

Graphic signage as a means of identifying
public areas and services

by

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Signatures have been redacted for privacy

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I. INTRODUCTION

The word communication comes from the Latin word "communis" which means common. Communication is therefore the act of two or more people sharing a common idea or understanding through a mutually understood system of words or symbols. Communication involves sending a message through speaking, writing, drawing, or acting and receiving a message through listening, reading, or observing. The symbols used to transmit the message may be words, languages, actions, numbers, or pictures.

A written language is an efficient method for communicating within a culture. However, the fact that there are many different languages is a barrier to international or cross cultural communication. A system of graphic symbols can provide a more effective communication technique between individuals in the same culture as well as in different cultures.

The history of graphic communication may be traced from the early hieroglyphics used by Egyptians through the development of the printed word, engraving, and photography to the technological accomplishments of the twentieth century: radio, motion pictures, and television. The basic function of graphic communication is the same as that of all human communication: the desire of the sender to influence the receiver.

The objective of this study is to develop a series of graphic symbols which might be effectively used for the communication of information or ideas concerning selected activities and services in areas of public use.

II. LITERATURE REVIEW

A. History of Communication

The early languages of civilizations were developed in a similar sequence: Babylonians and Assyrians developed cuniform writing, Egyptians used hieroglyphics, the characters of the Chinese language began by using symbols to represent natural forms. Therefore to communicate the idea of an object, the people of these cultures drew a picture or a symbol of the object. This use of a picture or a graphic symbol to express an idea is called ideography. The earliest known ideograms are a group of Syrian cylinder seals which are displayed in the Metropolitan Museum of Art.¹ The cylinders date from the second millennium B.C.

A second method for communicating ideas is the oral, or auditory, channel called syllabication. From the Stone Age through the Greek period this method of communication predominated for the exchanging of ideas. The youth of these successive cultures learned by listening, watching, and imitating. In fact, Eric Haverlock, when studying this method of self-education practiced by the Greeks before writing reached their culture, termed the oral communication process "the tribal encyclopedia."²

Logography is the third method for communicating an idea. It involves the use of multiple symbols to express words in written form. The characters which we use today in alphabets evolved from the earliest forms of picture writing or ideographics. An example of logography is the character

¹Edward A. Hamilton, Graphic Design for the Computer Age (New York: Van Nostrand Reinhold Co., 1970), p. 9.

²Ibid., p. 10.

"A": which may be traced to the Phoenician "alpha" meaning "ox" and resembling an ox's head.³

The Phoenicians are credited as the source of our modern alphabet for it was they who simplified the cumbersome hieroglyphics of earlier times.⁴ Their contribution, combined with the invention of paper in China in 105 A.D. and the making of ink in China around 220 A.D., provided the basic tools for recording knowledge and communicating efficiently by means of logography. One message could be recorded by hand lettering and communicated to a much larger group of people than ever before.

In Europe, the process of hand lettering was carried out for several centuries until 1448 when Johann Gutenberg of Mainz, Germany, invented printing by movable type. His process met the need of that time for printing a number of copies quickly and easily. Among the features of his process were:

1. a system of movable type so that characters could be arranged in any order
2. a type that could be reused
3. a method for holding the type in place for printing
4. a system for making type impressions on paper
5. an ink which could be transferred from type to paper leaving a readable impression.⁵

³Rudolf Modley, The Challenge of Symbology, A Report of the Fourth Annual Communications Conference of the Art Directors Club of New York. Prepared and distributed by the Fund for the Advancement of Education established by the Ford Foundation, 1965, p. 5.

⁴Russell N. Baird and Arthur T. Turnbull, The Graphics of Communication (Chicago: Holt, Rinehart, and Winston, 1966), p. 5.

⁵Ibid., p. 7.

The printed page was a revolutionary form of communication during the last half of the 15th century and throughout the 16th century. People became curious about the world and its history and the written word helped to satiate their curiosity. These times were interestingly described by Edward Hamilton in his observation that, "Literacy was at the same time both the cause and effect of mass communication."⁶

Although the invention of the Gutenberg press provided potential for communication, printing was limited to the reproduction of books until 1621 when the first newspapers appeared in Amsterdam. Because the reproduction of pictures was still accomplished by hand-engraving, illustrations continued to be limited to books.

The Industrial Revolution of the mid-eighteenth century augmented the technological advances made in printing by the development in the 1820's of cylinder presses by Danile Treadwell and Issac Adams. During this same time, in 1826, another inventor, Joseph Weiplein, developed photography as a medium, thus adding another facet to communication in Europe. The basic concept of photography, coupled with engraving skills, enabled William Talbot to produce the first photo-engraving in 1852. Newspapers could then be illustrated both with graphics and real photographs, uniting visual and verbal communication for the first time.

Today, Rudolf Modley has described the visual and verbal communication channels as being in a state of competition. He explains his idea by citing the conflict caused when verbal communication is combined with visual aids and visual communication is combined with verbal aids. Illus-

⁶Hamilton, loc. cit., p. 11.

trating newspapers was the first combination of verbal communication with visual aids applied to mass communication.⁷ Whereas in the early twentieth century, the first visual communication combined with verbal aids appeared in a new medium, the motion picture. G. W. Griffith combined this powerful visual communication with a few short, well-spaced verbal captions to produce the first silent, sub-titled film in 1915 called "The Birth of a Nation."⁸ Films increased in their complexity as sound was added and three dimensional illusions were developed. At the same time, radio advanced as a verbal communication media while television progressed in the field of visual and verbal communication.

B. Graphic Identification

Graphic communication is effective in providing a message for several different audiences if the audience is aware of the experience being illustrated. Picture identification more clearly and vividly represents an elephant to an Eskimo or a polar bear to an African than does the descriptive word. A study of communications done in South America with a low-literacy audience in 1950 revealed the pictorial material used was of no educational value unless illustrations were based on some past experience of the audience.⁹

More effective communication is accomplished if the number of objects and actions to be perceived are kept at a minimum. All objects and actions

⁷Hamilton, loc. cit., p. 12.

⁸Hamilton, loc. cit., p. 12.

⁹Arthur Krampen, "Signs and Symbols in Graphic Communication," Design Quarterly, LXII (1965), p. 16.

should be categorically true. Realistic color can become an attention-getter. Captions may be used to extend the meaning of the pictures rather than explain them. Simplicity and realism are two major factors in effective pictorial communication. Graphics, therefore, should emphasize bold, clear design and realistic silhouettes.

The graphic designer communicating with a sophisticated urban audience must include both persuasive manipulations and aesthetic enjoyment of his symbols. One of the most interesting, and recent, applications of this use of symbols was the design for a current events project published by Time-Life Books. The examples range from flash bulbs to tropical typhoons.¹⁰

The Industrial Revolution was the beginning of cross cultural communication which has increased rapidly to the point that, today, business and pleasure are only as far away as the nearest airplane. The various international gatherings such as World's Fair and Olympic Games as well as the United Nations pose special communication problems. An international picture vocabulary, International System of Typographic Picture Education (ISOTYPE), was designed by G. Arntz and E. Bernath in Austria in the early 1900's. ISOTYPE was designed to make minimum use of verbal symbols. The most important message of the pictorial symbol should be obvious at the first glance with other details or reinforcement of the message communicated from repeated cursory views. Some limited educational presentations have used the ISOTYPE vocabulary.¹¹

¹⁰Hamilton, loc. cit., p. 22.

¹¹Krampen, loc. cit., p. 22.

C. International Graphic Signage

As today's society becomes more globally oriented, people are confronted with problems when needing to identify services or participate in activities on an international level. Graphic signs may be viewed as a way of reducing complicated foreign messages to easily identifiable essentials. Their worldwide use is being incorporated as an integral part of road systems, World Fairs, Olympic Games, and more recently the United States National Park Service.

The International Council of Graphic Design Associations (ICOGRADA), which has done much of the pioneering work in presenting visual solutions to these worldwide communication problems, developed the following guide lines for signs:

1. Be unambiguous
2. Mean the same thing for all people to whom it is addressed
3. Be read accurately and quickly
4. Be acted upon.¹²

1. Road signs

The invention of the automobile was a technological development which has caused widespread international communication problems. For when the old network of roads became obsolete, new highway signs had to be developed to communicate dangers, regulations, directions, and highway services.

At an International Congress held in Paris in 1909, the Automobile Clubs of Europe adopted the first four road signs to identify typical road

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Colin Clipson, "The Uses and Abuses of Signs," Print, XXIII (November/December, 1969), p. 36.

dangers.¹³ The success of these early signs was limited because they were installed by private organizations who cluttered the signs with commercial advertisements of the sponsors. Soon signs with a written message which could only communicate with people familiar with the national language were in abundance along all roadways. At the Second International Congress held in Paris in 1926, two new pictorial road signs, one for curves (Figure 1a) and the other for uneven pavement (Figure 1b), were introduced. In addition, the triangular shape was adopted as a general danger sign.¹⁴

These early conferences were only concerned with highway sign development. However, at the same time, the Traffic Committee of the League of Nations was developing a set of regulatory signs for city traffic. By 1931, a total of 26 international road signs had been adopted to identify the regulations and dangers of both highway and city traffic. The number of such signs increased to 50 in 1949 when the United Nations by necessity adopted a new "Protocol of road signs."¹⁵ Three independent sets of road signage were in use by the end of World War II: a European set, an American set, and an African set. In order to adopt a worldwide system of road signs, the committee appointed by the United Nations to attend to the problem tested the three existing sets in various countries during 1950 and 1951. Based on the results of this extensive study, a set of international road signs was proposed in 1952. The study suggested that the following should be incorporated into the development of all road signs:

¹³Krampen, loc. cit., p. 19.

¹⁴Krampen, loc. cit., p. 19.

¹⁵Krampen, loc. cit., p. 20.

1. The color combination of a black symbol on a yellow background was found to give superior visibility.
2. Angular shapes were found to be more visible than round shapes and, therefore, a diamond shape was preferred.
3. The use of pictorial symbols without verbal messages.

The international road sign system has been well accepted by people in the field of design.¹⁶ Nevertheless, signs that are confusing to the traveler or are not easily identified do not fulfill their objective even if they are well designed. For example, in 1968, a sample of 2,000 motorists and pedestrians were questioned by Mass Observation Limited of London about the message communicated by a group of the international road signs. The study indicated that only 37 percent of the drivers could identify the message "All motor vehicles prohibited" (Figure 2a) and only 65 percent could identify "No overtaking" (Figure 2b). The pedestrian population of the study indicated only 50 percent could identify the sign "Crossroads" (Figure 3a) and 61 percent knew the sign for "Pedestrian Crossing Ahead" (Figure 3b).¹⁷

A study in 1969 by Lewis and Cook reported the difference in interpretation of the message in the sign "Falling Rocks." In a survey of 50 motorists, 23 thought the sign was a warning for falling rocks and 27 thought it was a warning for fallen rocks. The group of 23 said they would

¹⁶Clipson, loc. cit., p. 37.

¹⁷Clipson, loc. cit., p. 37.

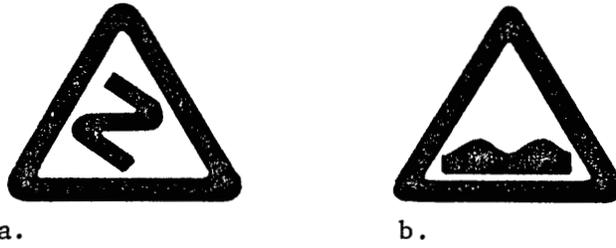


Figure 1. Signs introduced at Second International Congress of Automobile Clubs of Europe, 1926

- a. Curve
- b. Uneven pavement

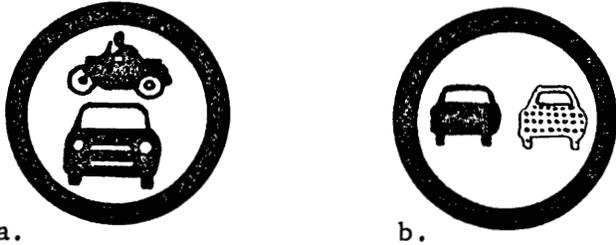


Figure 2. Road signs tested by Mass Observation Limited of London, 1968

- a. All motor vehicles prohibited
- b. No overtaking

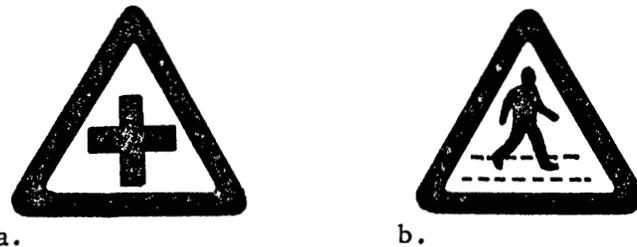


Figure 3. Pedestrian signs tested by Mass Observation Limited of London, 1968

- a. Crossroads
- b. Pedestrian crossing ahead

accelerate if they saw the sign while the group of 27 said they would slow down.¹⁸

The success of any sign system cannot be known until the signs are put into use. Although some of the existing 50 road signs are confusing, they continue to be recognized as the most currently effective system for communicating, on an international basis, road conditions. For imagine how confusing the verbal sign "Men Working" would be to a driver unfamiliar with the language. A graphic description of a figure with a shovel would be more universally understood.

2. Olympic signs

International gatherings such as the Olympic Games attract a large number of people from various language groups. A large percentage of such an audience may be unfamiliar with the language of the host country, therefore, graphic symbols are appropriate to identify activities and services.¹⁹

The first use of graphic identification signs for the Olympic Games occurred in 1964 in Tokyo. The sports signs for this program represented the significant actions of athletes in each event. In most cases, a stylized form of the entire human figure was shown (Figure 4a). Some designers have criticized this set of signs as being over-stylized, not appealing to the common experience of all visitors, and including either too much or too little detail.²⁰

¹⁸Clipson, loc. cit., p. 39.

¹⁹Krampen, loc. cit., p. 23.

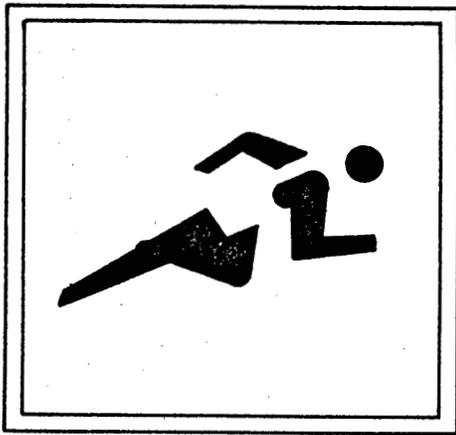
²⁰Krampen, loc. cit., p. 23.

For the 1968 Mexico Olympics, Lance Wyman used the typical athletic equipment to represent each event (Figure 4b). For the events that required no equipment, such as swimming and wrestling, the human figure in action was used. In conjunction with Wyman's athletic signs, Peter Murdock designed a group of signs to identify such services as telephones, rest rooms, wastebaskets, and mailboxes. Wyman and Murdock hoped to eliminate the language barrier by using pure graphic elements. An example is a silhouette walking through a door to represent an entrance, a row of seated silhouettes to represent a row in an auditorium, and a single seated silhouette to identify a specific seat and number.²¹

The 1972 Olympic Games in Munich will introduce a third, and new, set of athletic signs, as well as directional signs for traffic in and around Munich and identification signs for objects, buildings, and services. The athletic signs by Otl Aicher, a German designer, are based on the Tokyo Olympic signs. Even though the Tokyo signs were designed unsystematically, there will be a constancy to the elements used for the Munich signs: this could be described as a "body alphabet."²² This may be understood by visualizing a grid and four possible directions on it (Figure 4c): horizontal, vertical, and two diagonals. The silhouette of a stylized human form engaging in the specified athletic event to be communicated to the viewer will conform to the grid directions (Figure 4d). Whenever sports equipment

²¹Arthur Solin, "Graphics for the XIX Olympiad," Print, XVII (May/June, 1968), p. 28.

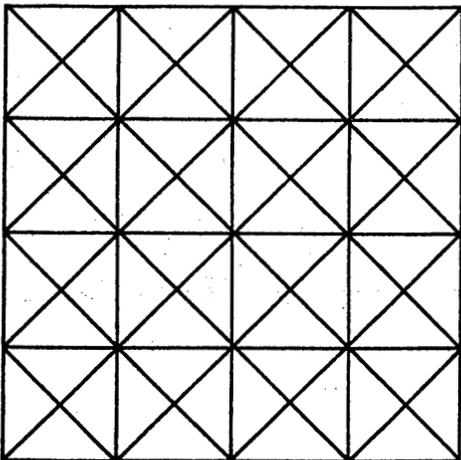
²²Jacob Heiner and Masaru Katsumie, "Sign Systems for International Events," Print, XXIII (November/December, 1969), p. 40.



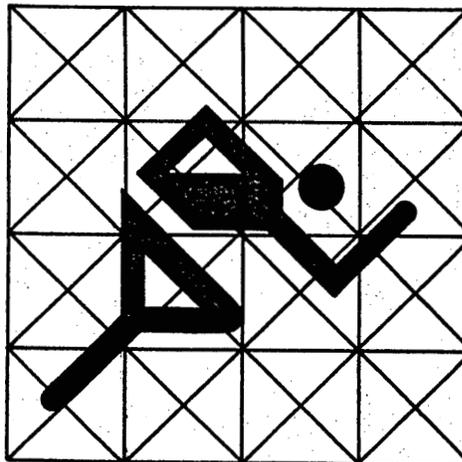
a.



b.



c.



d.

Figure 4. Olympic signs depicting a track performer

- a. Tokyo sign - 1964
- b. Mexico sign - 1968
- c. Munich grid - 1972
- d. Munich sign - 1972
Grid would not be included in the sign

is appropriate and involved, it will be included as part of the stylized figure.

3. Park signs

The United States National Park Service has developed a series of graphic signs which were first introduced on a national level in 1971. This system of signage was installed on an experimental basis in four national parks: Herbert Hoover National Historic Site in Iowa, Yosemite National Park in California, Minute Man National Historic Park in Connecticut, and Colonial National Historic Park in Virginia.

The signs were developed by U.S. designers, after consultation with the United Nations communication experts, so that the signs could be internationally understood. A total of 77 pictorial signs were selected by the Park Service from the designs submitted.

The message of each sign is communicated through a white symbol on a background of brown, gray-blue, or green. The background color for a sign is determined by its blend or contrast with the natural colors of an area.

The signs tell the visitor where activities and sports are allowed or prohibited. For instance, the silhouette of a tent identifies camping areas. A red diagonal slash across this sign means camping is prohibited.

4. The use of color coding for graphic signs at Expo '67

A strong emphasis on color coding was the basis for a signage system designed by Paul Arthur for the 1967 World Exhibition in Montreal.²³ Four

²³Paul Arthur, "An Account of the Development and Execution of On-Site Graphics for Expo," Print, XXI (March/April, 1967), p. 20.

colors--yellow, orange, violet, and green--were used to color code the four emplacement areas of Expo. The significance of the color code was emphasized to the spectators by its repetition at entrances, parking lots, and in guide books. In addition to these four colors, red was used to identify signs and equipment for fire protection and blue was used as the key to information and service equipment such as washrooms, trains, and boats.

5. International Council for Breaking the Language Barrier

The International Council for Breaking the Language Barrier (ICBLB) was founded in New York in 1962 for the promotion of pictorial signs as an international language. This organization gathered information about symbols which were in use at that time for science, industry, and traffic control.

In 1965, the International Council for Breaking the Language Barrier conducted a worldwide survey to establish a list of expressions in need of graphic representation. Among these were:

Toilet	Gasoline station	Gate-Platform
Men	Hotel	Tickets
Women	Restaurant	Baggage-Check
Exit	Pharmacy	Baggage-Claim
Emergency exit	Wet paint	Passport control
Entrance	Airport	Customs
Elevator	Seaport	Fasten seat belt
Information	Railway station	Telephone
First aid	Bus	Post
Police	Taxi	Telegram
Danger	Currency exchange	Travel agent ²⁴
Don't smoke	Arrival	
Don't enter	Departure	

²⁴Soichi Kato, "Toward an International Symbol Language," Print, XXI (March/April, 1967), p. 42.

Designers throughout the world submitted graphic symbols which in their estimation communicated these needed expressions.

In addition to the above mentioned pictorial identification signage for roads, Olympics, National Parks, World Fairs, and the International Council for Breaking the Language Barrier, pictorial symbols have also been used recently by the International Air Transportation Association, the Air Transportation Association of America, and the International Union of Railways in their attempt to develop graphic signage systems.

The international sign systems reviewed here have followed a five-stage rhythm expressed by Martin Krampen, University of Waterloo, as follows:

1. Environmental problems arise, produced by technological or other developments.
2. Signs and symbols are created, sometimes anonymously and tentatively, to communicate about these problems.
3. These signs or symbols are modified or corrected by collective experience.
4. Modified versions are finally conventionalized.
5. As new problems appear the sign code is further amplified, modified, corrected, and so on.²⁵

²⁵Krampen, loc. cit., p. 19.

III. DEVELOPMENT OF THE PROBLEM

A. Statement of the Problem

The purpose of this study is to produce a series of representative graphic symbols which substitute for descriptive words and phrases in identifying activities and services involving cross cultural and international participation. The use of symbols surmounts the identification problems caused by unfamiliar languages and makes it possible for everyone to identify the activity or service.

This study is based upon signage developed through earlier research by national and international organizations and agencies to encourage participation in worldwide travel and events. The graphic signs produced for these earlier studies used stylized figures and objects. When figures were used, their features were stylized, such as a circle to represent the head with other geometric elements to represent the body. Many objects used to identify an area or service were presented as silhouettes in stylized shapes.

Therefore, implications from these early studies serve as catalysts for the development of a series of signs based on figures and objects in realistic silhouetted form which rely on the basic factors of simplified realism.

B. Objectives

1. To review the literature concerning the use of graphics.
2. To explore the possibilities of graphics as a communication medium.

3. To design a series of symbols or signs identifying specific athletic endeavors, public events, and public places.
4. To explore the credibility of future graphic innovations.

C. Definition of Terms

For the purposes of this study, the major terms will be operationally defined as follows:

Symbol -- a graphic representation identifying an activity or service or providing information

Sign -- pictorial symbol posted for the purpose of identifying an activity or service

Signage -- a system of signs for an area or event encompassing a number of activities or services

Stylization -- graphic designs based on an exaggeration or distortion of some characteristic of an object

IV. PROCEDURE

A. Athletic Events, Parks, Coliseums

Three groups of signs were produced for this study to identify the activities and services connected with three functions involving international participation. The following is a list of the three areas of concern and the activities and services for which signs were produced:

<u>Athletic Events</u>	<u>Parks</u>	<u>Coliseums</u>
1. Archery	1. Cooking areas	1. Broadcasting
2. Basketball	2. Litter	2. Cloak room
3. Billiards	3. Men's rest room	3. Elevator
4. Football	4. Parking	4. Fire extinguisher
5. Golf	5. Telephone	5. First aid
6. Tennis	6. Water	6. Locker room
	7. Women's rest room	7. Lounge
		8. Refreshments
		9. Security
		10. Smoking area
		11. Stairway
		12. Telephone
		13. Ticket office
		14. Water fountain

B. Factor of Simplified Realism

The pictorial symbols designed for the signs are based on simplified realism. Each sign contains a minimum amount of graphical information to identify an activity or service.

A realistic description of the elements involved allows the activity or service to be identified by various language groups sharing common experiences. Limiting the description to basic characteristics of the elements communicates the message to these groups quickly and easily.

C. Structural Objectives

The dimensions of all signs are 15 inches wide by 20 inches high, a constant proportion ratio of 3 to 4. Depending upon the location in which the signs would be used, the size could be increased or decreased provided the 3 to 4 proportion was maintained. The use of a rectangular shape relates these signs to the international signs produced for the Olympic Games, Expo '67, and the National Parks Service. The corners of the signs have been rounded, decreasing the danger of bending or damage to the corners.

Three basic colors were selected for the signs: blue, green, and brown. White and one of the selected colors in a dark value were used for each sign. This creates strong contrast, thus clearly distinguishing the pictorial symbol against its background. On some signs a light value and/or black was added to differentiate between two objects or surfaces. A fourth color, red, was reserved for identification of signs connected with fire hazards.

The three groups of signs were unified by using the constant proportion ratio and one basic color with white for each sign. Other characteristics used to unify the presentations of signs within each group were:

1. Athletic signs -- Signs developed for six types of athletic activity have a close-up graphic description of the action occurring when the activity is performed.
2. Park signs -- Signs developed for six areas within a park involve graphics describing services rather than activities. A white symbol used on either a blue, green, or brown background lets the sign and its message be recognized from a distance.
3. Coliseum signs -- Signs developed to identify 13 areas within a coliseum use the same design presentation as the park signs.

Since both types of public areas often involve common services, it was desirable to produce identification signs which could be easily adapted to either area.

A partial band of color as used in the first aid sign or a total band of color as used in the elevator sign were added to the coliseum signs in order to unify and distinguish them as a group. The park and coliseum signs, however, could be interchanged by adding or removing the band of color.

The symbol for telephones is an example of adapting a park sign for use as a coliseum sign.

V. APPLICATION OF PRINCIPLES

Four factors: activity, symbol, background color, and interpretation of form and color for the 27 signs produced are found in Table 1. All signs have certain similarities and possess the common component of quick interpretation. The sample signs were constructed of cardboard for ease of handling and preparation but for commercial installation would be constructed of a durable, corrosion proof metal that would be impervious to weather conditions. Mat finish enamel paint was used to apply the color to the cardboard sign and would be appropriate for the metal sign to reduce reflection and glare. The symbols produced for this study were designed to be used in all three areas to identify the same activity or service thus assisting the audience to become familiar with the activity and those certain symbols used to identify it therefore reinforcing the visual message.

The signs would be installed at the location of the activity and at key directional points to assist the public in locating the activity or service. Mounting specifications for the signs are identical for both indoor and outdoor usage if placed against a wall or building. They should be six feet from the floor or ground if against a wall or six and one-half feet from the base of the structure if perpendicular to the wall. For outdoor use only, the signs also could be mounted on one-quarter inch steel breakaway posts with the top of the sign placed seven feet above the ground. These measurements allow for maximum visibility and avoid the danger of causing a collision between people.

The use of graphic signage can assist people of all cultures to locate activities and places positioned in and around public facilities with ease.

Table 1. Descriptive characteristics of individual signs

Area	Service or activity	Symbols	Background color	Interpretation
1. Athletic signs	Archery	Arrow and target	Brown (dark value)	The parts of the design are in contrasts of brown and white to distinguish the target from the background and create the illusion of the arrow projecting from the target.
	Basketball	Basketball and hoop with net	Brown (dark value)	The basketball is described with a light value of brown and black to define its surfaces and distinguish it from the background. White and black are used to describe the net and hoop on which the basketball appears to be resting.
	Billiards	Rack of billiard balls and cue ball	Green (dark value)	The rack of balls and the cue ball are described in white to contrast with the background. One ball within the rack is identified by a dark green color; the six ball. A light value of green surrounds the rack of balls to unite them as a group.
	Football	Football and football shoe	Brown (dark value)	The football and football shoe are described with a light value of brown and white to define their surfaces and distinguish them from the background. The dark brown background is used between the football shoe and the football to project an appearance of subsequent contact.

Table 1. (Continued)

Area	Service or activity	Symbols	Background color	Interpretation
	Golf	Golf ball and golf club	Green (light value)	A dark value of green and white are used to describe the height and depth of the golf club. White is used to contrast the golf ball with the club and background. Black oval outlines describe the golf ball's surface texture.
	Tennis	Tennis ball and tennis racket	Green (dark value)	The tennis ball is described in white with a black line added to define the division between its surfaces. The racket is described behind the tennis ball with a contrast of white and dark green to define the webbing and a light value of green to define the frame of the racket.
2. Park signs	Cooking areas	Firewood and flame	Brown (dark value)	A white substitution of the parts of a campfire, firewood, and a flame are used to contrast with the background.
	Litter	Trash recepticle	Green (dark value)	White substitution of the surfaces of a trash recepticle in perspective are used to contrast with the background.
	Men's rest room	Front view of a male's head	Blue (dark value)	A white description of the hair, ears, and chin line of a male's head are in contrast with the background.

Table 1. (Continued)

Area	Service or activity	Symbols	Background color	Interpretation
	Parking	Outlines of parking spaces and an automobile	Blue (dark value)	A white outline of parking spaces and a white silhouette of an automobile are in contrast with the background.
	Telephone	Telephone receiver	Green (dark value)	A white outline description of a telephone receiver is in contrast with the background.
	Water	Water faucet, water, and water container	Brown (dark value)	A white description of a water faucet, a drop of water, and a container of water are in contrast with the background.
	Women's rest room	Front view of a female's head	Blue (dark value)	A white description of the hair and chin line of a female's head are in contrast with the background.
3. Coliseum signs	Broadcasting	Human facial profile and microphone	White	A dark brown profile of a human face and a dark brown outline of a microphone contrast with the background. Circles of a light value are added to describe the surface texture of the microphone.
	Cloakroom	Coat and hanger	Brown (dark value)	White description of the surfaces of a coat and coat hanger are in contrast with the background.

Table 1. (Continued)

Area	Service or activity	Symbols	Background color	Interpretation
	Elevator	Elevator doors and floor numbers	Blue (dark value)	White descriptions of the surfaces of elevator doors are in contrast with the background.
	Fire extinguisher	Fire extinguisher	Red	A white description of the surfaces of a fire extinguisher is used to contrast with the background.
	First aid	Cross and medical supply container	White	A white description of a cross is used to contrast with the dark blue surface of a medical bag.
	Locker room	Front view of a male's head and shower	White	A dark blue substitution of the hair and ears of a male's head is used to contrast with the background. A shower with a dark blue shower head and black water droplets, spaced at various distances, appears in front of the figure.
	Lounge	Chair, table, and lamp	Green (dark value)	White description of the surfaces of a chair, a lamp, and a table are in contrast with the background.
	Refreshments	Typical food items purchased at a concession	Brown (dark value)	Contrasts of brown and white are used to describe three typical food items purchased at concessions.

Table 1. (Continued)

Area	Service or activity	Symbols	Background color	Interpretation
Security	Front view of a male's head and police hat	Blue (dark value)	A silhouette of a male's head and the surfaces of a police hat are described in white to contrast with the background.	
Smoking areas	Smoking pipe	White	A dark brown description of a pipe and brown outlines of smoke are in contrast with the background.	
Stairways	Stair steps and railing	Brown (dark value)	A white description of a series of stair steps, with a railing above them, is in contrast with the background.	
Telephone	Telephone receiver	White	A dark blue outline of a telephone receiver is in contrast with the background.	
Ticket office	Human hand and ticket	Brown (dark value)	A white description of a hand holding a ticket is in contrast with the background.	
Water fountain	Water fountain and water	White	A dark blue description of a water fountain receptacle is in contrast with the background. Above the receptacle, a water spout pouring water from it is outlined in dark blue.	

Plate I. Photographs of signs created for athletic activities

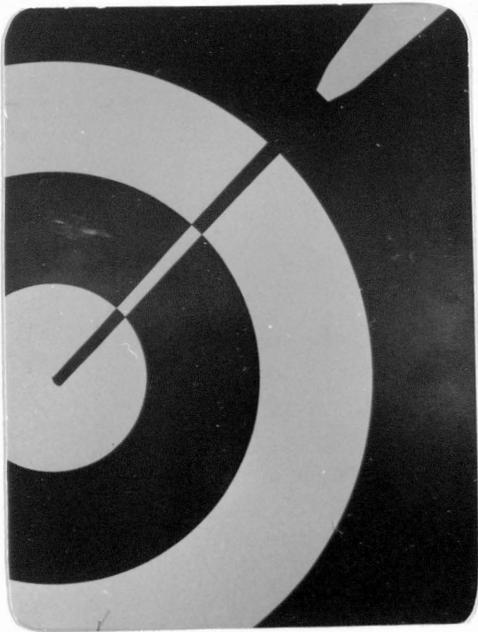


Figure 5. Archery

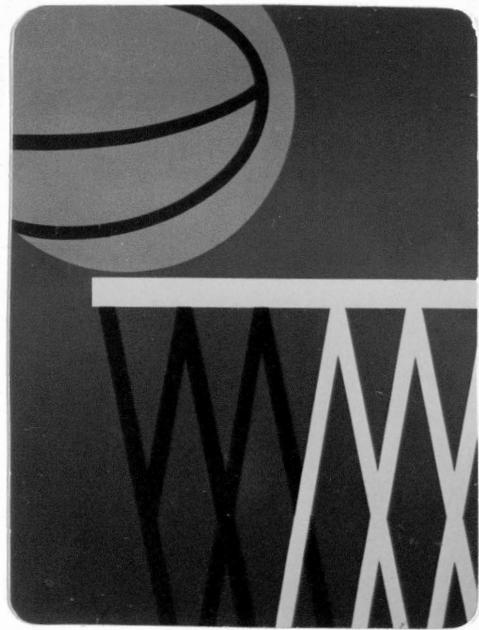


Figure 6. Basketball

Plate I. (Continued)

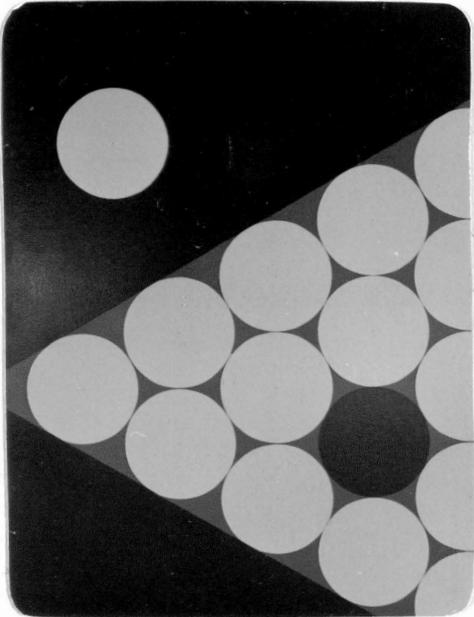


Figure 7. Billiards

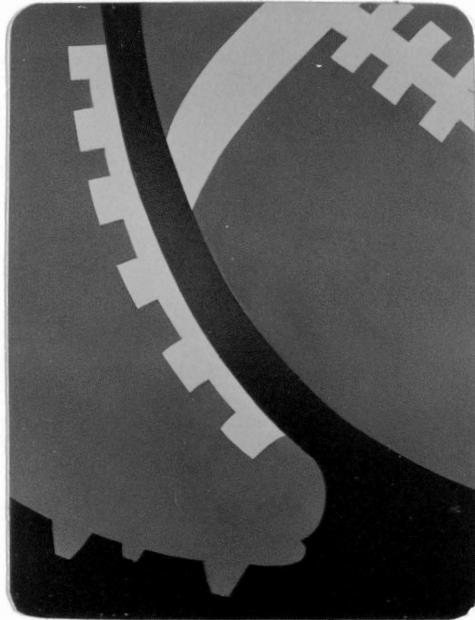


Figure 8. Football

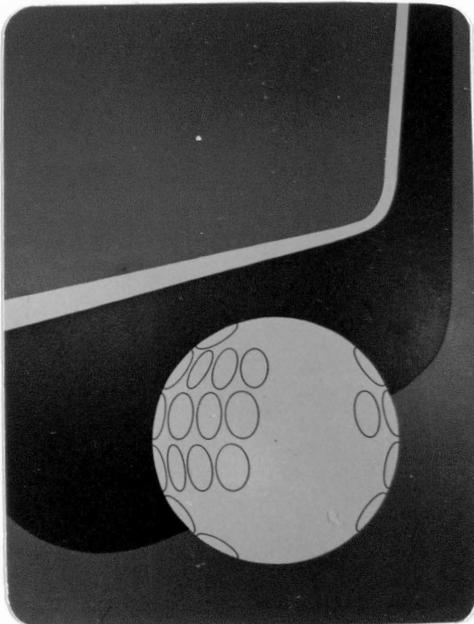


Figure 9. Golf

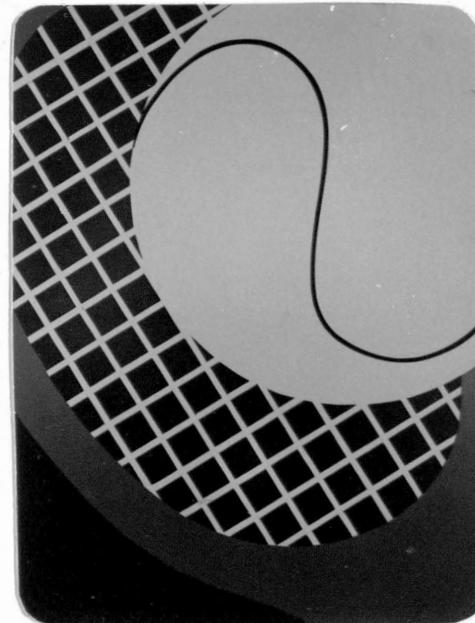


Figure 10. Tennis

Plate II. Photographs of signs created for park services



Figure 11. Cooking area

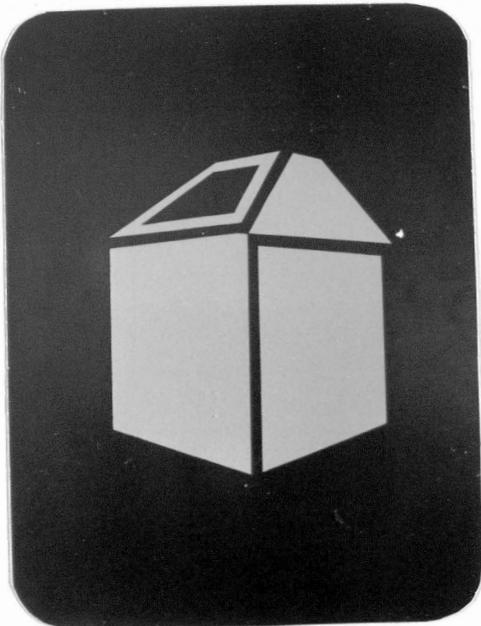


Figure 12. Litter



Figure 13. Men's rest room

Plate II. (Continued)

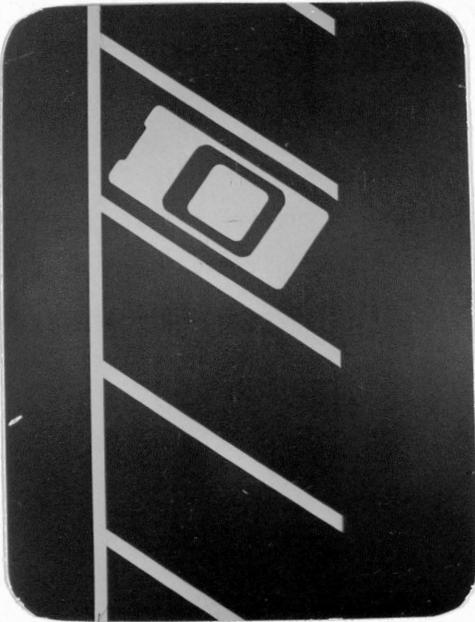


Figure 14. Parking

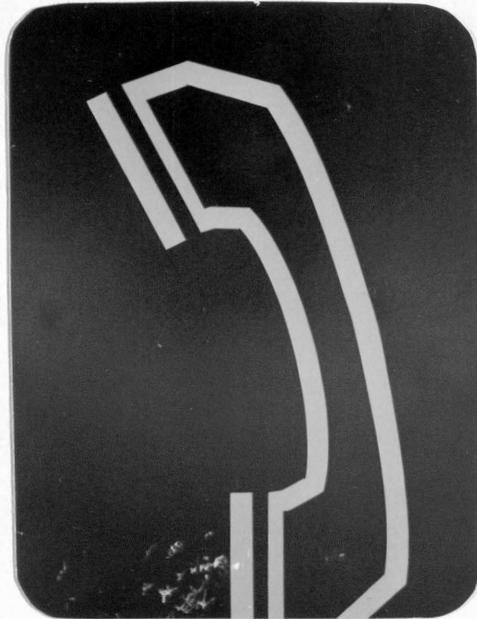


Figure 15. Telephone

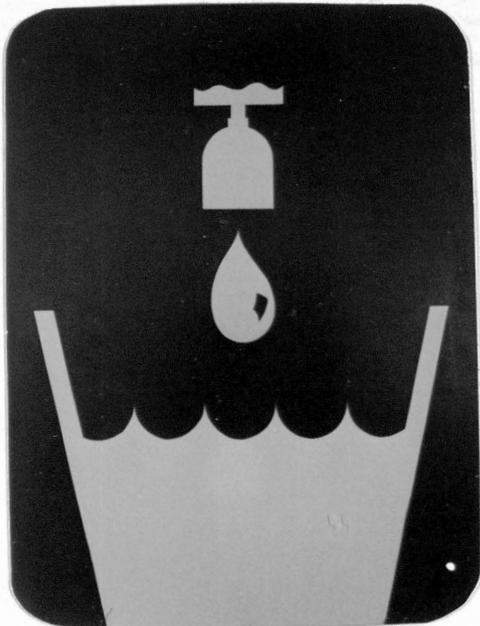


Figure 16. Water

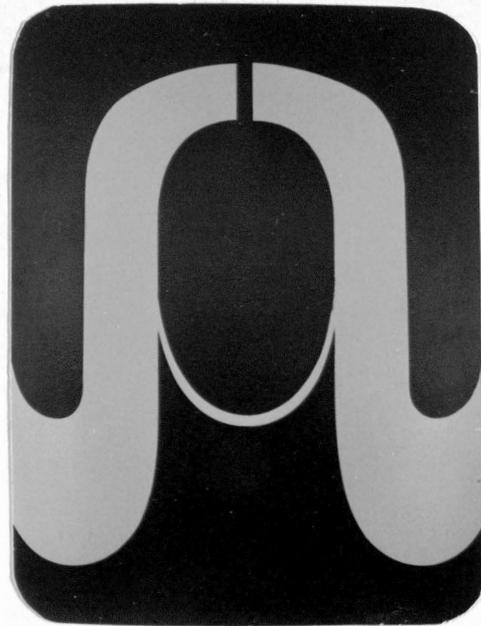


Figure 17. Women's rest room

Plate III. Photographs of signs created for coliseum services

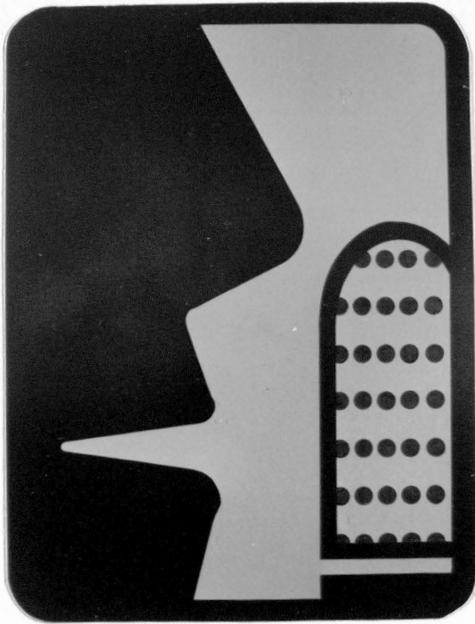


Figure 18. Broadcasting



Figure 19. Cloakrooms

Plate III. (Continued)

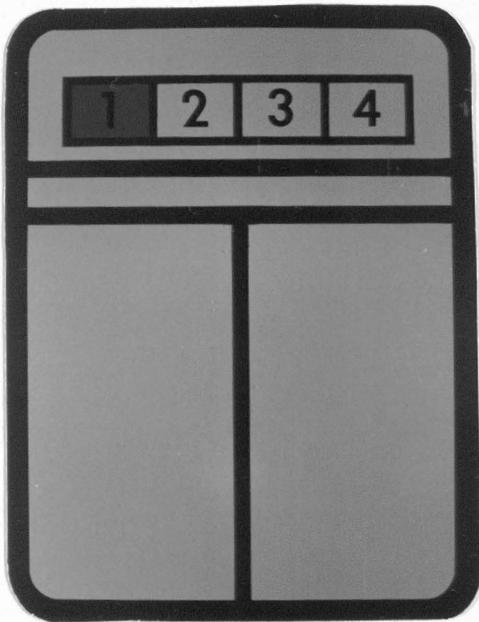


Figure 20. Elevator



Figure 21. Fire extinguisher

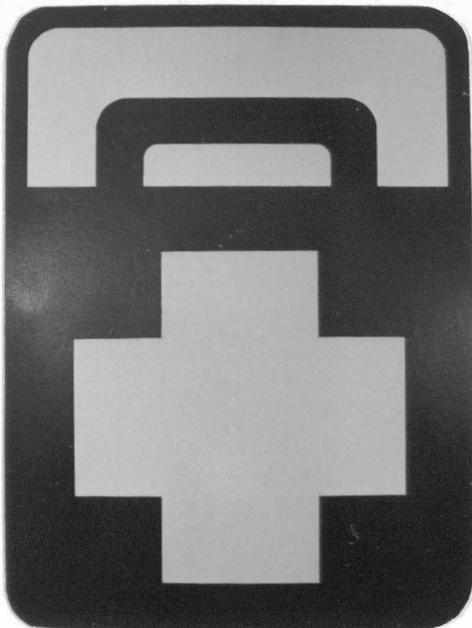


Figure 22. First aid

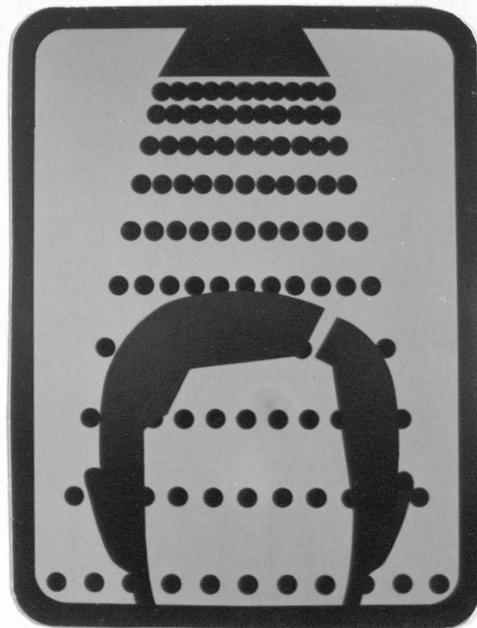


Figure 23. Locker room

Plate III. (Continued)

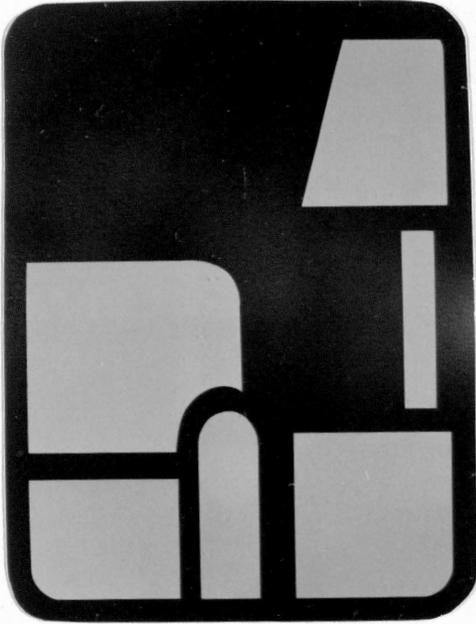


Figure 24. Lounge

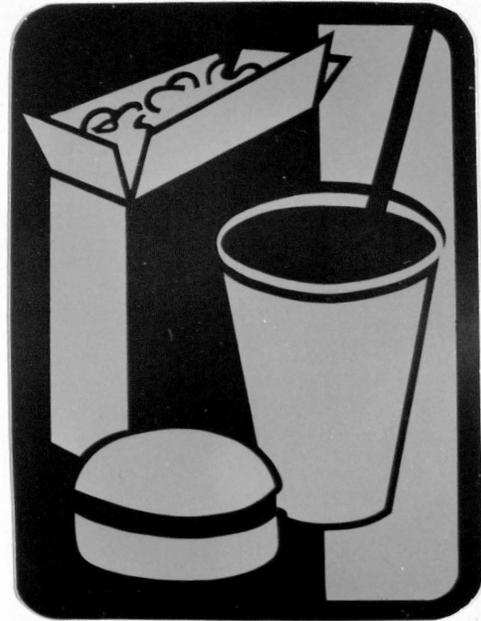


Figure 25. Refreshments

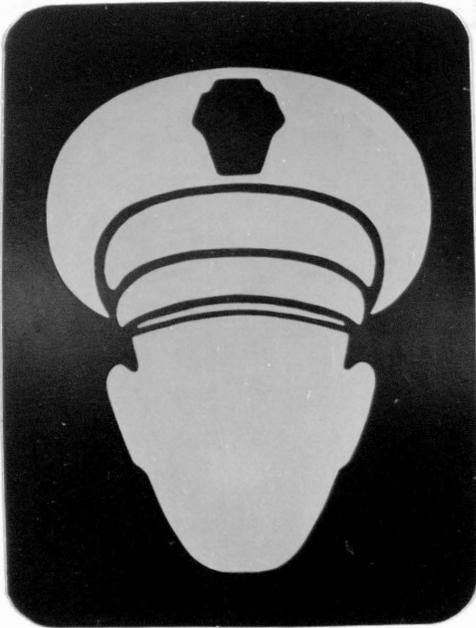


Figure 26. Security



Figure 27. Smoking area

Plate III. (Continued)

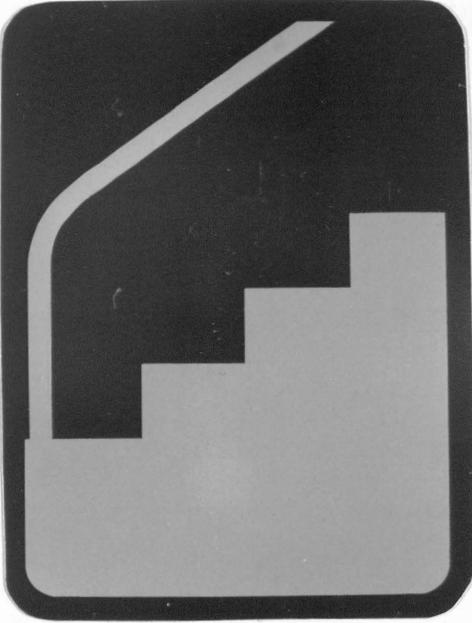
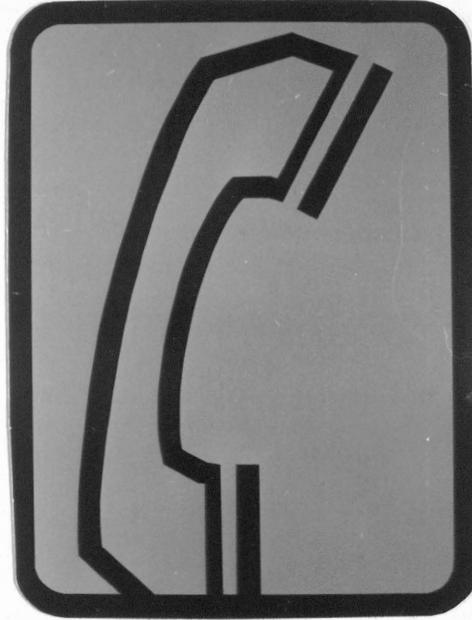


Figure 28. Stairway



Figures 29. Telephone

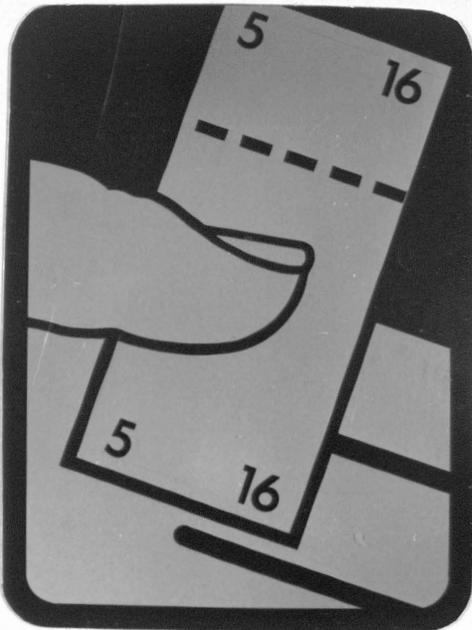


Figure 30. Ticket office

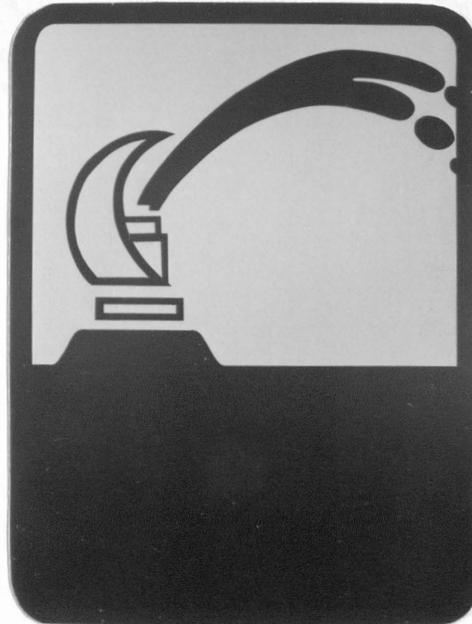


Figure 31. Water fountain

VI. SUMMARY, CONCLUSIONS, AND IMPLICATIONS OF THE STUDY

The growth of graphic signage has been slow and rather spasmodic. This situation is largely due to the variety of the contributors, the wide range usage, and the lack of uniform regulations and restrictions.

The technological innovations that have made it possible for people to have more money and more leisure time have increased the need to provide international visual signage for the convenience of international travel and international business. This need for international communication underlines the concept stated by Marshall McLuhan, "the medium is the message."

Future innovations in the field of realistic graphics are limitless. Some of the areas that would very easily lend themselves to applied graphics would be consumer information concerning nutritional labeling; care of textiles; and care plus operational manuals for household equipment, cameras, and cars. Symbols could be developed to assist people in becoming familiar with the metric system. Public service programs of educational television might find the media of symbols an acceptable visual route to learning. Subway systems and banking operations could improve their services to customers by identifying symbols used for specific activities within their respective systems. The writing of brochures identifying international symbols could be prepared for and distributed by travel agencies, automobile clubs, and gasoline companies as an educational service to their clientele.

Future studies in the area of signage need to be explained to reinforce and evaluate the acceptance of this form of communication. Some

examples of studies to be researched would be: (1) the use of color as a variable with the same symbol form; (2) the use of the symbol form and color with variation in the value and intensity of the color; (3) the acceptance and interpretation of the given symbols within a culture as well as cross culturally.

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