	.029	8	7.5	.5	.25
1971	.022	9	9.0	0.0	0.00
					$\Sigma d^2 = 47.50$

$\alpha = 0.05$

CR = 0.683

$r_s = 0.605$

Figure A-4

POLICY
FREQUENCY

a x YEAR	b y FREQUENCY	c x RANK	d y RANK	e d	f d^2
1979	4	1	4.0	-3.0	9.00
1978	5	2	1.5	.5	.25
1977	5	3	1.5	1.5	2.25
1976	3	4	7.0	-3.0	9.00
1975	3	5	7.0	-2.0	4.00
1974	4	6	4.0	2.0	4.00
1973	2	7	9.0	-2.0	4.00
1972	4	8	4.0	4.0	16.00
1971	3	9	7.0	2.0	4.00
					$\Sigma d^2 = 52.50$

$\alpha = 0.05$

$CR = 0.683$

$r_s = 0.563$

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Figure B-4

POLICY
TOTAL RAW SPACE

a x YEAR	b y SPACE	c x RANK	d y RANK	e d	f d^2
1979	39936	1	6.0	-5.0	25.00
1978	41472	2	5.0	-3.0	9.00
1977	49152	3	3.5	- .5	.25
1976	24576	4	8.0	-4.0	16.00
1975	33792	5	7.0	-2.0	4.00
1974	49152	6	3.5	2.5	6.25
1973	51084	7	2.0	5.0	25.00
1972	16920	8	9.0	-1.0	1.00
1971	81648	9	1.0	8.0	64.00
					$\Sigma d^2 = 150.50$

$\alpha = 0.05$

CR = 0.683

$r_s = -0.250$

Figure C-4

POLICY
PROPORTIONATE SPACE

a x YEAR	b y X/TOTAL X	c x RANK	d y RANK	e d	f d^2
1979	.099	1	6	-5	25
1978	.104	2	5	-3	9
1977	.125	3	2	1	1
1976	.061	4	8	-4	16
1975	.088	5	7	-2	4
1974	.118	6	4	2	4
1973	.122	7	3	4	16
1972	.039	8	9	-1	1
1971	.151	9	1	8	64
					$\Sigma d^2 =$ 140

$\alpha = 0.05$

$CR = 0.683$

$r_s = -0.160$

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Figure A-5

HISTORY
FREQUENCY

a x YEAR	b y FREQUENCY	c x RANK	d y RANK	e d	f d^2
1979	3	1	6.5	-5.5	30.25
1978	0	2	8.5	-6.5	42.25
1977	4	3	5.0	-2.0	4.00
1976	5	4	3.5	1.5	2.25
1975	6	5	2.0	3.0	9.00
1974	5	6	3.5	2.5	6.25
1973	0	7	8.5	.5	.25
1972	3	8	6.5	1.5	2.25
1971	8	9	1.0	8.0	64.00
					Σd^2 = 160.50

α = 0.05

CR = 0.683

r_s = -0.33

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Figure B-5

HISTORY
TOTAL RAW SPACE

a x YEAR	b y SPACE	c x RANK	d y RANK	e d	f d^2
1979	21504	1	7.0	-6.0	36.00
1978	0	2	8.5	-6.5	42.25
1977	24576	3	6.0	-3.0	9.00
1976	27648	4	5.0	-1.0	1.00
1975	52224	5	2.0	3.0	9.00
1974	35328	6	4.0	2.0	4.00
1973	0	7	8.5	- .5	.25
1972	43344	8	3.0	5.0	25.00
1971	78624	9	1.0	8.0	64.00
					$\Sigma d^2 = 190.5$

$\alpha = 0.05$

CR = 0.683

$r_s = -0.580$

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Figure C-5

HISTORY
PROPORTIONATE SPACE

a x YEAR	b y X/TOTAL X	c x RANK	d y RANK	e d	f d^2
1979	.053	1	7.0	-6.0	36.00
1978	.000	2	8.5	-6.5	42.25
1977	.062	3	6.0	-3.0	9.00
1976	.069	4	5.0	-1.0	1.00
1975	.136	5	2.0	3.0	9.00
1974	.085	6	4.0	2.0	4.00
1973	.000	7	8.5	-1.5	2.25
1972	.102	8	3.0	5.0	25.00
1971	.146	9	1.0	8.0	64.00
					$\Sigma d^2 = 192.5$

$\alpha = 0.05$

$CR = 0.683$

$r_s = -0.604$

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Figure A-6

PERSONALITIES
FREQUENCY

a x YEAR	b y FREQUENCY	c x RANK	d y RANK	e d	f d^2
1979	3	1	3.5	-2.5	6.25
1978	3	2	3.5	-1.5	2.25
1977	1	3	7.0	-4.0	16.00
1976	4	4	1.0	3.0	9.00
1975	3	5	3.5	1.5	2.25
1974	0	6	9.0	-3.0	9.00
1973	1	7	7.0	0.0	0.00
1972	1	8	7.0	1.0	1.00
1971	3	9	3.5	5.5	30.25
					Σd^2 = 76.00

α = 0.05

CR = 0.683

r_s = 0.367

Figure B-6

PERSONALITIES
RAW SPACE

a x YEAR	b y SPACE	c x RANK	d y RANK	e d	f d^2
1979	12288	1	6.5	-5.5	30.25
1978	21504	2	4.0	-2.0	4.00
1977	3072	3	8.0	-5.0	25.00
1976	39945	4	1.0	3.0	9.00
1975	36864	5	2.0	3.0	9.00
1974	0	6	9.0	-3.0	9.00
1973	22349	7	3.0	4.0	16.00
1972	12288	8	6.5	1.5	2.25
1971	15360	9	5.0	4.0	16.00
					$\Sigma d^2 = 120.50$

$\alpha = 0.05$

CR = 0.683

$r_s = -0.004$

Figure C-6

PERSONALITIES
PROPORTIONATE SPACE

a x YEAR	b y X/TOTAL X	c x RANK	d y RANK	e d	f d^2
1979	.030	1	5.0	-4.0	16.00
1978	.054	2	3.0	-1.0	1.00
1977	.007	3	8.0	-5.0	25.00
1976	.100	4	1.0	3.0	9.00
1975	.096	5	2.0	3.0	9.00
1974	.000	6	9.0	-3.0	9.00
1973	.053	7	4.0	3.0	9.00
1972	.028	8	6.5	1.5	2.25
1971	.028	9	6.5	2.5	6.25
					$\Sigma d^2 = 86.50$

$\alpha = 0.05$

$CR = 0.683$

$r_s = 0.280$

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Figure A-7

SPORTS
FREQUENCY

a x YEAR	b y FREQUENCY	c x RANK	d y RANK	e d	f d^2
1979	1	1	5.0	-4.0	16.00
1978	1	2	5.0	-3.0	9.00
1977	1	3	5.0	-2.0	4.00
1976	1	4	5.0	-1.0	1.00
1975	2	5	1.5	3.5	12.25
1974	0	6	8.5	-2.5	6.25
1973	0	7	8.5	-1.5	2.25
1972	2	8	1.5	6.5	42.25
1971	1	9	5.0	4.0	16.00
					$\Sigma d^2 = 109.00$

$\alpha = 0.05$

CR = 0.683

$r_s = 0.092$

Figure B-7

SPORTS
RAW SPACE

a x YEAR	b y SPACE	c x RANK	d y RANK	e d	f d^2
1979	6144	1	7.0	-6.0	36.00
1978	15360	2	4.5	-2.5	6.25
1977	9216	3	6.0	-3.0	9.00
1976	15360	4	4.5	- .5	.25
1975	27648	5	1.0	4.0	16.00
1974	0	6	8.5	-2.5	6.25
1973	0	7	8.5	-1.5	2.25
1972	15480	8	3.0	5.0	25.00
1971	18144	9	2.0	7.0	49.00
					Σd^2 = 150.00

α = 0.05

CR = 0.683

r_s = -0.250

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Figure C-7

SPORTS
PROPORTIONATE SPACE

a x YEAR	b y X/TOTAL X	c x RANK	d y RANK	e d	f d^2
1979	.015	1	7.0	-6.0	36.00
1978	.038	2	2.5	- .5	.25
1977	.023	3	6.0	-3.0	9.00
1976	.038	4	2.5	1.5	2.25
1975	.072	5	1.0	4.0	16.00
1974	.000	6	8.5	-2.5	6.25
1973	.000	7	8.5	-1.5	2.25
1972	.036	8	4.0	4.0	16.00
1971	.033	9	5.0	4.0	16.00
					$\Sigma d^2 = 154.00$

$\alpha = 0.05$

$CR = 0.683$

$r_s = 0.134$

Figure A-8

HOBBIES/RECREATION
FREQUENCY

a x YEAR	b y FREQUENCY	c x RANK	d y RANK	e d	f d^2
1979	2	1	8.0	-7.0	49.00
1978	6	2	3.5	-1.5	2.25
1977	7	3	2.0	1.0	1.00
1976	5	4	5.0	-1.0	1.00
1975	1	5	9.0	-4.0	16.00
1974	8	6	1.0	5.0	25.00
1973	3	7	7.0	0.0	0.00
1972	6	8	3.5	4.5	20.25
1971	4	9	6.0	3.0	9.00
					$\Sigma d^2 = 123.50$

$\alpha = 0.05$

CR = 0.683

$r_s = -0.029$

Figure B-8

HOBBIES/RECREATION
RAW SPACE

a x YEAR	b y SPACE	c x RANK	d y RANK	e d	f d^2
1979	30720	1	7.5	-6.5	42.25
1978	70650	2	2.5	- .5	.25
1977	70056	3	2.5	.5	.25
1976	64512	4	4.0	0.0	0.00
1975	9216	5	9.0	-4.0	16.00
1974	79872	6	1.0	5.0	25.00
1973	44698	7	6.0	1.0	1.00
1972	49500	8	5.0	3.0	9.00
1971	30720	9	7.5	1.5	2.25
					Σd^2 = 96.00

α = 0.05

CR = 0.683

r_s = 0.200

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Figure C-8

HOBBIES/RECREATION
PROPORTIONATE SPACE

a x YEAR	b y X/TOTAL X	c x RANK	d y RANK	e d	f d^2
1979	.076	1	7	-6	36
1978	.178	2	3	-1	1
1977	.179	3	2	1	1
1976	.161	4	4	0	0
1975	.024	5	9	-4	16
1974	.192	6	1	5	25
1973	.107	7	6	1	1
1972	.109	8	5	3	9
1971	.057	9	8	1	1
					Σd^2 = 90

α = 0.05

CR = 0.683

r_s = 0.250

Figure A-9

JOB INFORMATION
FREQUENCY

a x YEAR	b y FREQUENCY	c x RANK	d y RANK	e d	f d^2
1979	12	1	1.5	- .5	.25
1978	11	2	4.5	-2.5	6.25
1977	6	3	8.0	-5.0	25.00
1976	6	4	8.0	-4.0	16.00
1975	11	5	4.5	.5	.25
1974	9	6	6.0	0.0	0.00
1973	6	7	8.0	-1.0	1.00
1972	12	8	1.5	6.5	42.25
1971	14	9	1.0	8.0	64.00
					$\Sigma d^2 = 155.00$

$\alpha = 0.05$

CR = 0.683

$r_s = -0.290$

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Figure B-9

JOB INFORMATION
RAW SPACE

a x YEAR	b y SPACE	c x RANK	d y RANK	e d	f d^2
1979	116736	1	4	-3	9
1978	119808	2	3	-1	1
1977	46080	3	9	-6	36
1976	55296	4	8	-4	16
1975	104448	5	5	0	0
1974	76800	6	7	-1	1
1973	79818	7	6	1	1
1972	122292	8	2	6	36
1971	133056	9	1	8	64
					$\Sigma d^2 = 164$

$\alpha = 0.05$

CR = 0.683

$r_s = -0.360$

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Figure C-9

JOB INFORMATION
PROPORTIONATE SPACE

a x YEAR	b y X/TOTAL X	c x RANK	d y RANK	e d	f d^2
1979	.290	1	2	-1	1
1978	.302	2	1	1	1
1977	.117	3	9	-6	36
1976	.138	4	8	-4	16
1975	.272	5	4	1	1
1974	.185	6	7	-1	1
1973	.191	7	6	1	1
1972	.288	8	3	5	25
1971	.247	9	5	4	16
					$\Sigma d^2 = 98$

$\alpha = 0.05$

CR = 0.683

$r_s = 0.184$

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Figure A-10

EMPLOYEE BENEFITS
FREQUENCY

a x YEAR	b y FREQUENCY	c x RANK	d y RANK	e d	f d^2
1979	3	1	4.5	-3.5	12.25
1978	1	2	9.0	-7.0	49.00
1977	3	3	4.5	-1.5	2.25
1976	2	4	7.5	-3.5	12.25
1975	3	5	4.5	.5	.25
1974	3	6	4.5	1.5	2.25
1973	2	7	7.5	- .5	.25
1972	4	8	2.0	6.0	36.00
1971	5	9	1.0	8.0	64.00
					$\Sigma d^2 = 178.5$

$\alpha = 0.05$

CR = 0.683

$r_s = -0.480$

Figure B-10

EMPLOYEE BENEFITS
RAW SPACE

a x YEAR	b y SPACE	c x RANK	d y RANK	e d	f d^2
1979	42990	1	3.0	-2.0	4.00
1978	12288	2	9.0	-7.0	49.00
1977	39936	3	4.0	-1.0	1.00
1976	21504	4	8.0	-4.0	16.00
1975	27648	5	6.5	-1.5	2.25
1974	27.648	6	6.5	- .5	.25
1973	44698	7	2.0	5.0	25.00
1972	56632	8	1.0	7.0	49.00
1971	34902	9	5.0	4.0	16.00
					$\sum d^2 = 162.50$

$\alpha = 0.05$

CR = 0.683

$r_s = -0.350$

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Figure C-10

EMPLOYEE BENEFITS
PROPORTIONATE SPACE

a x YEAR	b y X/TOTAL X	c x RANK	d y RANK	e d	f d^2
1979	.106	1	2.5	-1.5	2.25
1978	.031	2	9.0	-7.0	49.00
1977	.101	3	4.0	-1.0	1.00
1976	.053	4	8.0	-4.0	16.00
1975	.072	5	5.0	0.0	0.00
1974	.066	6	6.0	0.0	0.00
1973	.106	7	2.5	4.5	20.25
1972	.133	8	1.0	7.0	49.00
1971	.064	9	7.0	2.0	4.00
					$\Sigma d^2 = 141.50$

$\alpha = 0.05$

$CR = 0.633$

$r_s = -0.179$

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Appendix II

TREND ANALYSIS OF FEATURE ARTICLE CONTENT USING THE SPEARMAN RANK CORRELATION

Appendix II

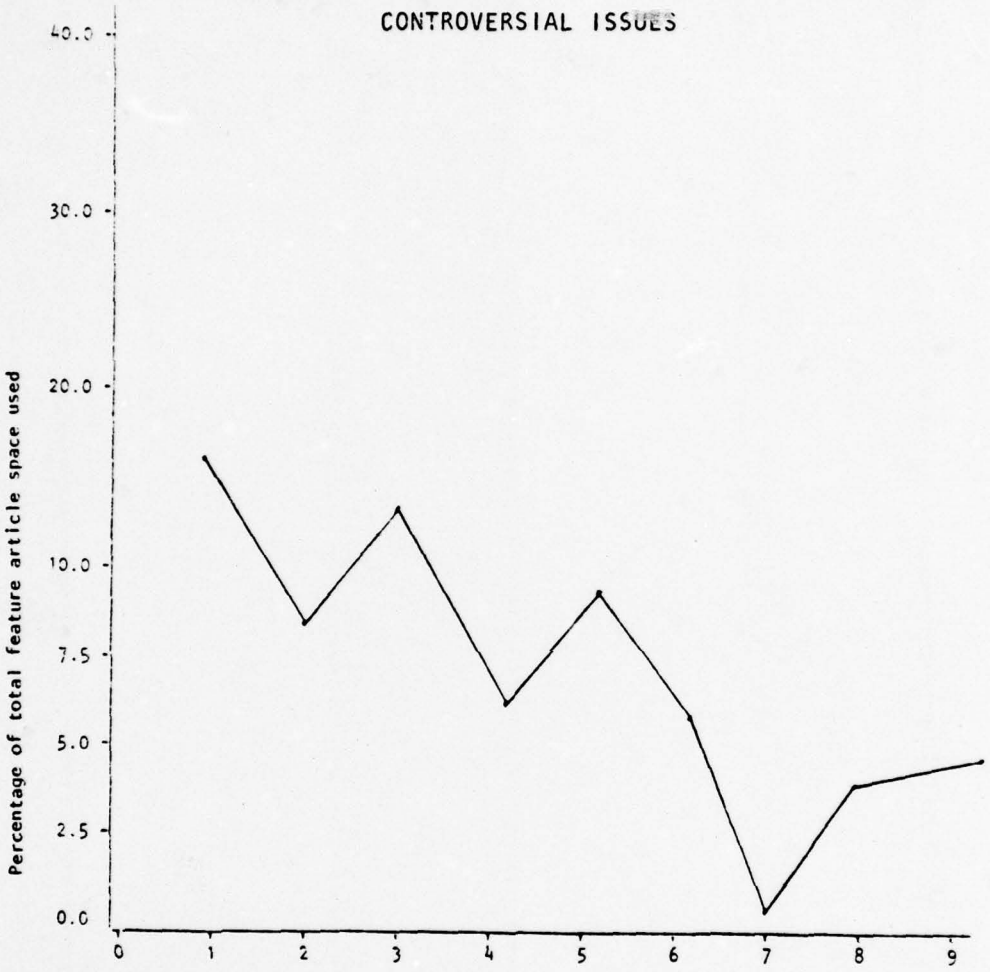
TREND ANALYSIS OF FEATURE ARTICLE CONTENT USING THE SPEARMAN RANK CORRELATION

Figures D-1 to D-10 depict the trends over time of space devoted to the ten topical categories. In each figure time is represented by the number "1" to "9" (i.e., "1" equals 1971, etc.) on the horizontal (x) axis. The proportionate amount of space devoted to the content category for each year is depicted on the vertical (y) axis.

At the bottom of each figure the decimal proportions are listed for each year and have not been converted into percentages. These figures are derived from the data listed in column (b) Figures C-1 to C-10, Appendix I. The Spearman coefficient (r_s) is listed also along with the critical value (CR) at the bottom of each figure. Again, a significant trend is designated by a value of r_s which exceeds ± 0.683.

The diagrams in Figures D-1 to D-10 are included in this thesis to portray visually the trends in feature article content. The degree of annual fluctuation is depicted and tends to illustrate the direction of trends in editorial treatment of the ten content categories.

Figure D-1



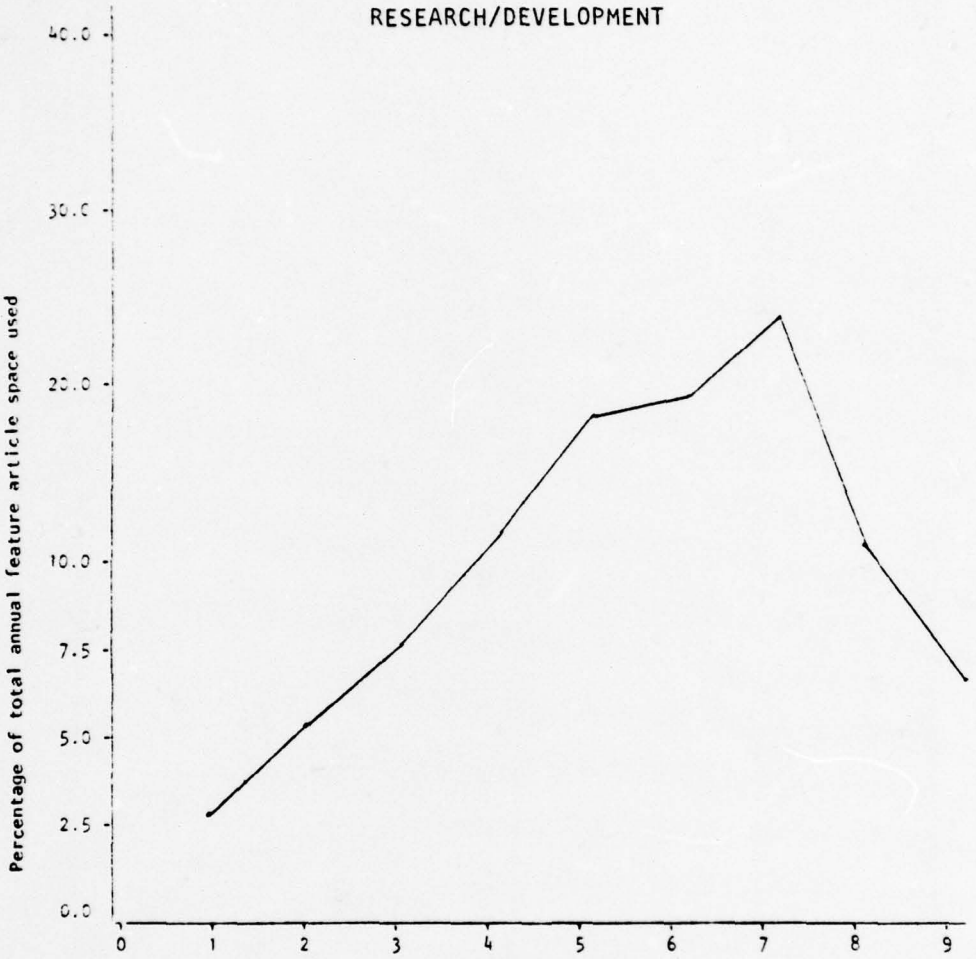
1971 = .160
1972 = .095
1973 = .137
1974 = .059
1975 = .088
1976 = .054
1977 = .000
1978 = .026
1979 = .030

r_s = -.900

CR = $\pm$ .683

Figure D-2

RESEARCH/DEVELOPMENT



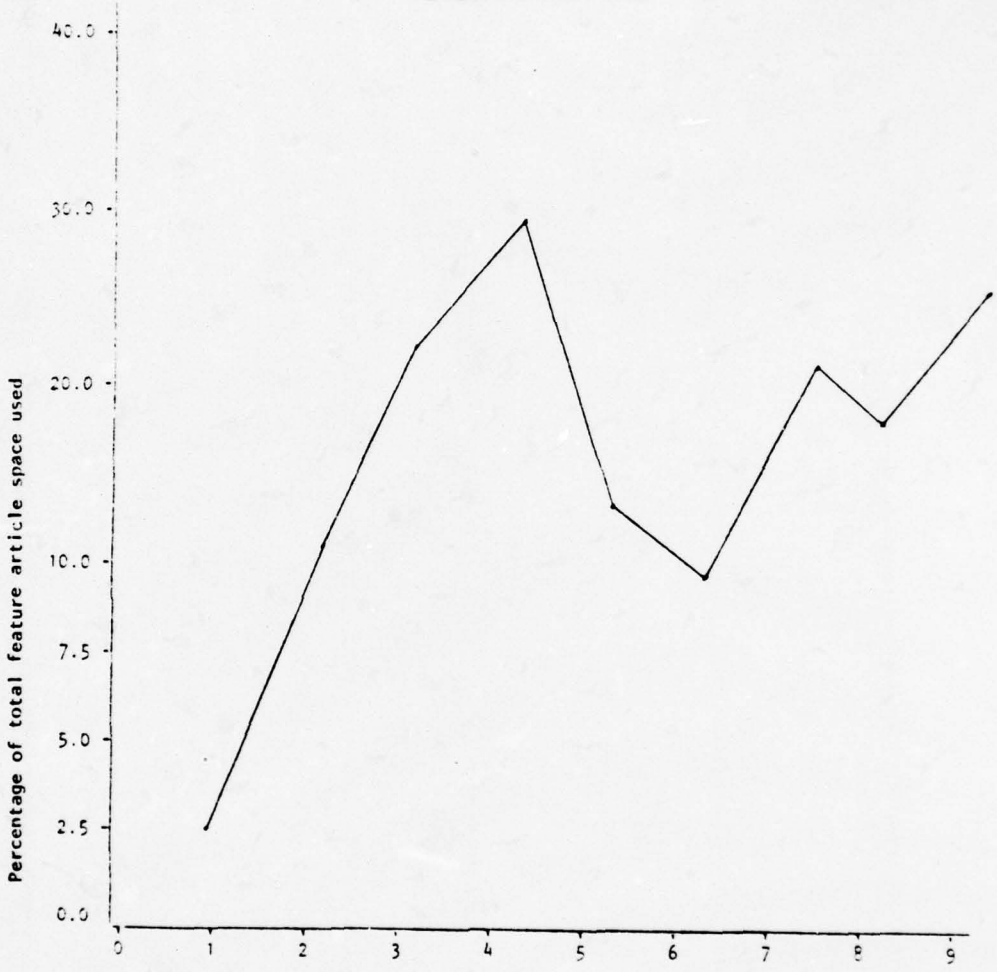
1971 = .022
1972 = .029
1973 = .057
1974 = .029
1975 = .120
1976 = .136
1977 = .156
1978 = .077
1979 = .046

r_s = +0.605

CR = $\pm$0.683

Figure D-3

PERSONAL AFFAIRS



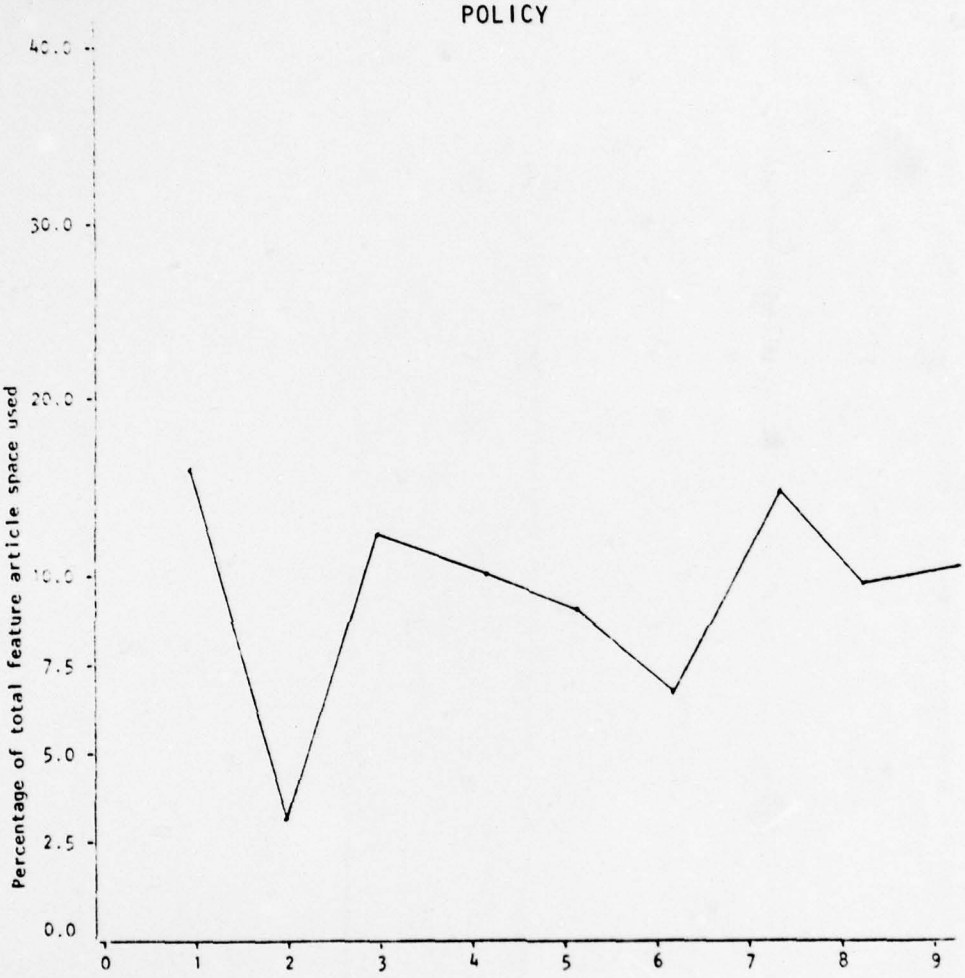
1971 = .022
1972 = .094
1973 = .191
1974 = .255
1975 = .120
1976 = .107
1977 = .187
1978 = .186
1979 = .221

r_s = +.484

CR = ±0.683

Figure D-4

POLICY



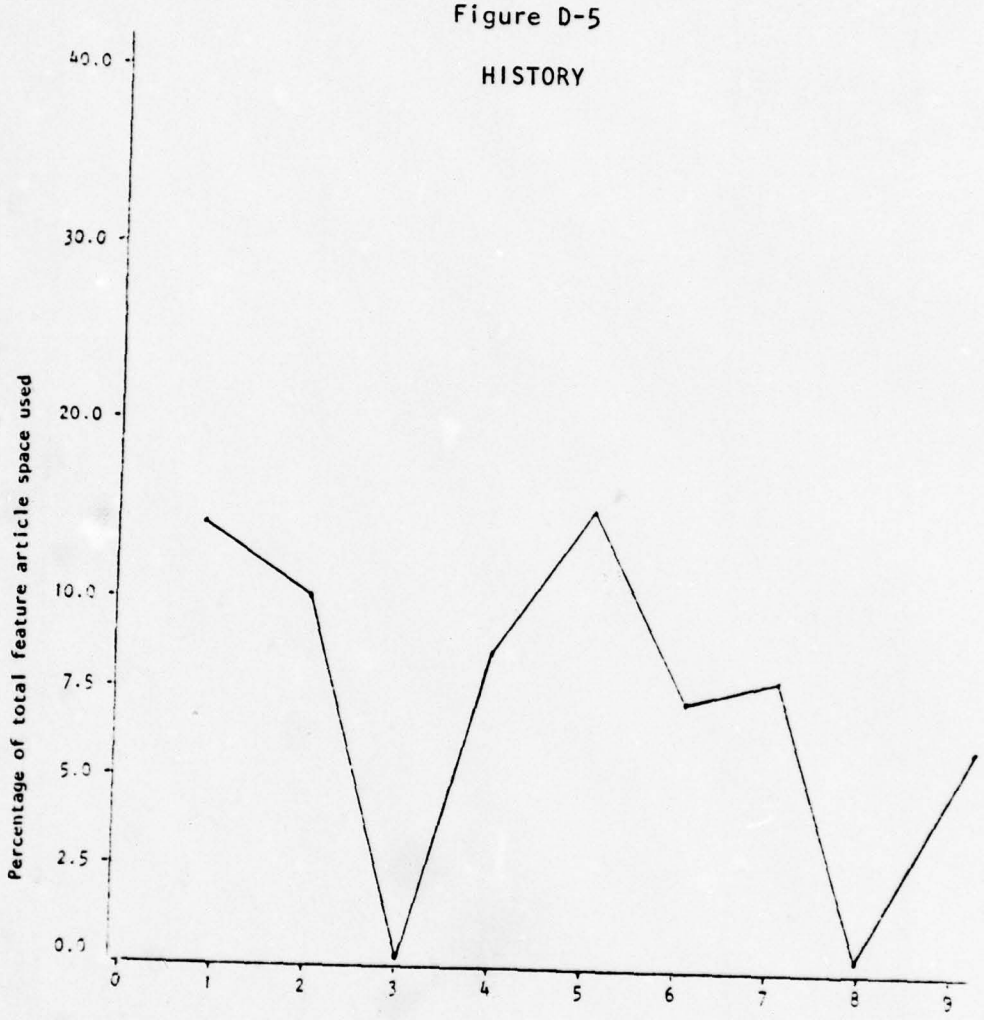
1971 = .151
1972 = .039
1973 = .122
1974 = .118
1975 = .088
1976 = .061
1977 = .125
1978 = .104
1979 = .099

r_s = -.16

CR = ±0.683

Figure D-5

HISTORY



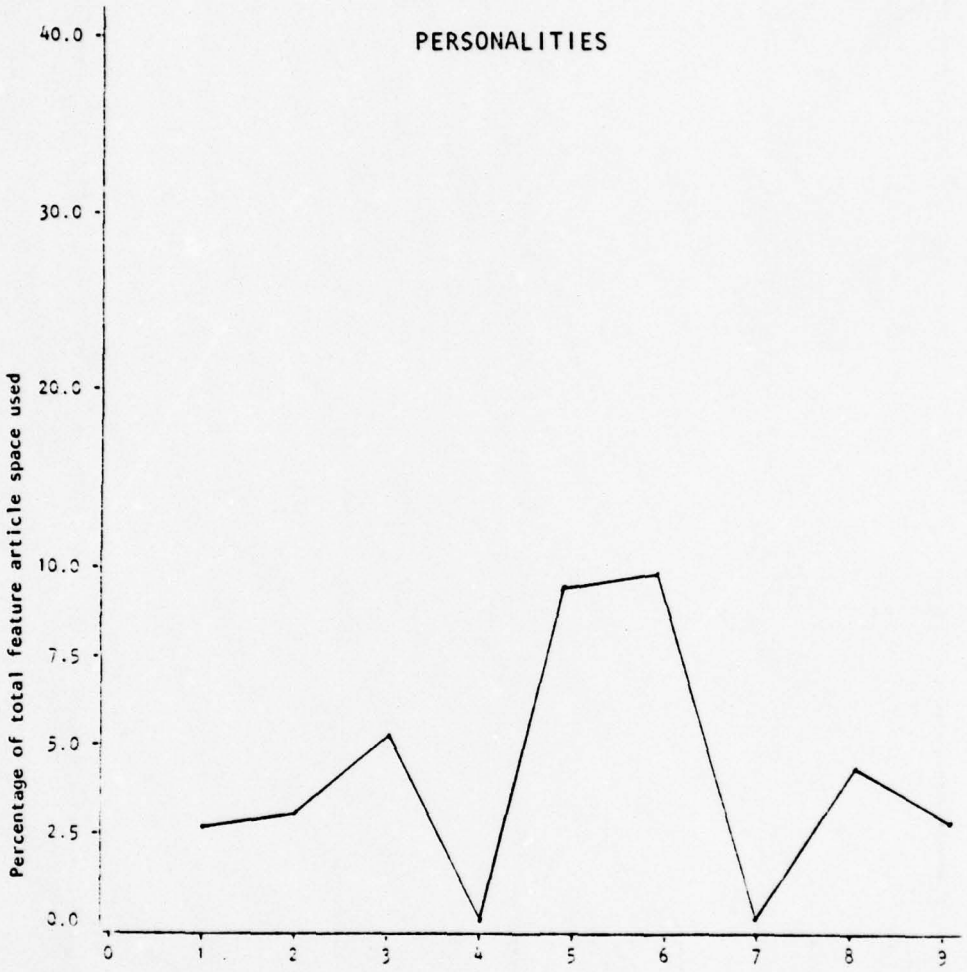
1971 = .146
1972 = .102
1973 = .000
1974 = .085
1975 = .136
1976 = .069
1977 = .062
1978 = .000
1979 = .053

r_s = -.604

CR = $\pm$0.683

Figure D-6

PERSONALITIES



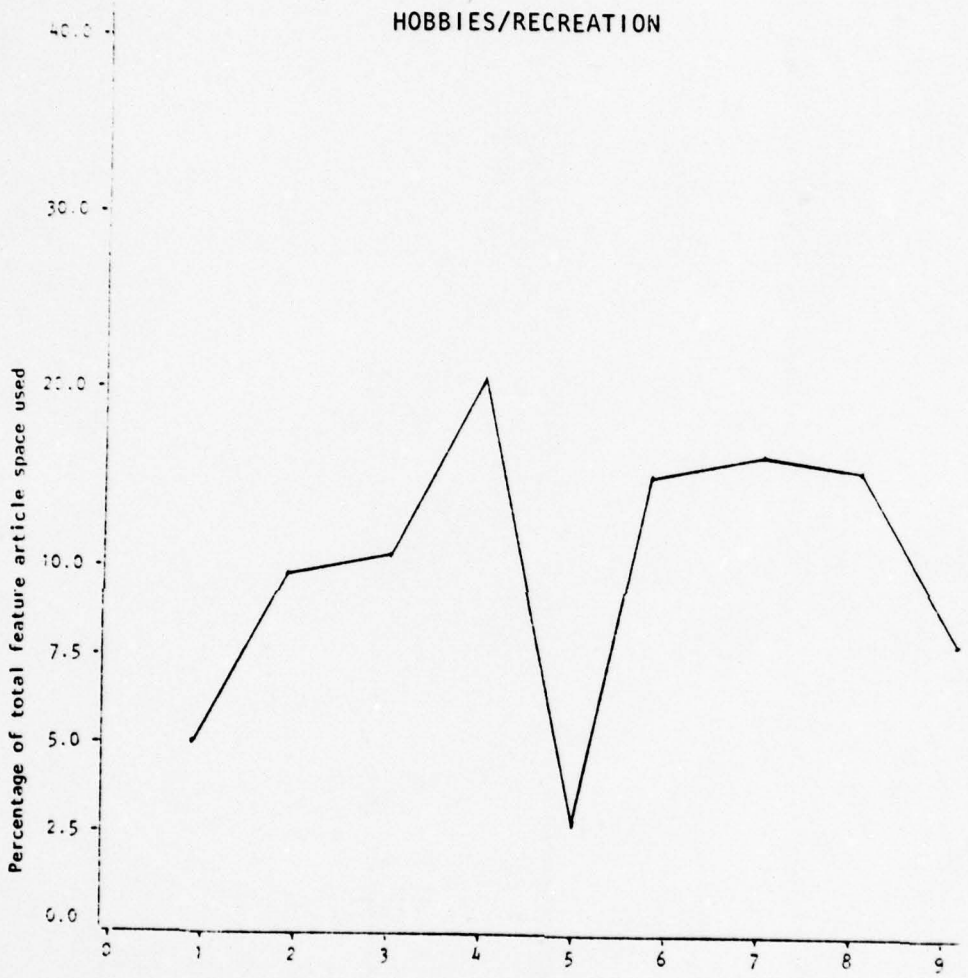
1971 = .028
1972 = .028
1973 = .053
1974 = .000
1975 = .096
1976 = .100
1977 = .007
1978 = .054
1979 = .030

r_s = +.280

CR = $\pm$0.683

Figure D-8

HOBBIES/RECREATION



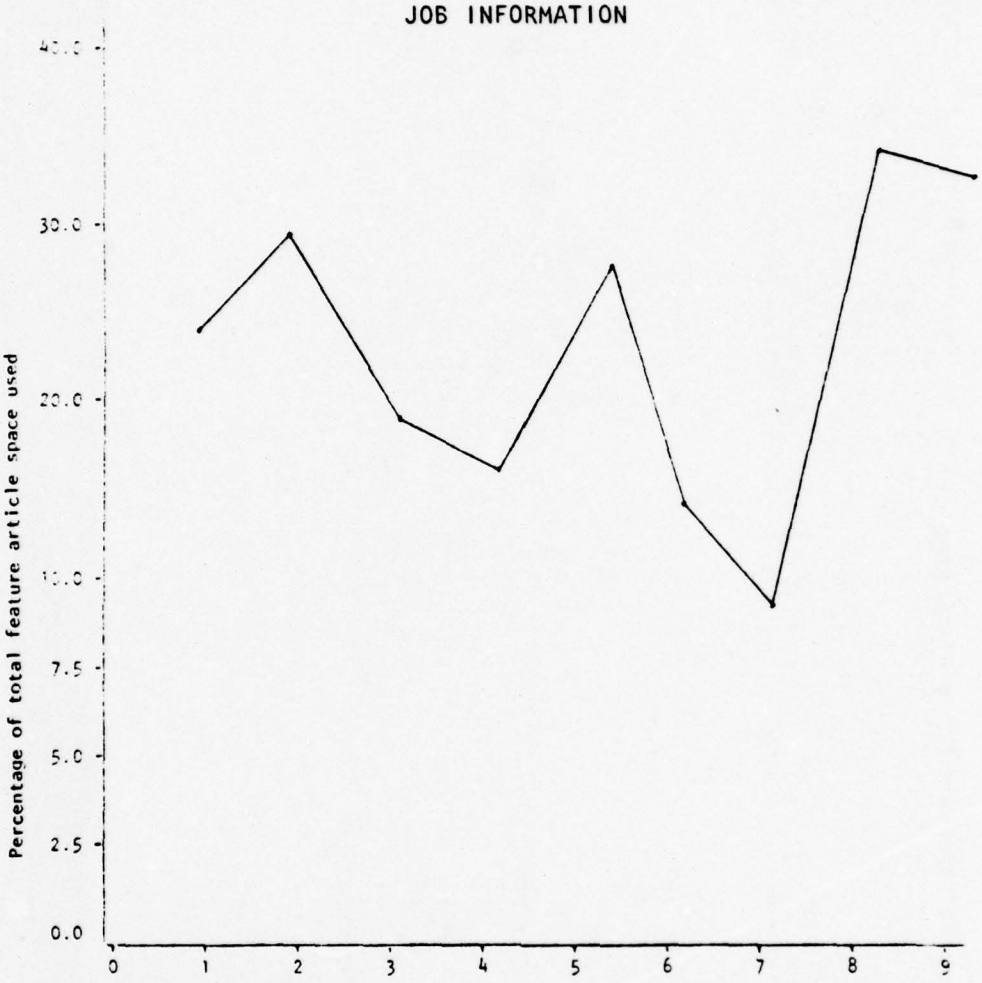
1971 = .057
1972 = .109
1973 = .107
1974 = .192
1975 = .024
1976 = .161
1977 = .179
1978 = .178
1979 = .076

r_s = +.25

CR = $\pm$0.683

Figure D-9

JOB INFORMATION



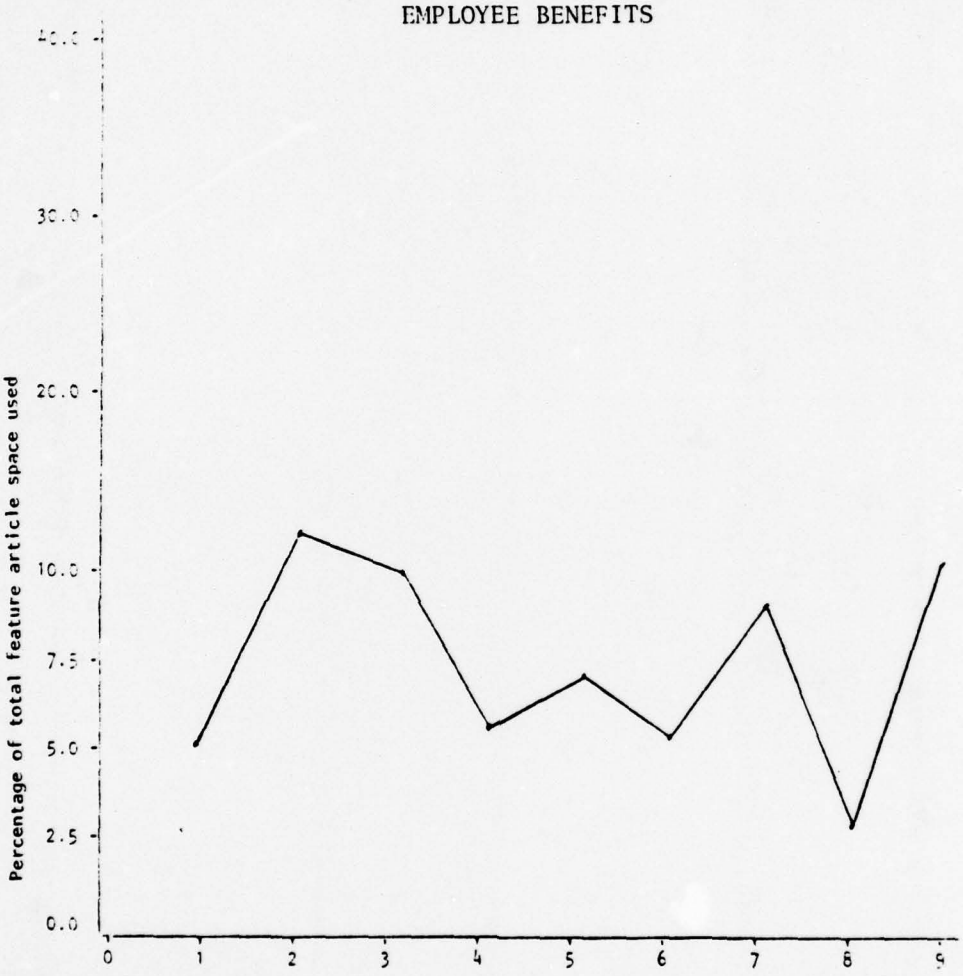
1971 = .247
1972 = .288
1973 = .191
1974 = .185
1975 = .272
1976 = .138
1977 = .117
1978 = .302
1979 = .290

r_s = +.184

CR = ±0.683

Figure D-10

EMPLOYEE BENEFITS



1971 = .064
1972 = .133
1973 = .106
1974 = .066
1975 = .072
1976 = .053
1977 = .101
1978 = .031
1979 = .106

r_s = -.179

CR = ±0.683

Appendix III

ANALYSIS OF DESIGN ELEMENT USAGE ACCORDING TO CONTENT CATEGORY

Appendix III

ANALYSIS OF DESIGN ELEMENT USAGE ACCORDING TO CONTENT CATEGORY

Figures E-1 to E-9 are designed to portray an index of design treatment. A matrix has been constructed for each year which depicts the usage of each design element by content category. The decimal figures in each cell represent the proportionate amount of space dedicated to the various design elements in each content category.

The data may be examined in two ways. The relative use of color photograph space among the ten content categories can be evaluated by reading across the color photograph space row. Therefore, in Figure E-1, the proportionate amount of space devoted to four-color process color photographs in the "controversial issues" category reads 0.096. This means 9.6 percent of the total amount of feature article space dedicated to "controversial issues" consisted of color photograph space. Similarly, 10.1 percent of the "personal affairs" feature article content consisted of color photograph space.

The data can also be read vertically. The relative use of design elements within each content category can be determined by reading the cells in the category columns. For example, in Figure E-1, the column data in the "controversial issues" category reflects 0.096 (9.6 percent) of

feature article space was devoted to color photographs, .036 (3.6 percent) of feature article space was used for display text and 0.286 (28.6 percent) was used for body text.

The design of the matrix allows comparison of design element usage both among (row data) and within (column data) content categories. Therefore, the data can be analyzed to determine which category favors the use of individual design elements. Also, the relative design composition of feature article content can be analyzed for each content category.

Figure E-1

INDEX OF DESIGN ELEMENT USAGE
BY CONTENT CATEGORY
1971

	controversial issues	personal affairs	research & development	policy	history	personalities	sports	hobbies & recreation	job information	employee benefits
color photo	.096*	.101	-0-	.058	.016	-0-	.345	.128	.027	-0-
display text	.036	.121	.034	.029	.045	.007	.054	.033	.032	.025
body text	.286	.391	.197	.347	.286	.378	.235	.212	.200	.524
nonprocess color photo	.089	.023	.442	.176	.203	.210	.055	.208	.295	.097
illustration	.086	.044	-0-	.020	.106	-0-	-0-	-0-	.003	.094
white space	.337	.089	.326	.277	.317	.125	.310	.205	.320	.176
color space	.068	.227	-0-	.091	.025	.219	-0-	.228	.001	.083

*Read as 9.6%. Same conversion applies to each three-digit number in any one cell.

Figure E-2

INDEX OF DESIGN ELEMENT USAGE
BY CONTENT CATEGORY
1972

	controversial issues	personal affairs	research & development	policy	history	personalities	sports	hobbies & recreation	job information	employee benefits
color photo	.101	.091	-0-	-0-	.113	-0-	.238	.206	.155	-0-
display text	.020	.047	.031	.041	.021	.014	.024	.030	.033	.027
body text	.367	.586	.171	.228	.443	.258	.187	.273	.261	.276
nonprocess color photo	.106	.194	.344	.287	.275	.370	.080	.150	.222	.243
illustration	.144	-0-	-0-	.095	.076	-0-	.009	.008	.030	.125
white space	.259	.055	.454	.347	.070	.171	.401	.307	.298	.210
color space	-0-	.026	-0-	-0-	-0-	.186	-0-	.018	-0-	.117

Figure E-3

INDEX OF DESIGN ELEMENT USAGE
BY CONTENT CATEGORY
1973

	controversial issues	personal affairs	research & development	policy	history	personalities	sports	hobbies & recreation	job information	employee benefits
color photo	.073	.006	-0-	-0-	-0-	-0-	-0-	.339	.086	.126
display text	.026	.029	.034	.006	-0-	.032	-0-	.031	.040	.033
body text	.344	.409	.414	.356	-0-	.495	-0-	.297	.294	.449
nonprocess color photo	.308	.200	.207	.227	-0-	.101	-0-	.005	.232	.134
illustration	-0-	.006	.138	.047	-0-	-0-	-0-	.004	.061	-0-
white space	.249	.266	.108	.303	-0-	.378	-0-	.322	.287	.234
color space	-0-	.022	.040	.060	-0-	-0-	-0-	-0-	-0-	.069

Figure E-4

INDEX OF DESIGN ELEMENT USAGE
BY CONTENT CATEGORY
1974

	controversial issues	personal affairs	research & development	policy	history	personalities	sports	hobbies & recreation	job information	employee benefits
color photo	-0-	.118	-0-	-0-	-0-	-0-	-0-	.315	.062	-0-
display text	.021	.040	.070	.049	.031	-0-	-0-	.032	.033	.017
body text	.348	.289	.334	.292	.451	-0-	-0-	.315	.438	.398
nonprocess color photo	.383	.147	.173	.098	.108	-0-	-0-	.036	.242	.247
illustration	-0-	.062	.131	.119	.150	-0-	-0-	.027	-0-	.063
white space	.248	.177	.291	.442	.226	-0-	-0-	.220	.150	.161
color space	-0-	.106	-0-	-0-	.033	-0-	-0-	.053	.115	.112

Figure E-5

INDEX OF DESIGN ELEMENT USAGE
BY CONTENT CATEGORY
1975

	controversial issues	personal affairs	research & development	policy	history	personalities	sports	hobbies & recreation	job information	employee benefits
color photo	-0-	.087	.172	-0-	-0-	.104	.270	-0-	.063	-0-
display text	.068	.017	.026	.044	.030	.051	.049	.015	.043	.020
body text	.394	.130	.242	.325	.357	.259	.349	.283	.405	.385
nonprocess color photo	.055	.110	.325	.120	.105	.307	.035	.121	.198	-0-
illustration	.081	.226	-0-	.127	.166	-0-	-0-	.141	.064	.163
white space	.302	.283	.273	.189	.342	.196	.222	.440	.134	.379
color space	.049	.147	-0-	.193	-0-	.083	.075	-0-	.093	.052

Figure E-6

INDEX OF DESIGN ELEMENT USAGE
BY CONTENT CATEGORY
1976

	controversial issues	personal affairs	research & development	policy	history	personalities	sports	hobbies & recreation	job information	employee benefits
color photo	-0-	.084	.139	-0-	.144	.171	.203	.357	-0-	-0-
display text	.176	.036	.032	.036	.048	.052	.013	.039	.041	.033
body text	.443	.172	.367	.424	.367	.380	.386	.212	.202	
nonprocess color photo	.093	.177	.025	.124	-0-	.076	.236	.099	.461	.283
illustration	.199	.157	.135	.052	.055	.025	-0-	.011	.003	.214
white space	.082	.326	.271	.392	.328	.308	.371	.039	.188	.196
color space	.106	.046	.030	-0-	-0-	-0-	-0-	.067	.094	.071

Figure E-7

INDEX OF DESIGN ELEMENT USAGE
BY CONTENT CATEGORY
1977

		controversial issues	personal affairs	research & development	policy	history	personalities	sports	hobbies & recreation	job information	employee benefits
color photo	-0-	.049	-0-	-0-	.111	-0-	.223	.282	.066	-0-
display text	-0-	.066	.070	.042	.038	.068	.039	.058	.026	.024
body text	-0-	.269	.316	.362	.337	.436	.339	.281	.330	.432
nonprocess coior photo	-0-	.082	.215	.122	.054	.171	-0-	.114	.293	.043
illustration	-0-	.173	.099	.160	.080	-0-	-0-	-0-	.017	.144
white space	-0-	.168	.213	.216	.232	.322	.398	.195	.200	.327
color space	-0-	.193	.087	.098	.147	-0-	-0-	.068	.066	.029

Figure E-8

INDEX OF DESIGN ELEMENT USAGE
BY CONTENT CATEGORY
1978

	controversial issues	personal affairs	research & development	policy	history	personalities	sports	hobbies & recreation	job information	employee benefits
color photo	-0-	.106	.036	-0-	-0-	-0-	.264	.282	.113	.067
display text	.076	.025	.080	.045	-0-	.043	.030	.458	.025	.017
body text	.496	.351	.414	.291	-0-	.171	.336	.281	.271	.201
nonprocess color photo	-0-	.131	.067	.129	-0-	.409	.090	.114	.285	-0-
illustration	.052	.053	.054	.076	-0-	.173	.045	-0-	.032	.375
white space	-0-	.148	.144	.268	-0-	.120	.233	.195	.270	.215
color space	.376	.186	.197	.191	-0-	.083	-0-	.068	.003	.125

Figure E-9

INDEX OF DESIGN ELEMENT USAGE
BY CONTENT CATEGORY
1979

	controversial issues	personal affairs	research & development	policy	history	personalities	sports	hobbies & recreation	job information	employee benefits
color photo	-0-	.105	-0-	-0-	-0-	.036	-0-	.261	.135	-0-
display text	.058	.028	.021	.013	.027	.043	.020	.018	.039	.032
body text	.396	.357	.367	.474	.269	.317	.216	.283	.264	.426
nonprocess color photo	-0-	.108	.355	.089	.267	.165	.312	.089	.287	.101
illustration	.254	.106	-0-	.084	.125	-0-	-0-	.032	.004	.105
white space	.292	.155	.256	.157	.149	.437	.451	.296	.192	.231
color space	-0-	.139	-0-	.184	.164	-0-	-0-	.019	.079	.104

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Appendix IV

TREND ANALYSIS OF DESIGN ELEMENT CONTENT OVER TIME

Appendix IV

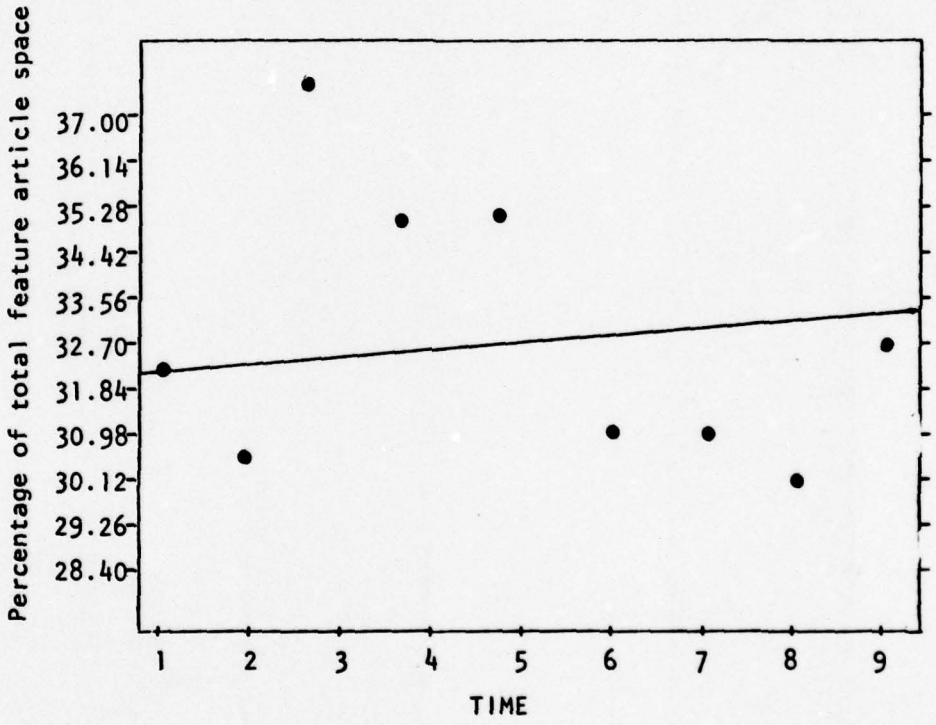
TREND ANALYSIS OF DESIGN ELEMENT CONTENT OVER TIME

Figures F-1 to F-7 illustrate the trends over time of design element usage in feature article content. Time is depicted by the numbers one to nine (i.e., "one" equals 1971, etc.) on the horizontal (x) axis. The annual percentage of content devoted to each design element is depicted on the verticle (y) axis.

The analysis was conducted to determine trends over time of design element usage regardless of content category. The general usage trend of each design element can be compared by inspecting the direction of the trend slope and the value of the Pearsonian correlation statistic (r).

Figure F-1

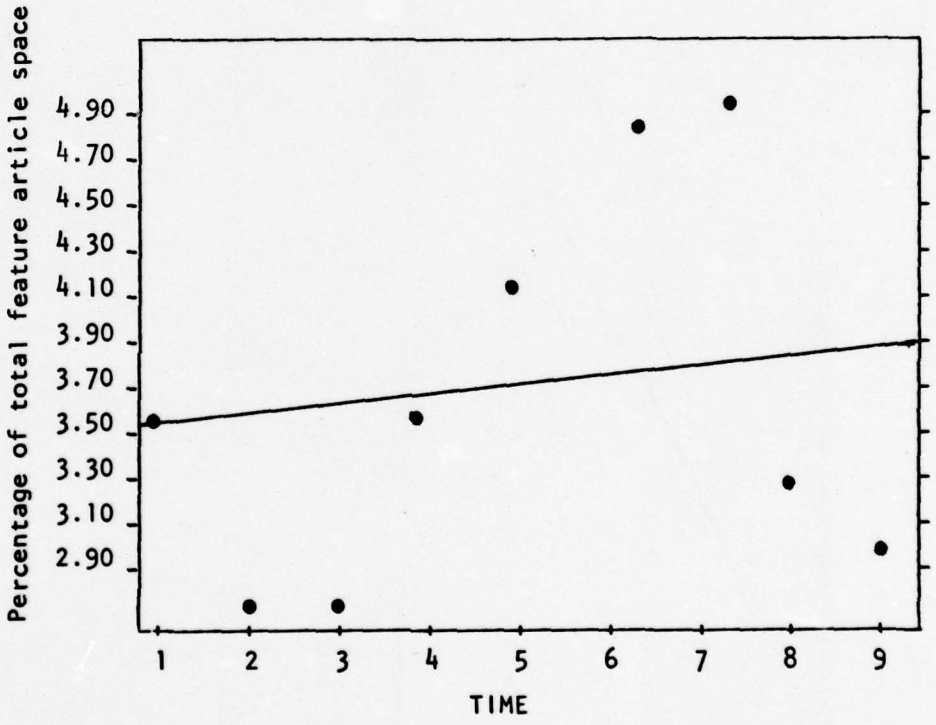
BODY TEXT



$r = 0.0153$

$P < .49$

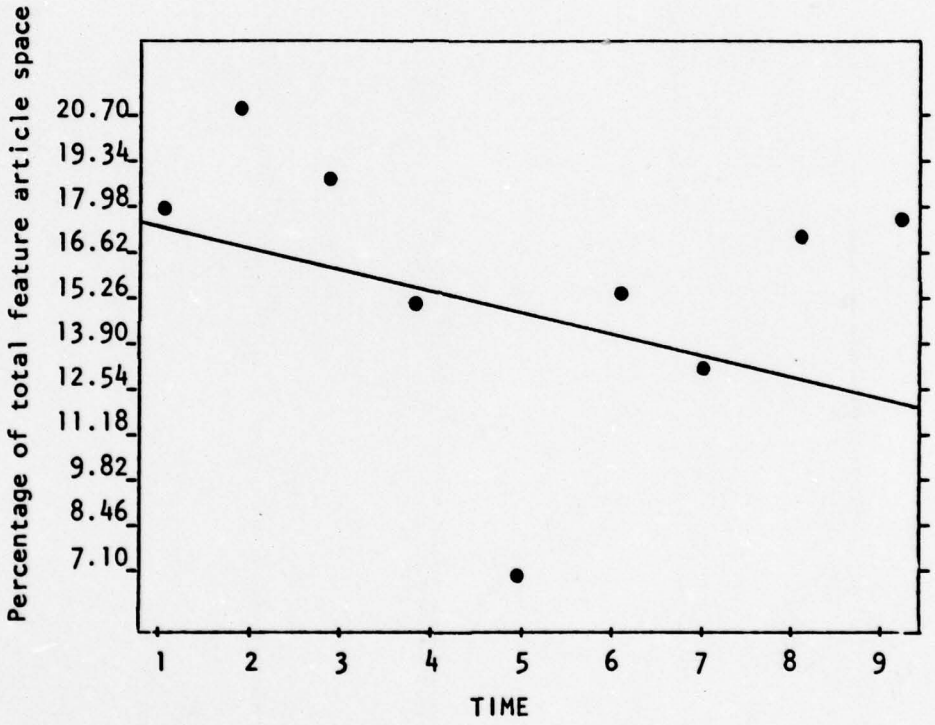
Figure F-2
DISPLAY TEXT



r = 0.256
p < .27

Figure F-3

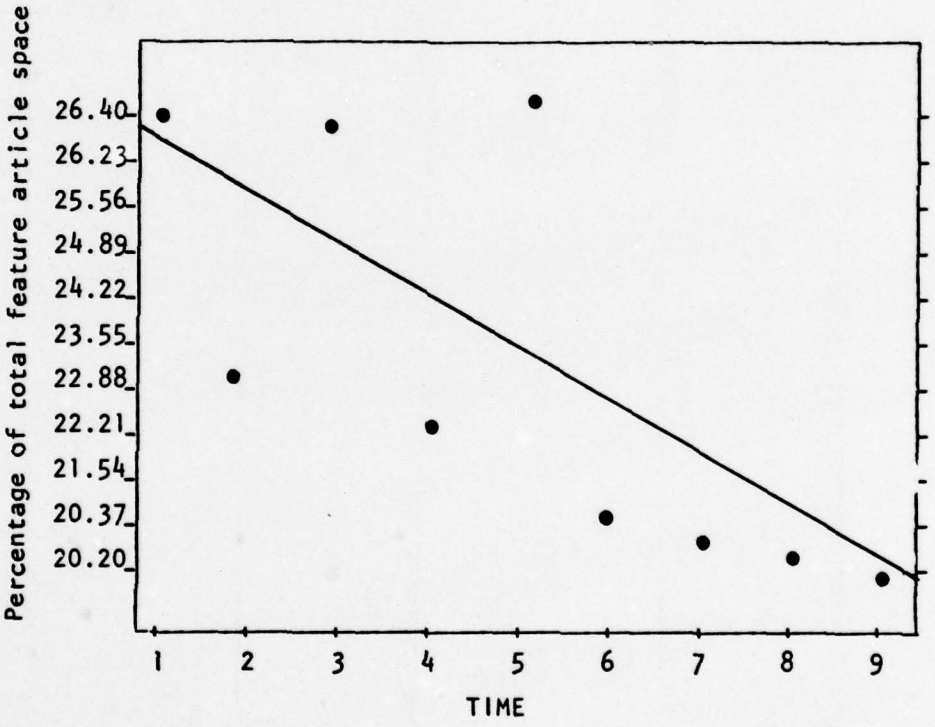
NONPROCESS COLOR
PHOTOGRAPH SPACE



r = -0.304

p < .22

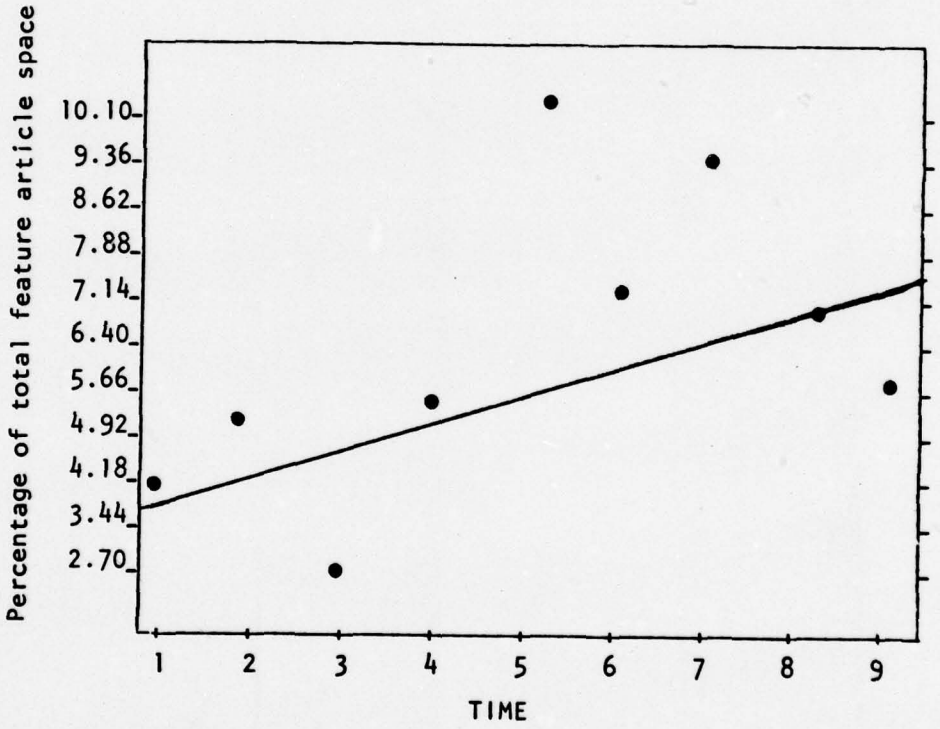
Figure F-4
WHITE SPACE



r = -0.7470
P < 0.01

Figure F-5

ILLUSTRATION SPACE

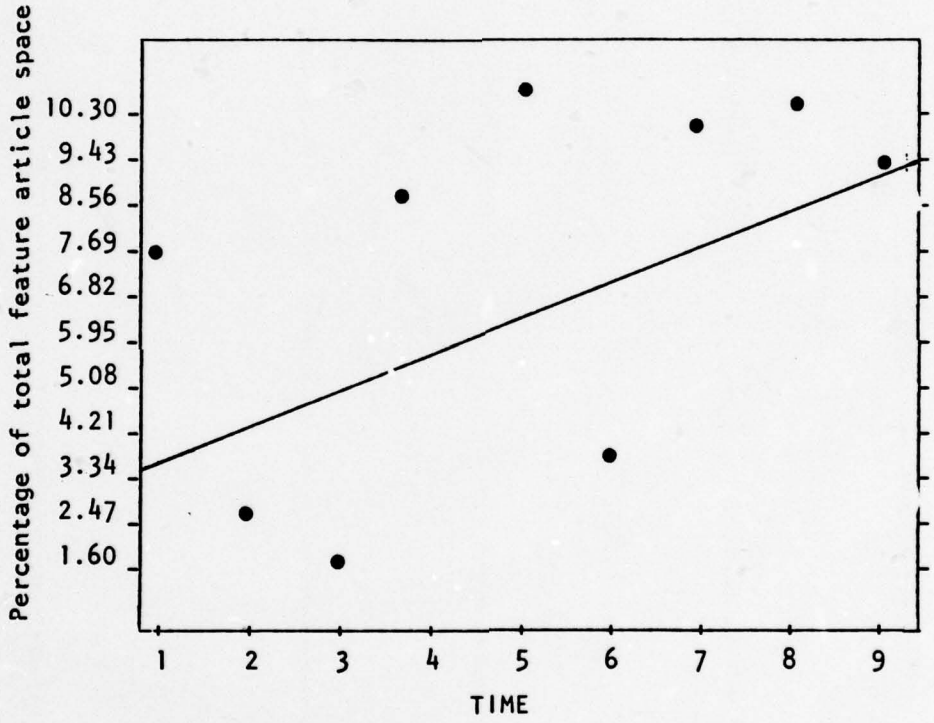


r = 0.553

P < .07

Figure F-6

COLORED SPACE

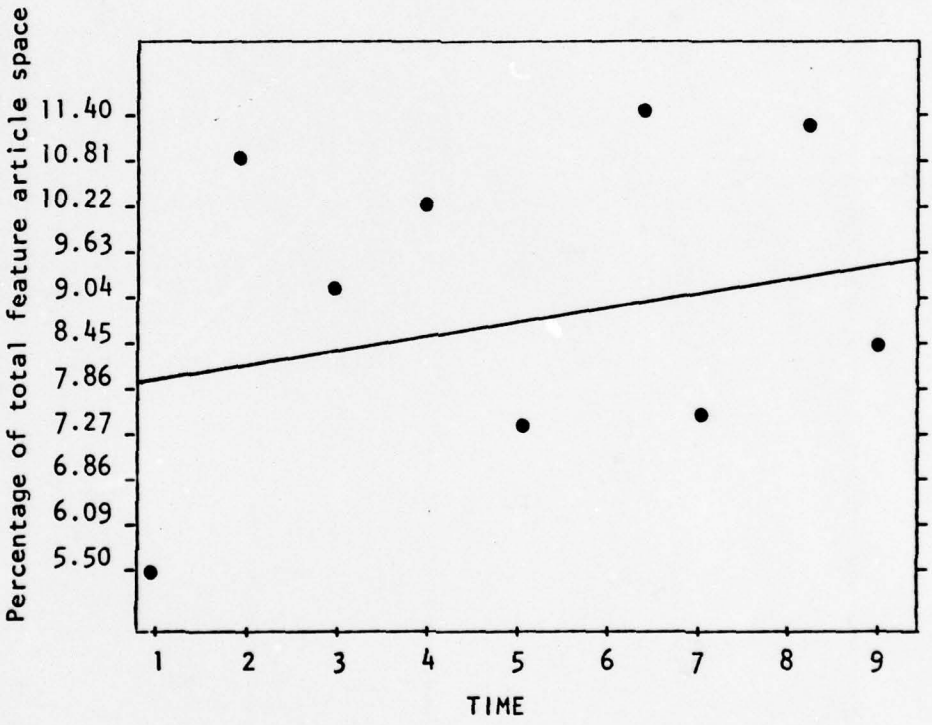


r = 0.583

p < .05

Figure F-7

FOUR-COLOR PROCESS COLOR
PHOTOGRAPH SPACE



$r = 0.292$

$p < .23$

Appendix V

ANNUAL TRENDS IN GENERAL USAGE OF DESIGN ELEMENTS

Appendix V

ANNUAL TRENDS OF GENERAL USAGE OF DESIGN ELEMENTS

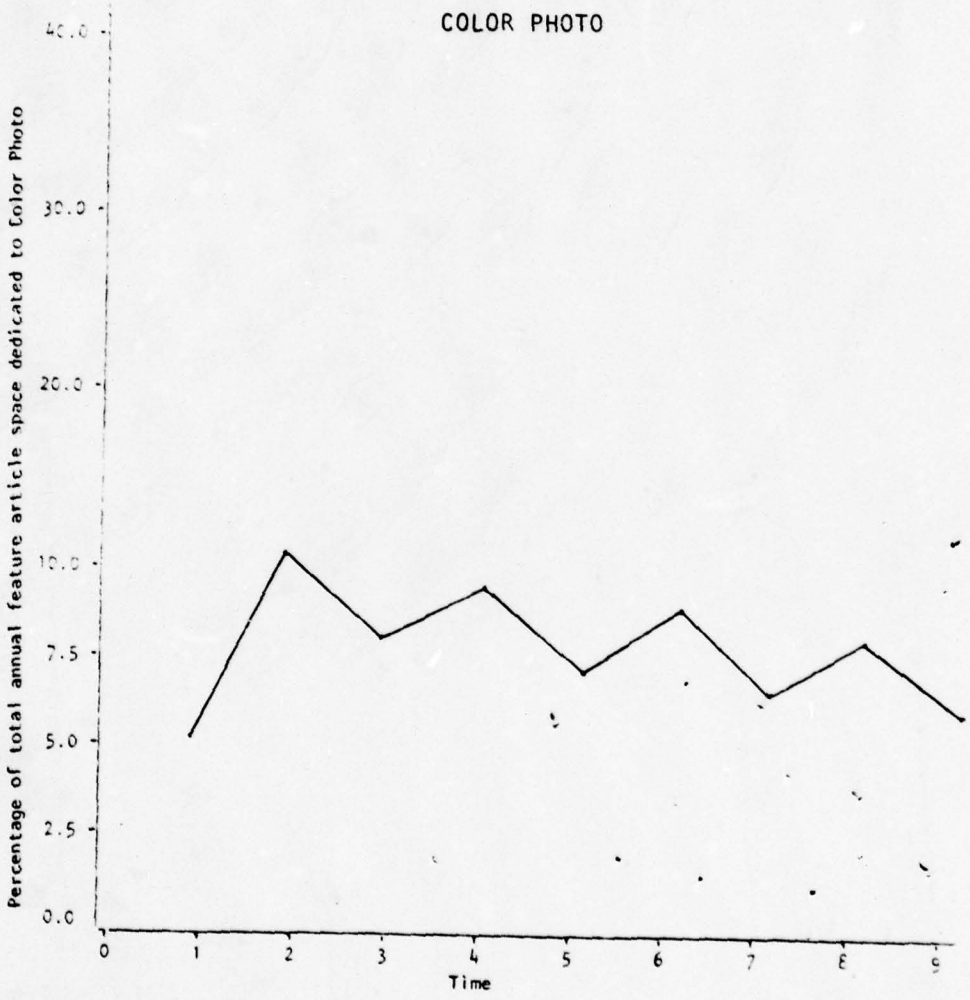
Figures G-1 to G-7 illustrate the relative use of each design element over time. Although Figures F-1 to F-7 depict the trends over time and the statistical significance of design element usage, the Pearsonian relationship does not illustrate annual fluctuations in design element usage. Therefore, the figures in this Appendix were included to depict visually the degree of usage.

Time is depicted on the horizontal axis (x) by the number one to nine (i.e., "one" equals 1971, etc.). The percentages of total feature article space devoted to each design element is depicted on the verticle axis (y) of each Figure G-1 to G-7.

Figure H is a composite graph which contrasts the relative increase and decrease over time of all seven design elements analyzed. A description of the symbols used to illustrate each design element is annotated at the bottom of Figure H.

Figure G-1

COLOR PHOTO



1971 = .055
1972 = .107
1973 = .090
1974 = .103
1975 = .078
1976 = .114
1977 = .080
1978 = .113
1979 = .084

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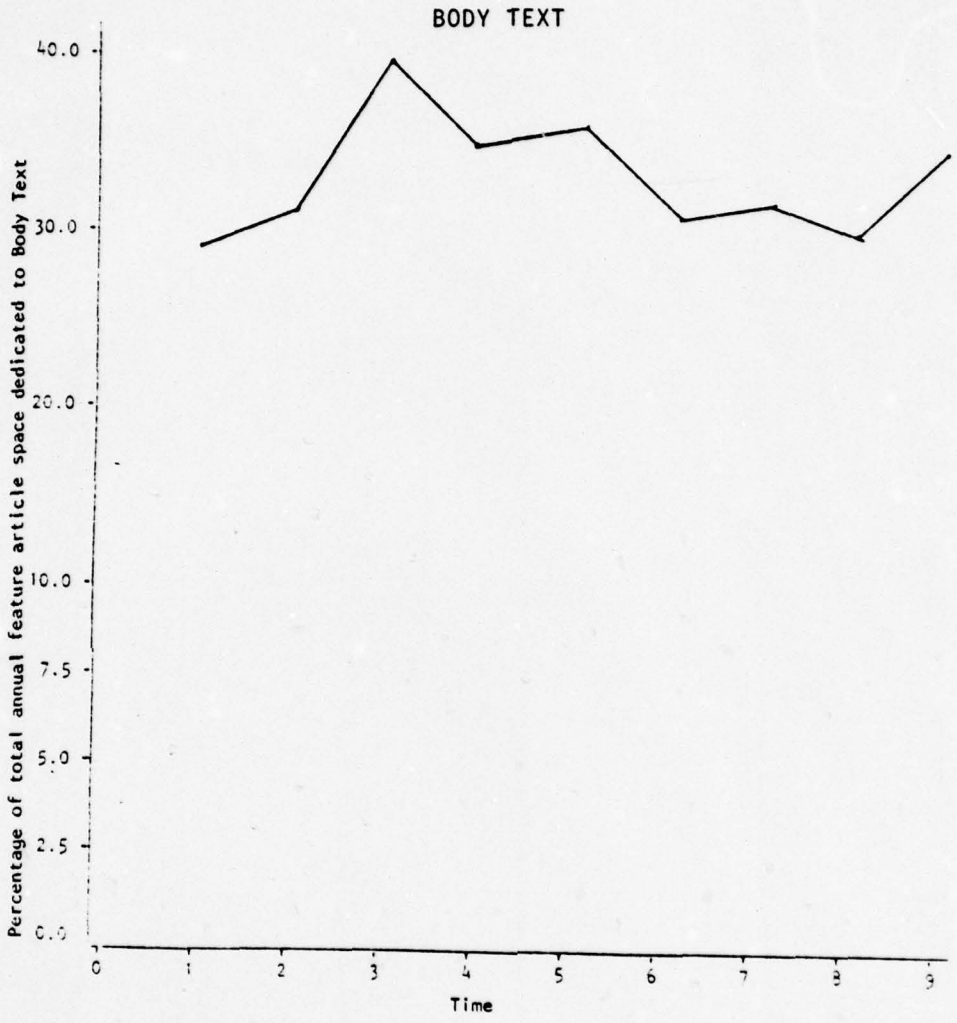
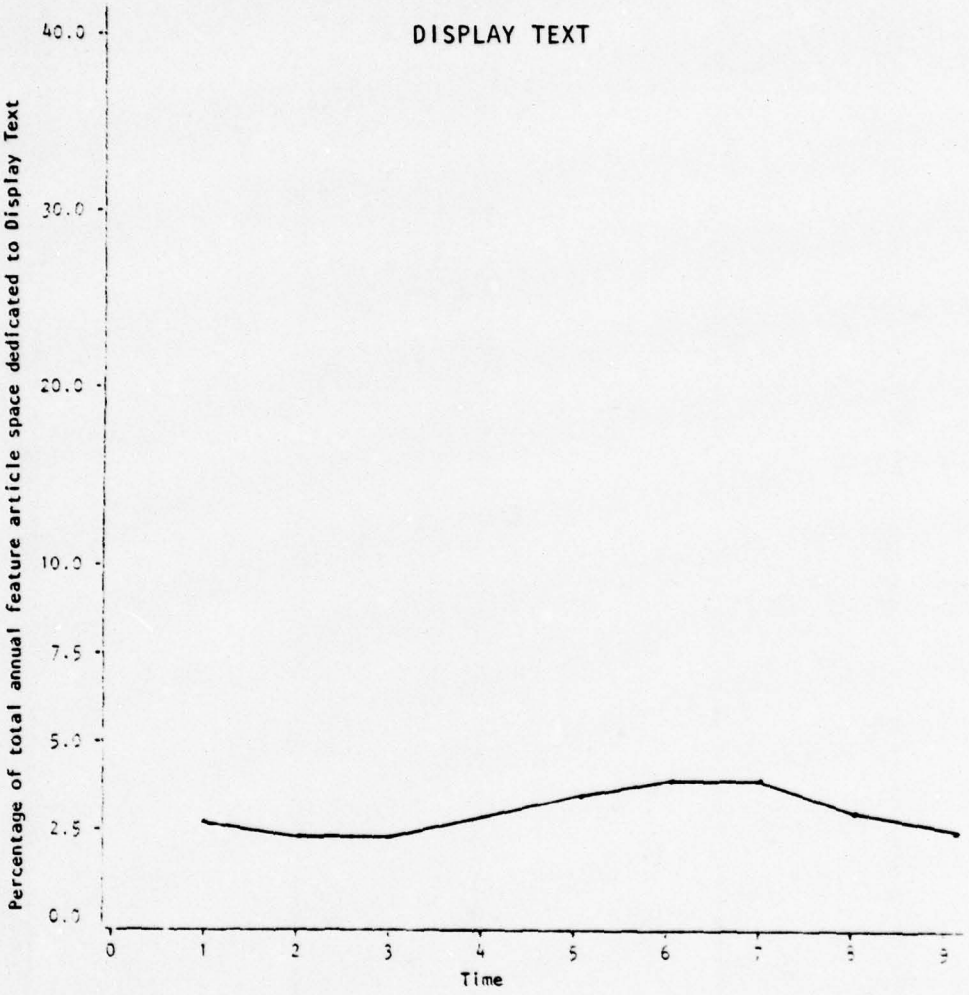
Figure G-2



1971 = .284
1972 = .308
1973 = .370
1974 = .347
1975 = .347
1976 = .311
1977 = .311
1978 = .305
1979 = .327

Figure G-3

DISPLAY TEXT



1971 = .036
1972 = .029
1973 = .029
1974 = .036
1975 = .041
1976 = .048
1977 = .049
1978 = .034
1979 = .030

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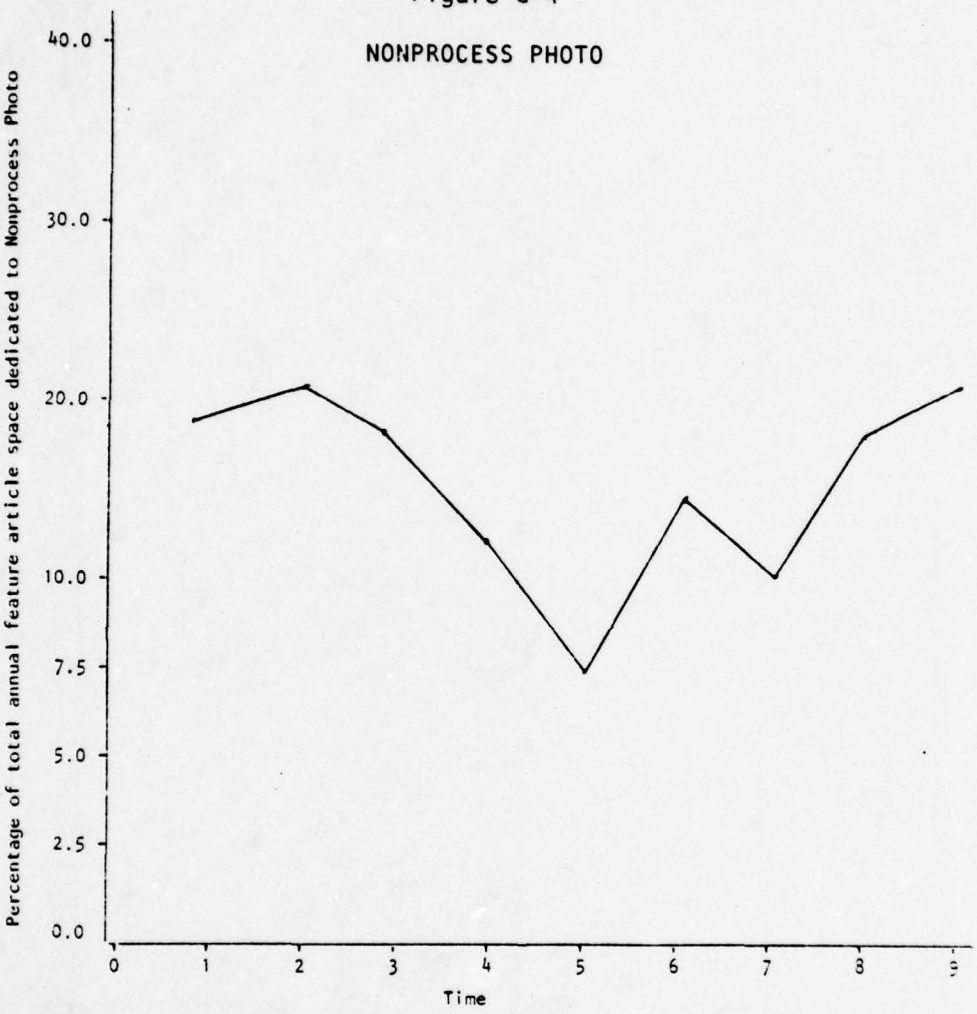
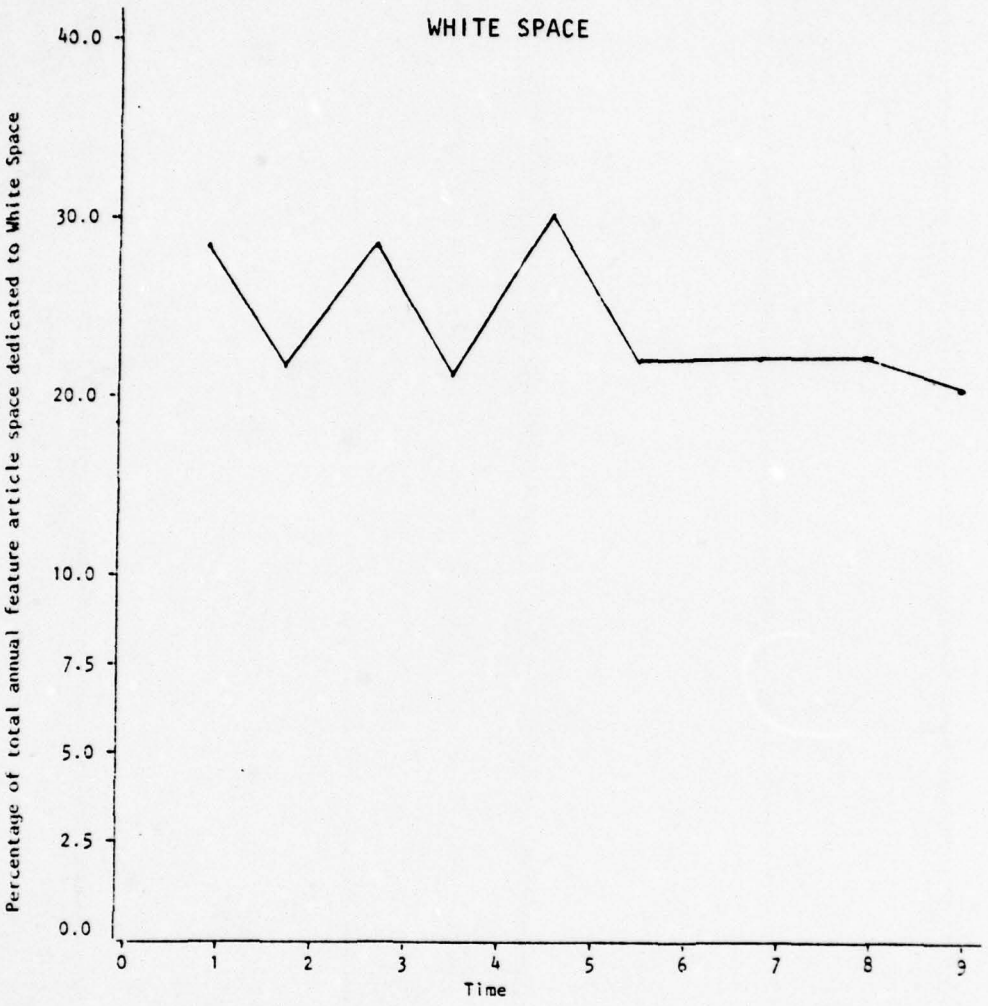
Figure G-4



1971 = .181
1972 = .207
1973 = .186
1974 = .148
1975 = .071
1976 = .147
1977 = .129
1978 = .165
1979 = .175

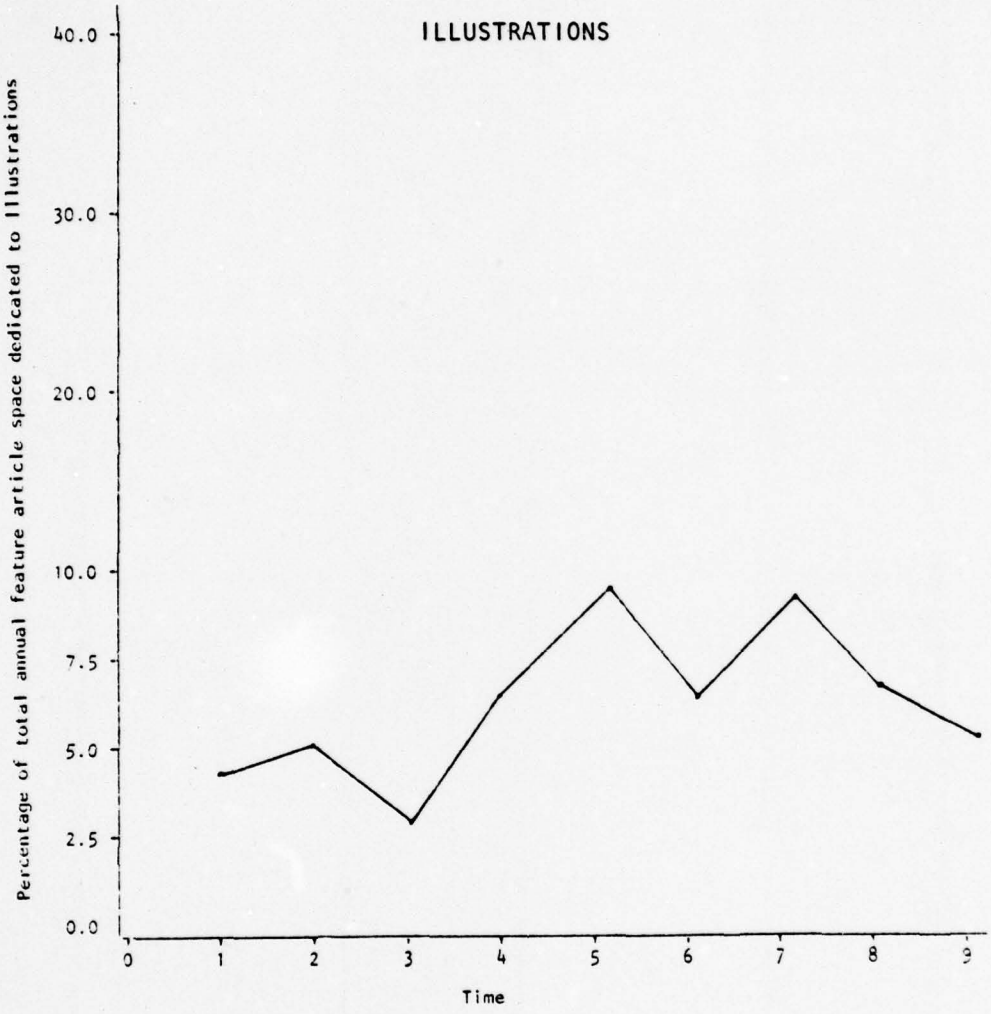
Figure G-5



1971 = .269
1972 = .231
1973 = .265
1974 = .222
1975 = .266
1976 = .211
1977 = .210
1978 = .212
1979 = .202

Figure G-6

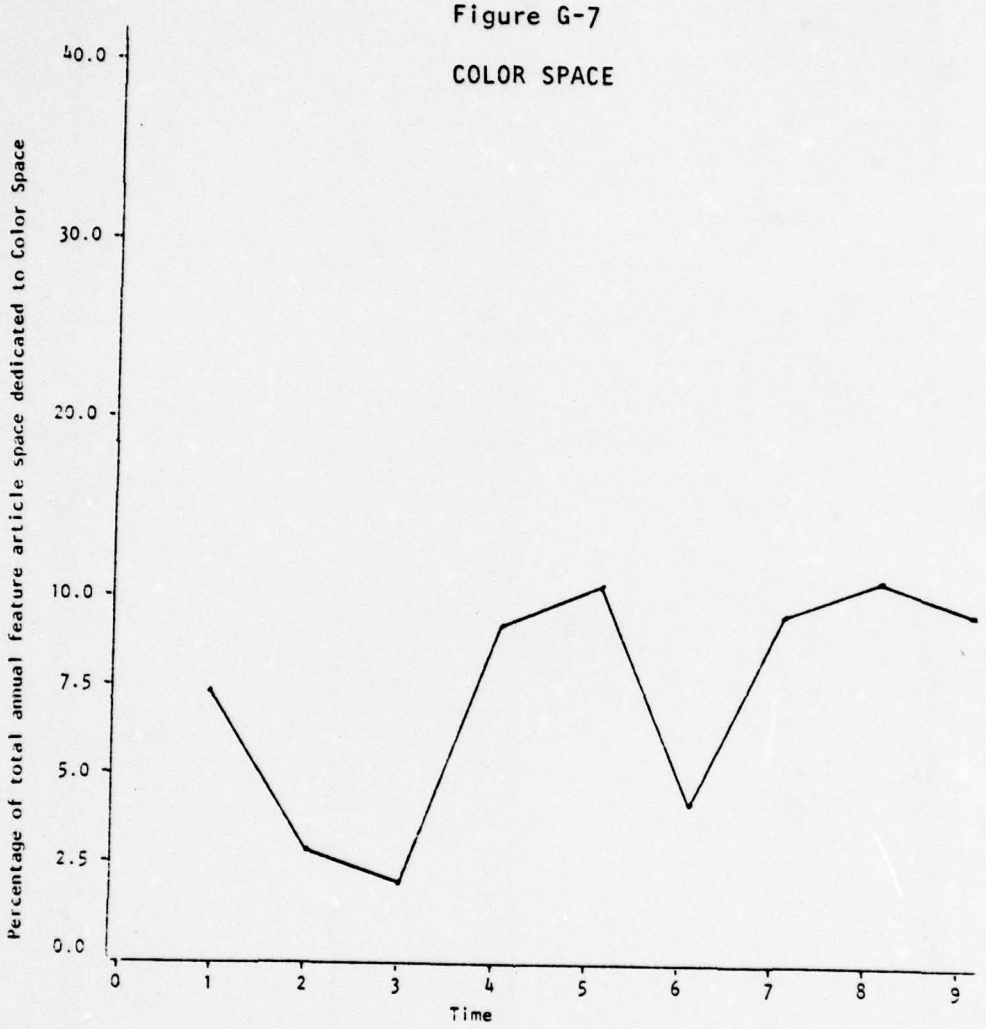
ILLUSTRATIONS



1971 = .041
1972 = .052
1973 = .027
1974 = .057
1975 = .101
1976 = .070
1977 = .090
1978 = .072
1979 = .061

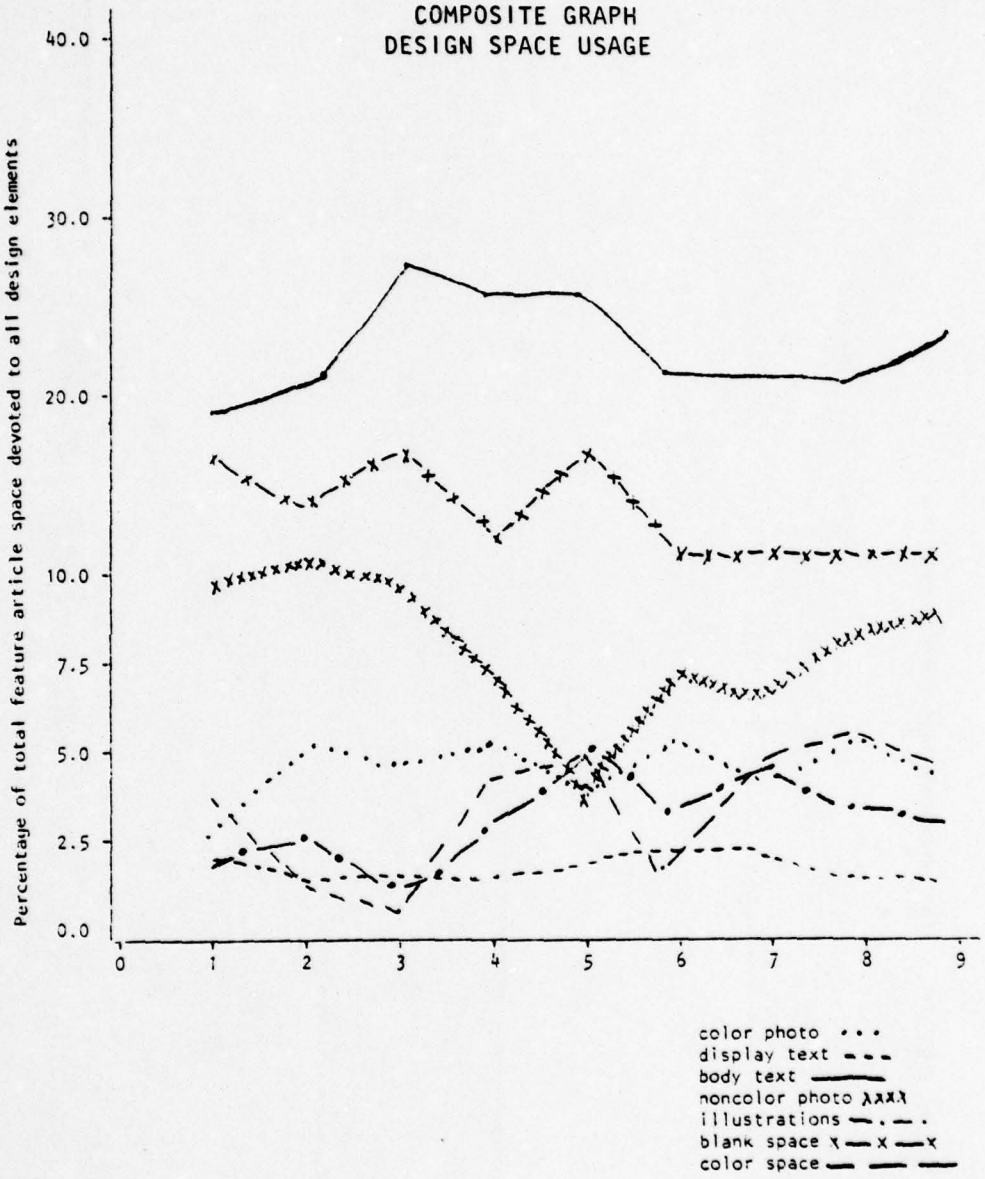
Figure G-7

COLOR SPACE



1971 = .074
1972 = .026
1973 = .016
1974 = .085
1975 = .099
1976 = .043
1977 = .095
1978 = .103
1979 = .094

Figure H


COMPOSITE GRAPH
DESIGN SPACE USAGE
Percentage of total feature article space devoted to all design elements
40.0
30.0
20.0
10.0
7.5
5.0
2.5
0.0
0
1
2
3
4
5
6
7
8
9
color photo
display text
body text
noncolor photo
illustrations
blank space
color space

Appendix VI

ANALYSIS OF TRENDS IN DESIGN ELEMENT USAGE WITHIN CONTENT CATEGORIES

Appendix VI

ANALYSIS OF TRENDS IN DESIGN ELEMENT USAGE WITHIN CONTENT CATEGORIES

Figures I-1 to I-7 summarize the data derived from the analysis of trends over time in the use of design elements within the ten content categories. The Pearson product-moment correlation was used to test for significance.

The sign of the Pearson coefficient (r) indicates whether a trend is upward or downward. The coefficient (r^2) signifies the variance explained by the operation of time. The letter "p" denotes the significance level of the relationship of time and the use of the designated design element within each of the content categories listed.

Figure I-1

FOUR-COLOR PROCESS
COLOR PHOTOGRAPH SPACE

Content Category	r	r^2	p
controversial issues	-0.8335	0.6947	0.0026
personal affairs	-0.0148	0.0002	0.4848
research and development	0.1661	0.0276	0.3345
policy	-0.5477	0.3000	0.0634
history	-0.0277	0.0007	0.4717
personalities	0.2324	0.0540	0.2736
sports	-0.2692	0.0724	0.2418
hobbies and recreation	0.2749	0.0755	0.2370
job information	0.1872	0.0350	0.3147
employee benefits	-0.0516	0.0026	0.4474

r^2 = variance explained

p = significance level

Figure 1-2

BODY TEXT
SPACE

Content Category	r	r^2	p
controversial issues	0.0754	0.0056	0.4235
personal affairs	-0.4180	0.1747	0.1314
research and development	0.5974	0.3569	0.0446
policy	0.5292	0.2801	0.0714
history	-0.1966	0.0386	0.3060
personalities	-0.0784	0.0001	0.4204
sports	0.4506	0.2031	0.1117
hobbies and recreation	0.3485	0.1214	0.1790
job information	-0.0605	0.0044	0.4324
employee benefits	-0.3400	0.1156	0.1853

r^2 = variance explained

p = significance level

Figure I-3

DISPLAY TEXT SPACE

Content Category	r	r^2	p
controversial issues	0.4328	0.1796	0.1278
personal affairs	-0.52937	0.2802	0.0713
research and development	0.2628	0.0691	0.2471
policy	0.0212	0.0004	0.4783
history	-0.1105	0.0122	0.3885
personalities	0.2311	0.0534	0.2747
sports	-0.0630	0.0039	0.4359
hobbies and recreation	0.2574	0.0662	0.2518
job information	-0.1123	0.0126	0.3867
employee benefits	-0.0282	0.0008	0.4712

r^2 = variance explained

p = significance level

Figure I-4

NONPROCESS COLOR
PHOTOGRAPH SPACE

Content Category	r	r^2	p
controversial issues	-0.5204	0.2709	0.0754
personal affairs	-0.0439	0.0019	0.4553
research and development	-0.4307	0.1855	0.12358
policy	-0.6987	0.4882	0.0181
history	-0.2323	0.0540	0.2737
personalities	0.0507	0.0025	0.4484
sports	0.5302	0.2811	0.0709
hobbies and recreation	-0.2465	0.0607	0.2612
job information	0.3061	0.0937	0.2115
employee benefits	-0.3633	0.1230	0.1682

r^2 = variance explained

p = significance level

Figure I-5

ILLUSTRATION SPACE

Content Category	r	r^2	p
controversial issues	0.2955	0.0873	0.2199
personal affairs	0.4849	0.2352	0.0928
research and development	0.0736	0.0054	0.4253
policy	0.3717	0.1381	0.1623
history	-0.0667	0.0044	0.4322
personalities	0.4339	0.1882	0.1216
sports	0.3302	0.1090	0.1926
hobbies and recreation	0.0808	0.0065	0.4180
job information	-0.1372	0.0188	0.3623
employee benefits	0.4918	0.2419	0.0893

r^2 = variance explained

p = significance level

Figure I-6

WHITE SPACE

Content Category	r	r^2	p
controversial issues	-0.5600	0.3136	0.0584
personal affairs	0.2515	0.0632	0.2568
research and development	-0.5684	0.3230	0.0551
policy	-0.4562	0.2081	0.1085
history	-0.1055	0.0111	0.3934
personalities	0.4239	0.1797	0.1277
sports	0.2720	0.0740	0.2394
hobbies and recreation	-0.1661	0.0276	0.3346
job information	-0.4900	0.2401	0.0902
employee benefits	0.2918	0.0851	0.2230

r^2 = variance explained

p = significance level

Figure 1-7

COLORED SPACE

Content Category	r	r^2	p
controversial issues	0.3581	0.1282	0.1719
personal affairs	0.2069	0.0428	0.2966
research and development	0.4937	0.2437	0.0883
policy	0.5625	0.3164	0.0574
history	0.5630	0.3170	0.0572
personalities	-0.6239	0.3893	0.0362
sports	0.5000	0.5000	0.5000
hobbies and recreation	-0.3501	0.1226	0.1778
job information	0.1958	0.0383	0.3068
employee benefits	-0.0183	0.0003	0.4813

r^2 = variance explained

p = significance level

Appendix VII

DEFINITIONS

Appendix VII

DEFINITIONS

ARTICLE. a complete piece of writing designated by a title, body and ending.

BLANK SPACE. the absence of printing on any portion of a page.

COLORED SPACE. the amount of space on a page on which color alone (tint or solid block) is printed or surprinted with a second color.

DISPLAY TYPE. a type size which is 14 points or larger used for titles and subtitles.

FEATURE ARTICLE. articles in a publication which focus on a particular topic or portion thereof, presenting an in-depth rather than capsulized treatment of topical categories. In contrast to subjects treated departmentally, the titles and beginning page of feature articles are listed separately on one content page.

FORMULA. a repeated mixture of article content in a publication which results from subject treatment of topical categories.

GRAPHIC DESIGN. the composite of text type, display type, photographs, illustrations, space and color use on a page.

ILLUSTRATIONS. graphs, drawings, charts or line art printed on a page.

OBJECTIVES. the policies, views, interests and goals of a company, profession or association which are promoted in a publication.

ORGANIZATIONAL PUBLICATION. a publication such as a magazine which addresses specific audiences to advance the objectives of a sponsoring company, profession or association.

PICA. a unit of measure equal to 0.166 inches or 12 points.

PHOTOGRAPH. an image reproduced and printed on a page from a half-tone or continuous tone wash.

TEXT TYPE. type size 13 points or smaller used to print the main body of an article.

TEXT SPACE. the space on a page devoted to presentation of the main body of an article.

TITLE. words printed in display type which introduce an article by describing its topic.

TOPIC. a person. place, thing, idea or event about which something is said in an article.

Appendix VIII

MISCELLANEOUS CONTENT

Appendix VIII

MISCELLANEOUS CONTENT

Figure J lists those feature articles which could not be coded either by topic or content into one of the ten content categories used in this study. The space measurements for these miscellaneous articles were subtracted from the total feature article space measurements for each year to prevent bias in the calculation of proportionate space usage data.

Since the data accumulated in this category was insufficient, no content analysis was performed on the articles listed. However, the proportionate space usage data for miscellaneous content is included in Figure K to preserve the validity of content categorization and data continuity.

Figure J

MISCELLANEOUS
CATEGORY CONTENT

1971-1979

ISSUE	TOPIC	TOTAL SQUARE PICAS
May 1971	Humor, anecdote	6,144
July 1971	History of Pony Express	12,288
June 1972	Humor, anecdote	3,072
September 1973	History of British Army	24,576
December 1974	Humor, anecdote	3,072
November 1975	Army Birthday Celebration	12,288
December 1976	Bicentennial Celebration	15,360
March 1977	History of Korea	9,216
May 1979	Photoessay on San Francisco	12,288

Figure K

MISCELLANEOUS CONTENT
PROPORTIONATE DESIGN
ELEMENT USAGE
1971-1979

Design Elements	1971	1972	1973	1974	1975	1976	1977	1978	1979
color photo	-0-	-0-	.229	-0-	.557	.716	.602	-0-	.531
display text	.141	.027	.042	.018	.014	.014	.007	-0-	.018
body text	.267	.417	.400	.104	.105	.042	.120	-0-	.014
nonprocess color	-0-	-0-	.184	-0-	-0-	-0-	-0-	-0-	-0-
illustrations	.270	.273	-0-	.328	-0-	-0-	-0-	-0-	-0-
white space	.421	.555	.144	.549	.324	.229	.180	-0-	.438
colored space	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-

REFERENCES

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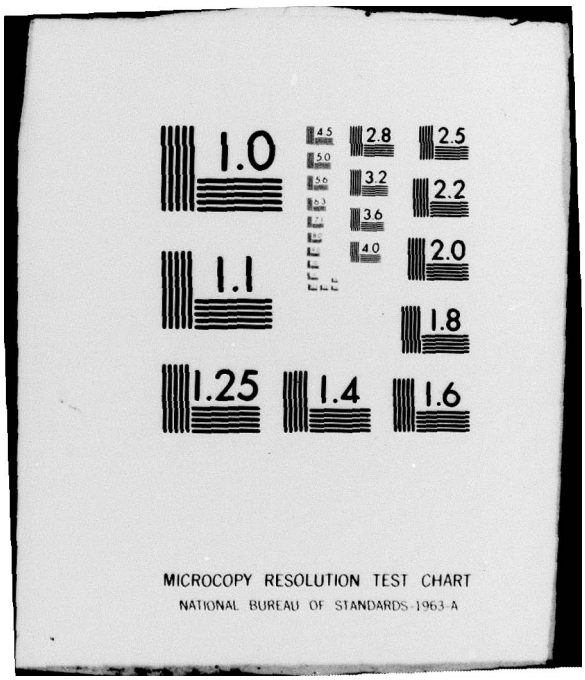
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