

A poster at a scientific meeting is an enlarged graphic display containing a title, the authors' names and institution, and text and figures explaining research. This form of presentation was developed as a way to handle the increased size of meetings and the growing number of presenters. Where formerly all information was conveyed in 15 minute talks, now there is a choice of talk or poster or posters only. This method of presentation has advantages and limitations.

Some of the *advantages* of posters are

- They can be studied at leisure or quickly scanned.
- They offer personal contact with interested viewers.
- They can be seen as a whole entity.
- They can be more informative than a talk.
- It is a *visual medium* and excellent for illustrations.

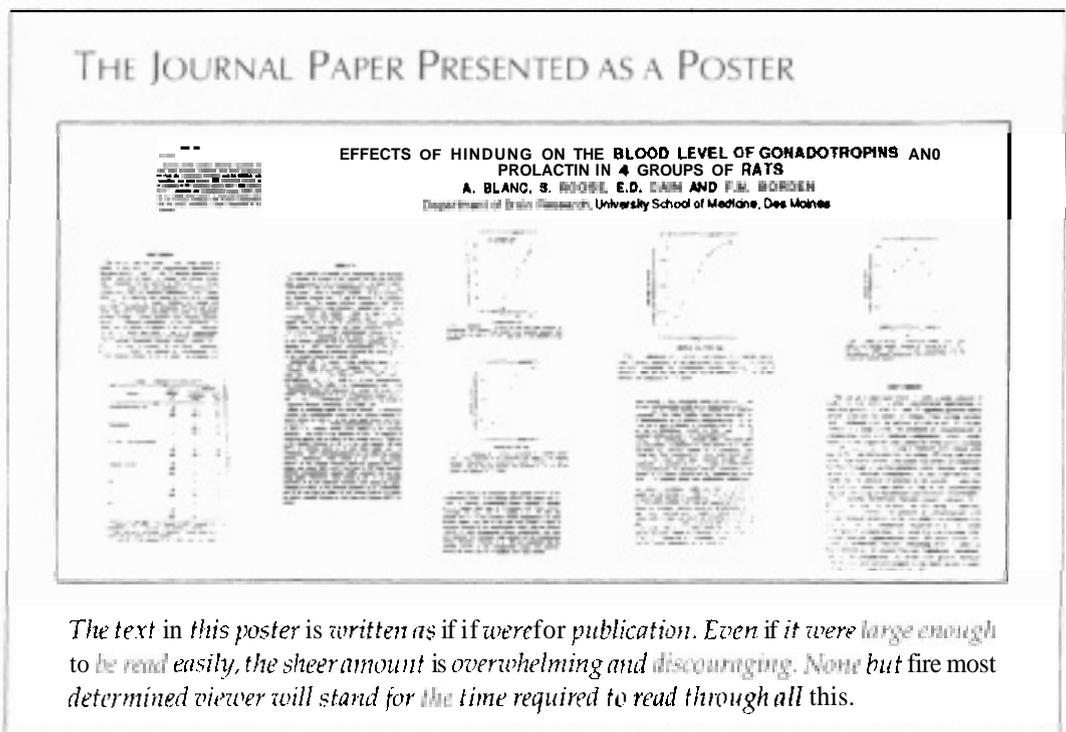
Some of the *limitations* of posters are

- The audience is not captive but **must** be attracted to the presentation.
- The viewer is not comfortably seated.
- Space is limited, so the poster must be selective.
- Text and **figures** must be large enough to be seen from a distance of 3 to 4 feet.
- Posters take more time to prepare and cost more money than slides.

## PLAN THE POSTER

Planning is **the most** time-consuming and crucial part of the poster. The *amount of information* to be included is the primary consideration.

Unfortunately, many presenters use the poster as an enlarged journal paper.



Sadly, too many scientists think an "information-packed" poster conveys the impression of highly productive research. It does not. The resulting crowded and confusing presentation obscures any central ideas and conveys the message that the research **may** be equally unclear.

**Limit your information.** Get to the heart of the matter and leave out the rest. In planning what you want to say, pick out no more than three points that you think are most important and focus on them. If you can get across even one point clearly and quickly to your viewer, your poster is successful. Remember that you are there to answer questions and fill in details. If necessary, make use of printed summaries for viewers who are interested in more detailed information.

## Poster Instructions

Poster instructions (provided by meeting organizers) have information that is vital to planning, such as size, location, length of time for viewing, information to be included, and often layout suggestions.

For planning, it is essential to know the poster size. Do not take it for granted that all posters are 6 feet wide by 4 feet tall (2 × 1.33 meters). Many are 8 feet wide by 4 feet tall; some are 4 × 4; others may be taller than they are wide. The size of the poster is the first indication of how much to limit the information. The size of the poster also determines the layout.

### POSTER LOCATION



*Poster sessions are located in hotel halls, in hotel rooms, or in cavernous convention halls, as in the figure above. The noise level may be high and the lighting level low, neither situation being conducive to thoughtful leisurely perusal of a poster. This is another reason to limit the information.*

The length of time for viewing varies. An hour is the minimum, 23 hours the maximum. If the poster will be up for more than 1 hour, the presenter is not usually

expected to be there the whole time. This means that the essential points should be clear and easily understood without personal explanations.

Information in the poster includes a banner with the title, the authors' names, and the institution. Sometimes the poster number and the abstract must be added to the banner. The banner is always positioned at the top of the poster, and instructions usually specify that letter height be 1 inch (2.5 cm) or larger.

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### Poster Title

Before sending in the abstract, it is worthwhile to consider how the title will appear on the poster. Lengthy poster titles will discourage the viewer. The first thing that a viewer will see is the title, so it should be brief, informative, and interesting. If a title is enticing or provocative as well, it will attract the viewer's interest.

The following title is lengthy but reasonably informative:

**MECHANISM OF AIRWAY CONSTRICTION AND SECRETION  
EVOKED BY LARYNGEAL ADMINISTRATION OF SO<sub>2</sub> IN DOGS**

However, the following version states the conclusion and is shorter and more informative:

**EVIDENCE THAT REFLEX EFFECTS OF SO<sub>2</sub> ARE MEDIATED BY  
AFFERENT ENDINGS IN THE UPPER AIRWAY**

But the next version is even shorter and, because it is a question, attracts the viewer's attention:

**ARE REFLEX EFFECTS OF SO<sub>2</sub> MEDIATED  
BY AFFERENT ENDINGS IN THE UPPER AIRWAY?**

Even shorter, although perhaps too terse, is the following:

**HOW DOES SO<sub>2</sub> AFFECT THE UPPER AIRWAY?**

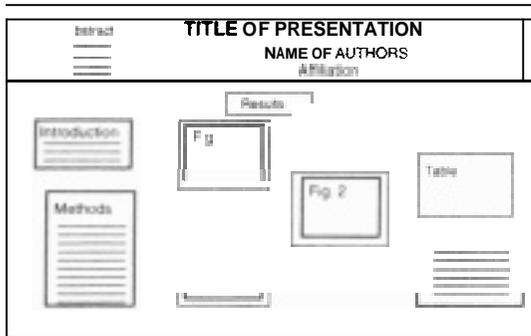
The first title, when enlarged to 1-inch-high letters, will stretch across 5 to 6 feet of width (2 meters or less). With the addition of names of authors and institution, the height of the title will be at least 6 inches (6.66 centimeters). A long title, large enough to be read from 20 feet (6.66 meters), will overwhelm the poster.

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### Abstract

Many meetings specify that abstracts be posted. However, all the information in the abstract should already be on the poster in a large, easy to read, organized form. An enlarged abstract will add nothing to the poster.

## POSTER WITH ABSTRACT



*This is a suggested layout that might be included with the poster instructions. The space allotted to the abstract is in the range of 9 × 4 inches. Because it is posted at the top of the poster, near the title, and cannot be adequately enlarged, it will not be readable and would be better left out.*

The meeting program will usually contain a copy of the abstract, which can be read at leisure. It is a waste of time and money to type and enlarge the abstract. Either leave it out or use a photocopy of it.

### **Rough Layout**

To visualize size and position when planning the poster, sketch a rough plan. This will give a general idea of how much text and how many figures should be included in the poster. This sketch should show approximate positioning and size of figures and text. The square, vertical, or horizontal shapes of your figures and text begin to evolve in a rough layout. Experiment with a number of rough layouts. Try different sizes and positions before deciding which layout suits the information better.

## ROUGH SKETCH



*The poster dimensions are approximately 4 × 6 feet (2 × 1.33 meters), and information is organized into broad topics. The shapes of pre-existing figures are roughly drawn.*

In the rough sketch, start to distill your ideas into only the most important points. Decide which one or two points you want the viewer to understand.

Do not try to increase the number of figures or amount of text by making text and figures smaller or by squeezing them together. If the poster is hard to read or cluttered, it will be ineffective. Look again at the information to see what further cuts may be made. Be ruthless and single-minded. *Never lose sight of the few points you want to emphasize.*

It takes intelligence, even brilliance, to condense and **focus information** into a clear, simple presentation that will be read and remembered. **Ignorance** and **arrogance** are shown in a crowded, complicated, hard-to-read poster.

## POSTER TEXT

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In writing papers, thoughts are expressed in paragraphs full of sentences that are often long and complex. This verbose kind of writing for a poster causes the viewer to struggle to find the core idea. Plan the poster text in short, simple, separate statements. This allows the viewer to scan the text quickly and easily for the important points.

### PARAGRAPH

Low concentrations of  $\text{SO}_2$  cause bronchoconstriction in asthmatic patients. Since low concentrations of  $\text{SO}_2$  may be totally absorbed in the upper airways and since the upper airways appear to be very sensitive to  $\text{SO}_2$ , we have explored the possibility that  $\text{SO}_2$  evokes reflex effects by engaging afferent nerves in the upper airways.

### SEPARATE STATEMENTS

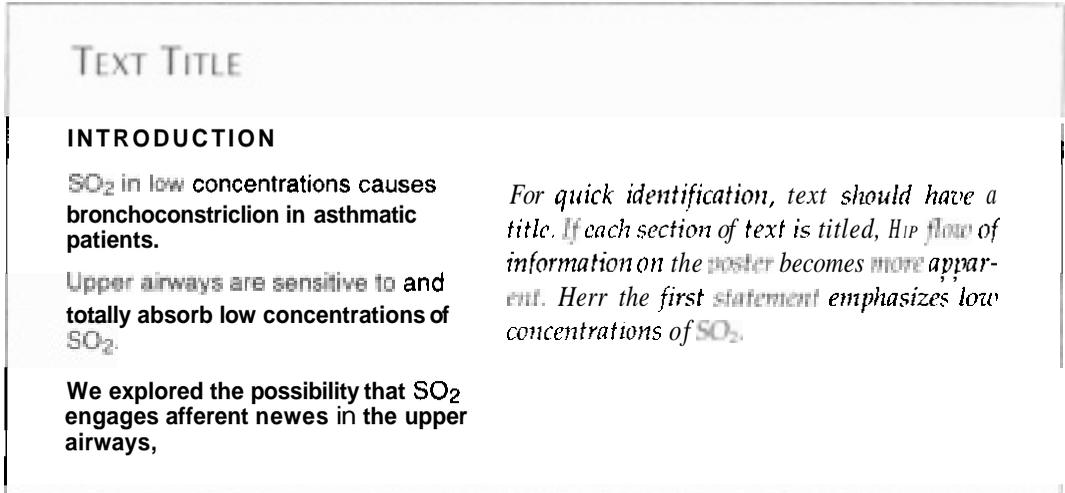
**Bronchoconstriction** in asthmatic patients is caused by  $\text{SO}_2$  in low concentrations.

Upper airways are **sensitive** and totally absorb low concentrations of  $\text{SO}_2$ .

We explored the possibility that  $\text{SO}_2$  engages afferent nerves in the upper airways.

*The text on the right can be understood much more quickly than the paragraph on the left because the statements are separated and simplified. Key words such as "bronchoconstriction" should be put first. Not only does this make it easier to scan text quickly, but it emphasizes important information.*

Text for a poster usually includes an introduction or background, methods, results, and conclusions. Because the type must be large, you will have to cut down the amount of information. Text should also be titled to make the different sections under discussion immediately clear.



Text should be about one-quarter inch high (24 point or larger). On the following page is an example of text size that will give you an idea of how much information may be included in a given space. The title is 36 point bold; the text is 30 point plain.

Try viewing both of these pages from 3 feet. Even those with perfect eyesight will have to admit that the large lettering on the following page can be read much more quickly and easily than the small print.

Remember that many in your audience have reached the "bifocal age" and have **difficulties focusing** on small **type**.

This text can be read without strain from 3 to 5 feet. Viewers will be drawn by its simplicity and size to scan the text quickly for core ideas.

The font in the sample text is Helvetica: a simple, clean, and legible type face. It is a sans serif font, which means that it lacks the fine lines attached to the extremities of the letters. It is also proportionately spaced (some letters are closer together than others), which is easier on the eyes. The title is bold (thick),

## TEXT SIZE

# INTRODUCTION

Bronchoconstriction in asthmatic patients is caused by  $\text{SO}_2$  in low concentrations.

Upper airways are sensitive to and totally absorb low concentrations of  $\text{SO}_2$ .

We explored the possibility that  $\text{SO}_2$  engages afferent nerves in the upper airways.

*Text of this size may come as a shock to those who persist in thinking of posters as enlarged papers. Most posters that you will see in meetings have text that is too small and too complex.*

and the body of the text is plain (thin). This is an excellent font to use for posters because it is easy to read, does not distract from the information, and yet is attractive.

Other sans serif fonts are Univers and Avant Garde. They are shown below in 30-point size to compare with the text on the previous page.

## FONT VARIATION

### UNIVERS

**We explored the possibility that SO<sub>2</sub> engages afferent nerves in the upper airways.**

### AVANT GARDE

**We explored the possibility that SO<sub>2</sub> engages afferent nerves in the upper airways.**

*Univers and Avant Garde are proportionately spaced type. Avant Garde is thinner lined than Univers or Helvetica. Notice the differences in letter shapes and overall looks. All are readable; all are conventionally shaped and will not distract from the information they describe.*

If a serif type such as Times is used, it should be used consistently throughout the poster. The text of this book is printed in Times, a serif type with extra lines on the letters. A serif type is said to be easier to read in extensive, small type, but in the large, economical text of a good poster, there is no difference in ease of reading. A serif type can be distracting, especially in a large title.

Save the use of bold labels for special emphasis, such as the title. Text that is all bold becomes strident and tiring to read. It can also overshadow the figures.

In addition to cutting information and making figures and text large, use simple clear language. Avoid abbreviations and jargon. Avoid tables if possible. If absolutely necessary, make them brief or put them into a handout.

Entice the viewer with clarity, simplicity, and pictures.

## DOES THE POSTER DISCOURAGE THE VIEWER?



## FIGURES

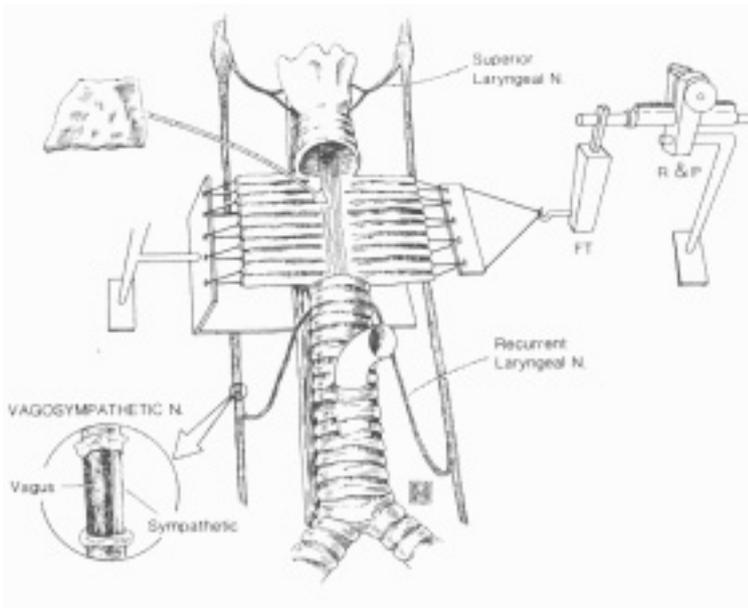
Figures are more impressive than text on a poster. The poster medium is made for pictures. Because we learn much more quickly and easily from pictures than from words, use figures to tell the story and plan the poster around the figures.

Drawings will attract the viewer. They hold the viewer's attention and communicate vividly and memorably. They are especially effective in describing methods.

### METHODS DRAWING

FIGURE 1

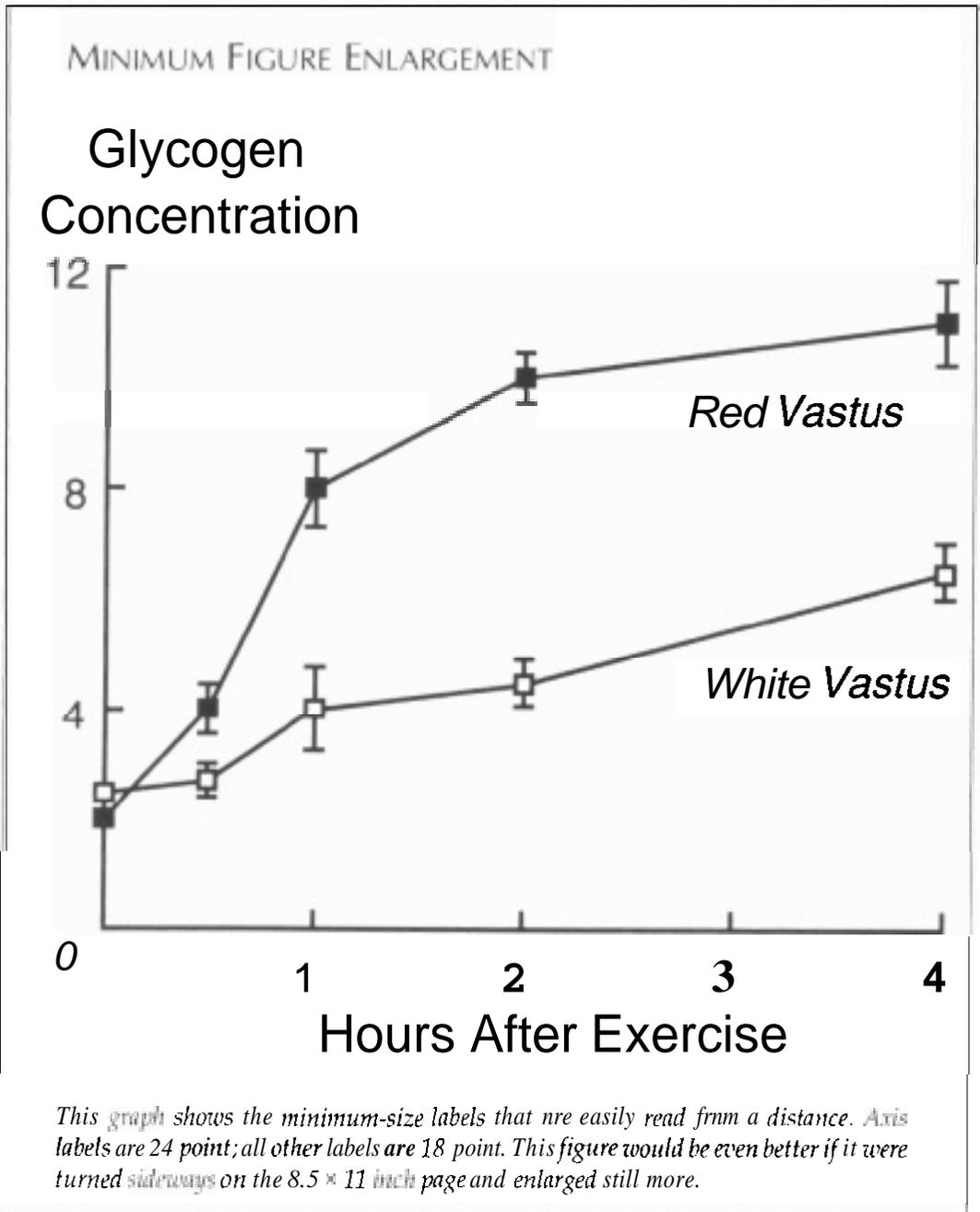
#### EXPERIMENTAL PREPARATION: VENTRAL VIEW



The tracheal segment is connected to a force transducer (FT) and adjusted by rack and pinion (R & P). The metal plate under the cut trachea prevents disturbance of the laryngeal nerve branches. The sympathetic nerve is isolated and surrounded by stimulating electrodes, and contraction is induced by acetylcholine applied to gauze.

*This drawing shows an experimental preparation of the trachea. Although it was designed for a paper, it could be enlarged to make an effective poster figure that could take the place of a long description of methods. A brief explanation of abbreviations and procedure is effectively shown directly under the drawing.*

Graphs must be large. A standard 8.5 × 11 inches is a minimum size. Axis labels should not be less than 24 point. Below is a graph enlarged to a size that is easy to see from 3 to 4 feet. Because of the necessarily large size, information on graphs should be limited and labels should be short.

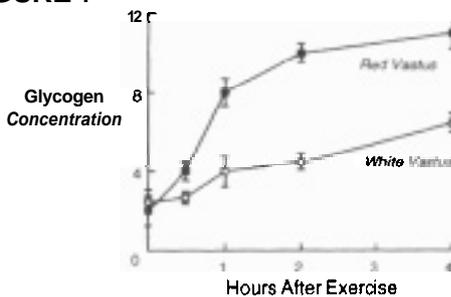


Figures should be numbered prominently for ease of identification and flow of information throughout the poster. If the figure is referred to in the text, it may then be referred to by number. If the figure number reference in the text is made prominent by being bold, all upper case, or larger, it facilitates cross-reference of text to figure, figure to text.

A concise explanation under the figure is helpful for clarification. In a short statement, details that were left out of the text may be included.

## NUMBERED FIGURE WITH LEGEND

**FIGURE 1**



After a swim to exhaustion, glycogen replenishment in skeletal muscle was measured.

*The figure number here will make the sequence of information clear. The text underneath clarifies or emphasizes the point and makes it a satisfying, integrated figure.*

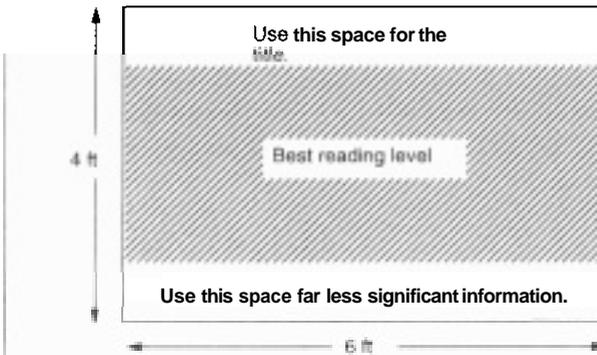
## POSTER LAYOUT

A poster should be organized so that the progression of information is clear, keeping in mind that we read from top to bottom and left to right. Important information should be at eye level. The top of the poster will contain the title, which is usually read on the approach to the poster. The 2 feet of space below the title is at eye level for most and is the area where information is most easily read.

An accurately scaled, penciled layout will help in arranging the information. Make a grid in inches instead of feet or use graph paper. This serves as a blueprint for relative sizes, juxtapositions, and flow of information.

Plan the poster to be read in sections from left to right and top to bottom. For a 6-foot-wide poster, it is best to divide the space into three or four sections. By doing this, each section can be read while standing in one place. The viewer need only move to the right to read the next section. This is especially practical when

## READABLE SPACE



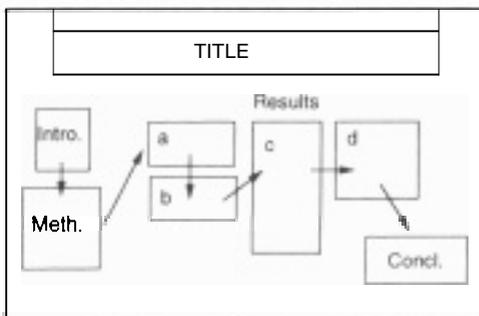
*Notice that some of the available poster space falls outside the best reading level. This is another reason for strictly limiting the amount of information. Plan for space around your text and figures. Do not try to cram the whole space with information.*

there are many people milling around the poster, it makes it possible for several people to read the poster at the same time.

Before the meeting, arrange the poster as it will be mounted to get some idea of how it will look. Check for consistency of style, terminology, and symbolism. Show it to your colleagues and to scientists outside of your expertise. Ask them and yourself if the poster presents a clear, simple, cohesive message.

Many laboratories and groups have poster practice sessions to which colleagues are invited for a discussion and critique. Time should be allowed to make changes before the meeting.

## POSTER DIVISIONS



*Sections are delineated by grouping of figures and texts and by leaving space between the groups. The arrows indicate one way the eye naturally moves through the poster.*

## POSTER PRODUCTION

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There are many ways to prepare and assemble the poster materials, from time-saving, simple, and inexpensive to time-consuming, sophisticated, and expensive. Although your own resources may be a limiting factor, the one thing you should not stint on is your time. Even if the poster is produced by a commercial design studio, the time you spend carefully planning and organizing the information will determine its success. The time you spend consulting with the artist and photographer will make a difference. If you produce your own poster, plan to spend several days on it.

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### **Black and White Enlargement**

The size of *photographic* enlargements is limited only by available photographic paper size. Photographic enlargement is the most faithful to the original. For posters, such enlargements should be printed on a matte surface paper to avoid glare and reflection.

A *PMT* is a photomechanical transfer in black and white. It is printed on a matte finish paper and is useful for enlargements up to 18 × 24 inches. Because it requires no negative, it is less expensive than a photographic enlargement. An 18 × 24 inch-print costs about \$20.

Enlargements by *copying machines* are generally limited to 11 × 17 inches. One-ply bond paper is usually used, although other finer one-ply papers, such as plate finish bristol, may sometimes be substituted. At 100 per copy, this is the least expensive kind of enlargement.

Enlargements may be made by *computer* and printed on a laser printer. Although maximum paper size is 8.5 × 14 inches, paper may be spliced together for any size. Print quality is good, and for anyone with access to a *computer/laser* printer, this is a quick flexible, and inexpensive way to produce title, text, and figures.

*Photo murals* are enlargements of the whole poster. Individual parts of the poster are mounted together in half or third size and then enlarged to the final size on one large sheet of paper. This is rolled up for transport to the meeting, then *unrolled* and tacked to the poster surface.

Paper for this process comes in rolls. Two processes are available: the *stat/negative* process and the photocopy process. The maximum width of paper for the *stat/negative* is 42 inches, slightly less than a 4-foot poster height. The negative costs about \$10, and the print itself costs about \$5 a square foot, so that a 3.5 × 6-foot blow-up will cost about \$115. It is printed on photographic paper.

A photomural done by the photocopy process is printed on light bond paper and undergoes enlargements or enlargements, so the final result may be poor quality. The maximum width of the paper is 36 inches, which is a foot less than the 4-foot poster board. The cost of a 3 × 6-foot reproduction ranges from \$18 to \$36, depending on the copy service.

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## **Text Production**

*Typewritten* text is not a viable alternative for posters unless it is enlarged. However, to go from typewriter-size text to a reasonable poster size means an enlargement of 400–500%, often with extreme loss of quality.

Text that is *typeset* results in enlargements of excellent quality but entails not only the typesetter's charge but an additional cost of enlargement.

*Computer-typed* text, printed and enlarged by the laser printer, is the best alternative. The print quality is good, and changes in text and enlargement may be easily made. A word processing program is most flexible for this purpose, although some drawing programs provide good text options.

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## **Trimming and Mounting**

*Trimming* of figures, text and title may be necessary to save space or to splice pages together. This can be done with an accurate paper cutter or sharp knife against a metal ruler.

For the most basic production, the enlarged, separate text figures and title can be taken to the meeting and tacked onto the assigned board according to plan. However, mounting the separate parts on light board adds body, durability, and color.

*Material for mounting* may be one of the following:

1. Poster board and railroad board are lightweight boards that come in a variety of colors.
2. Mat board is heavier and also available in many colors. It is harder to cut than the lighter boards.
3. Cover stock and construction paper are heavy papers, easy to cut, and available in an array of colors. Although these papers are not as durable as heavier boards, they are easier to transport because they are thinner and weigh less.

To mount the poster to the backing board, use a *spray adhesive* such as 3M Photo Mount™. This coats the paper evenly and is quick and easy to use. The item

to be glued is placed face down on newspaper or other disposable material. This prevents excess spray glue from covering the floor or table surface. The back of the item is sprayed, then pressed into position on the backing material.

Rubber cement takes more time to apply and is not as smooth as spray adhesive. Glue Stic™ is handy for small items but also takes time to apply evenly.

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## Poster Backgrounds

The poster surface provided at most meetings is tan cork board or white composition board. They are neutral to ugly looking. The white background swallows and absorbs the white paper on which your poster parts are printed. In this case, a color background is essential for contrast, emphasis, and clarity.

Often a professionally done poster uses a *modular board background* that covers the entire poster space. Figures are mounted on modules of backing board so that when they are tacked to the meeting board, the pieces form a solid colored background. This is time-consuming and requires expertise in accurate positioning of figures and cutting of boards. The result, however, is a consistent background color that frames the poster text and figures and unites them into a cohesive whole. Different color can be used for specific sections of the poster. This is a way to divide or emphasize poster parts.

Another possibility for background color is *Velcro™ material* cut to the poster size and tacked to the meeting board along the edges. When pieces of adhesive loop tape are applied to the backs of the poster parts, they can be quickly mounted on the Velcro-covered board and just as quickly changed around and taken down.

There are also heavy *seamless papers* in 53- and 107-inch widths in many colors. These papers may be cut to poster board size and tacked to the board. This provides a smooth color background for tacking poster items.

## Color

Color is a great asset in posters. A color background frames and unifies the poster parts. Color keys used consistently throughout the poster make information easier to follow. In addition, color is pleasing and attractive to the viewer.

If possible, use color backing. Apply color to columns in bar graphs with color markers or color film. Use color paper for arrows; use color transfer letters for short labels; use color photographs and drawings. Just make sure they are large.

Although large photographic color prints are expensive, less expensive color prints can be made using the color photostat process or the color copier:

- The maximum size for a *color photostat* is 11 × 16.5 inches and maximum enlargement is 200%. A color slide may be enlarged to this maximum size. In this process, the range of color is fairly subtle, and the background will be a neutral color similar to that of a photographic print. Color contrast may be dampened in this process by the light gray background. A maximum-sized stat costs about \$25.
- The *color copier* uses a laser printing process, and maximum paper size for printing is 11 × 17 inches. Each copy costs about \$4. Color quality in these prints is brighter and more artificial, tending to exaggerate yellow, but the background is the pure white of the bond paper used in this process.

Color printers for *printing computer-generated files* produce brilliant colors. Files must usually be saved in encapsulated Postscript language (EPS), which is built in to most drawing programs, such as MacDraw®, Adobe Illustrator™, and Free-hand®. It is possible to transfer non-EPS files as from graphing programs to a draw program. The cost of an 11 × 17-inch print is about \$18.

*Color photo murals* can be printed from EPS files onto computer paper and cost about \$175. Because these files are generally large, it is preferable to save them onto a mass storage disk for printing.

With the multimedia software available now, it may not be long before a poster will consist of a laptop computer projecting onto the poster board, continually replaying the text and figures, with sound and even animation built in!

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## Transport

Most meetings are held away from home and entail plane travel with its attendant baggage and space complications. Consider this when deciding how to produce the poster. For easy transport, the poster should be lightweight and compact enough to take on the plane. Checking the poster with baggage risks losing or damaging it.

A photo mural can be carried rolled into a 4 foot mailing tube.

Posters mounted on large sections of mat board are awkward to carry, but sections may be cut and taped so that they can be folded to a more compact size. If they will not fit into a briefcase or large envelope, at least cover them with heavy wrapping paper to avoid dirt and damage.

Better yet, use a heavy, corrugated mailing box. These come in a 23 by 13 × 2.5-inch size and can be located under "Boxes—Corrugated & Fiber" in the Yellow Pages.

Separate poster items should be planned to fit into a briefcase or heavy box. Velcro™ material can be folded and put into a suitcase or box, and seamless paper backing can be rolled into a mailing tube.

## POSTER PURPOSE

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Communication of one or two ideas should be the purpose of the poster. The purpose of a poster is *not* vanity or ambition. Unfortunately, in the crowded, noisy, poorly-lit halls for poster sessions, there is often very little communication at all.

Scientists could learn from advertisers. Compare the average scientific poster with the sales exhibits at a scientific meeting. Whatever the agenda of advertisers, they communicate effectively. Advertisers spend large sums of money, thought, and time to present limited information concisely, clearly, and attractively.

Observe and think about what communicates to you, what communicates to your colleagues. If you genuinely desire to teach others through your poster, you will not be afraid to be simple, clear, and creative.