The Almost Universal Language: Graphics for International Documents

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SUMMARY
The explosive growth in international trade and immigration demands developing language-independent documents. More and more communicators are turning to graphics as a universal language. This naive approach can backfire, for graphics are not universal unless expressly designed as such. By relying on images shared by all and by avoiding details that confuse or offend, we can make graphics independent of verbal language and of culture.

In today’s international market we must routinely communicate across barriers of language and culture. Of the 5,000 languages and dialects spoken throughout the world, 100 are routinely used in business and technical pursuits (Dreyfuss 1984). To emphasize this lingual diversity, consider French. The dialect spoken in Paris differs somewhat from that of Montreal and greatly from that of the southern parishes of Louisiana. Further, differences in meaning, style, and emphasis separate the English used in the United Kingdom, Canada, the United States, and Australia.

Even within a single country, products and services must overcome language barriers. For instance, many countries have multiple official and unofficial languages. India’s one-rupee note contains the words “one rupee” in the 15 official languages using 11 scripts (Nakanishi 1980). If current immigration trends continue, it is estimated that by the year 2000 the majority of Canadians will speak neither English nor French as their first language.

And in many areas of the United States, Spanish, Chinese, French, Japanese, Vietnamese, Korean, and other languages are the first or only language of residents. Throughout the industrialized countries, more and more work is being performed by “legal aliens” or “guest workers” who bring their languages and cultural values with them.

WHY USE GRAPHICS? AND WHERE?

If a picture can save you a thousand words, then that same picture can save you another ten thousand words if it is in a document that will be translated into ten other languages.—Herbert E. Vogt (Vogt 1986, p. 330)

Graphics cannot totally replace words. However, with careful design they can bridge barriers of language and culture. In inter-lingual and inter-cultural documents, use graphics to

• Reduce the size and number of editions of
documents. Multiple translations can fit in a single document if only labels and brief annotations need to be translated.

**Graphic with multilingual labels**

- **Reduce translation.** Several of my clients tell me they pay up to U.S. $0.60 per word for translation of highly technical documents. If they translate to more than three or four languages, they spend more translating than originating the documents. Even though we cannot say everything graphically, we can still reduce dependence on verbal language and lessen the possibility for erroneous translation (Jones et al. 1992).

- **Ease learning.** It is easier to see and understand than to see, translate, and then understand because visual images are less ambiguous and more memorable.

- **Improve comprehension.** Those who read in a second language rely more heavily on graphics than those who read in their first language because the understanding imparted by the graphic helps readers translate the text (Rochester 1992).

- **Take advantage of an already existing body of recognizable symbols.** Graphics can help us direct readers through our documents, much like the signs in international airports.

Before starting your graphic, think about your readers. How are their expectations shaped by their experiences of growing up in a particular culture by speaking and reading a particular language?

**Take Reading Habits into Account**

The South African Chamber of Mines designs wordless messages for illiterate miners instructing them to remove rocks from mine car tracks.

How would you read this? How would an illiterate read it?

The sign failed. Some workers began piling rocks on the tracks. They had read the sign right to left (Dreyfuss 1984). Why? People from many nations who are illiterate do not know that you are supposed to read left to right. Neither do people whose first language is Arabic or Hebrew.

The viewers' accustomed reading direction at the direction in which they scan a graphic and its order in which they read a sequence of graphics another example, in the Middle East an advertisement for laundry detergent showed dirty clothes on the left, a box of the detergent in the middle, and clean clothes on the right (Hartshorn 1989). Why did it fail? It failed because Arabic is primarily right to left.

It is not always easy to determine reading direction. Even languages like Arabic and Hebrew that are read left to right reverse direction for pronouns (Merrill and Shanoski 1992). I have even seen a Taiwanese newspaper with text reading left to right, right to left, and top to bottom in columns read from left to right and in columns read from right to left—all on the same page.

**How should we plan international graphics?**

Failure to communicate can result when basic cultural values differ. Every culture has artistic traditions and expectations that embody the basic values of the culture at large.

**International graphics**
If you are communicating to a multi-cultural audience where reading directions differ, make the graphic read top to bottom and use arrows to show sequence and to direct the eye around the graphic.

Assume  \( \Rightarrow \)  Show  \( \Rightarrow \)  and  \( \Leftarrow \)

Consider viewing direction

Values can also be associated with direction. For instance righteousness and power are associated with the right hand in Western cultures. In the Chinese tradition, however, honor dwells on the left hand, and on the right self-destruction and violence (Cooper 1978). Where could this concept become an issue? Consider an advertisement comparing your product with your competitor’s. Where would you place your competition’s product in relation to your own to ensure a favorable effect?

\( \Leftarrow \)  Bad  \( \Rightarrow \)  Good

Western values associated with direction

Consider Artistic Conventions and Expectations

Both visual and verbal communication depend on a common foundation of shared conventions. Studies of African peoples unfamiliar with pictorial methods found that both children and adults required training to recognize familiar objects shown in photographs and line drawings, and they perceived depth only with difficulty and only when overlap was present (Deregowski 1974). On the other hand, Australian aborigines objected to overlap used to show depth and perspective in pictures of birds because the overlap hid a wing or foot (Gombrich 1969).

For the most part, if your audience uses computers and other high-tech products, they understand the standard graphical forms common in Western technical and business documents. It is in the use of symbols and the way objects are depicted where problems arise. The only insurance against cultural miscommunication is testing with expected viewers.

Allow for Different Learning Styles and Rhetorical Preferences

Around the world the preferred style for documents varies. Stereotypes abound: Germans prefer details and background information. The French favor a more formal and authoritative approach. Americans want it short and sweet. Step by step. To the point. The Japanese would kindly appreciate instructions that are presented accurately yet with polite deference to the reader. Middle Eastern students are more familiar with grandiloquent and florid prose, passionate with style. In China the master or teacher lays out philosophical principles—it is the responsibility of the student to infer the details. For a good general reference on cultural differences, see Hall (1990).

I suggest a three-part approach to meet these diverse learning strategies and expectations:

- **Avoid extremes.** Moderation minimizes the confusion and offense any graphic may offer. Strive for a balance between formality and informality. It might be as simple as rounding the edges of a shape, but maintaining the precision of the lines.

- **Maintain neutrality.** Graphics are inherently more neutral in tone and emotion than text. Avoid techniques that give the graphic a definite personality (Rochester 1992). For instance, some viewers may find these icons too cute:

- **Design multi-use graphics.** Design your graphic so that it can be read in different ways for different purposes. An example is a map with numbered items along a suggested route. Those who want a step-by-step procedure can follow the route; but those who prefer to learn...
We can suggest a reading order without compelling it.

on their own can explore. Conceptual overviews and maps that illustrate the general hierarchy or organization of a system or a document are especially helpful (Spragins 1992). Keep in mind, though, that some cultures use different methods of categorization or may even lack a strong concept of categorization (Halio 1992).

There is a fine line between making an image recognizable and making it culturally specific. Pick graphics your international readers can identify; but take care to include only those details that enhance recognition.

Suppress Unimportant Details

Details that could inform one audience can confuse or distract another. For international symbols, design objects "sufficiently abstract that the audience does not have a preconception of their meaning" (Grove 1989, p. 141).

There is a fine line between making an image recognizable and making it culturally specific. Pick graphics your international readers can identify; but take care to include only those details that enhance recognition. Some suggestions:

- Disguise or diminish national differences, like the shape of power plugs (Vogt 1986) or the on-off position of power switches (Potosnak 1988).
- Hide audience-specific details by carefully choosing the viewpoint.
- Use an icon or simplified drawing of a realistic drawing or photograph (Vogt 1986).
- Obscure or omit textual labels on devices. For instance, show keyboards with blank keys.

Indicate particular function keys by position, not by name or label (Jones et al. 1992).
- Show all possible instances if you cannot disguise variable features, such as plugs on power cords (Jones et al. 1992).

You may have to show all instances.

In the end you must use your good judgment and test with actual users.

WHAT ARE SOME PITFALLS TO AVOID?

The symbols we may use to encode meaning or to decorate a graphic can have vastly different associations in different cultures. We must ensure that the different associations do not contradict our intended meaning. We have discussed general way to internationalize our graphics; now here are some specific problem areas.

Initials and Punctuation Marks

Minimize the use of letters, punctuation marks, and other verbal symbols. These signs, though common in Western Europe, would not work as w in China, whose language uses a different set of characters.

Avoid initials and punctuation marks.
Puns and Verbal Analogies

Verbal puns rely on objects whose name sounds like that of the concept. Some examples

For posting data in a table in a relational database.

For the mouse on a complex computer system. In some languages the name for the box that controls the screen pointer is not the same as that of a small rodent.

For Microsoft Excel®. Get it? It is a superimposed X (pronounced “ecks” in U.S. English) and an L (pronounced “ell”).

Probably the worst example of a visual pun is this icon for the oncology department of a hospital. It is a double pun involving Greek and Latin. Oncology is the medical study and treatment of cancer, which is the Latin word for crab. Not everyone got it. Some thought the image was a malignant growth.

Because puns require a subtle knowledge of the language, those who read in a second language rarely get the meaning. Puns do not translate well.

Mythological and Religious Symbols

We do not all share the same religious and mythological symbols. One computer program used this icon of the grim reaper . . .

. . . for a so-called fatal error. What would such an icon mean to someone raised a Hindu, Buddhist, or Zoroastrian?

How might this emblem for a “minor glitch” be interpreted?

Animals

From prehistoric times we have used animals as symbols. By adopting an animal as a totem, we attribute desirable characteristics of the animal, like courage, intelligence, speed, to ourselves. This practice continues today—consider how many governments use the eagle or lion as an emblem.

The problem with using animals as symbols is that we do not all agree on which of its characteristics the animal represents. Consider this online documentation screen that uses the rabbit as a symbol for the copy function (reproduction).

Copying

- To use the Tools menu
- Copying text and pictures
- Copying a button
- Copying a link
- Copying a field
- Copying a card
- Copying a background
- Adding a background

An example:
- Creating a memo stack

From the help facility for HyperCard 1.08 by Apple Computer, Inc.

In the United States rabbits commonly symbolize reproduction as well as sexual promiscuousness and speed. In Germany, however, they might be interpreted as a dinner entrée and in Australia, as vermin. To Americans, dogs are pets; to many Asians, they are food. A piggy bank would be a poor symbol for a savings account in Islamic countries.

Look at these icons. What does each animal signify in your culture? How universal is that meaning?

National Emblems

Do not casually diminish the flag, currency, coat of arms, or other emblems of a country. This can often happen quite innocently. Imagine a symbol of European economic unity that shows a businessman wearing a suit made of the flags of the European
countries. Somebody is the lapels and somebody else the seat of the pants.

If you must use such a national emblem, make sure you show it in the correct orientation and drawn to the correct proportions. Which is the French flag in this drawing?

The answer is neither. The one on the left has the colors in the right order but the proportions are wrong—in both cases the bars are the same width. They should be blue 30%, white 33%, and red 37%. A trifle? Perhaps not to a Frenchman. It is at least a graphical typo.

Colors

Because the symbolic meaning of color varies from culture to culture, ignorance about color associations may cause us to miscommunicate. Designers for the United States Indian Service, for instance, inadvertently biased voting in a Navajo election by using color codes for the candidates. To the Navajo, colors are ranked, with blue being good and red bad. Later, the colors were replaced by photographs of the candidates (Hall 1959).

Colors have cultural associations that come from religion, literature, and graphic arts (Cooper 1978; Dreyfuss 1984; Thorrell and Smith 1990; White 1990). Some examples:

**TABLE 1**

<table>
<thead>
<tr>
<th>Cultural associations of color</th>
</tr>
</thead>
<tbody>
<tr>
<td>Culture</td>
</tr>
<tr>
<td>---------</td>
</tr>
<tr>
<td>Europe and North American</td>
</tr>
<tr>
<td>Japanese</td>
</tr>
<tr>
<td>Chinese</td>
</tr>
<tr>
<td>Arabic</td>
</tr>
</tbody>
</table>

Conventional meanings of colors often vary. In the U.K., first place is often awarded a red ribbon, not blue as is common in the U.S. (Jones et al. 1992).

Does this mean you should never use colors in international documents? No, color can prove especially valuable, as in making logical categories explicit. If you use color, follow these guidelines:

- Make the design work in black and white first. Then add color to make it work better.
- Use color only in technical and business documents and there only where the context does not trigger a symbolic interpretation.
- Clearly define your color scheme and make color codes explicit.
- Test with typical viewers and revise to remove misinterpretation.

People

Depicting people in technical graphics presents special problems. Sights common in one culture may be deeply offensive in another. It is important to remember that standards of modesty vary widely:

- In Western Europe, nudes are readily accepted in TV and print advertisements; however, they are not in the United States (Ogilvy 1985).
- In much of the Islamic world, only women’s hands and eyes may be shown.
- Avoid showing the sole of the foot in the Orient (Holmes 1984). When the city of Atlanta campaigned for the 1996 Olympics, it used a videotape showing the virtues of the city, including its mild climate, illustrated with a scene of barefoot children on a playground. The scene backfired for Oriental viewers, who always wear shoes out of doors but frequently remove them indoors.

Furthermore, detailed and realistic images of people inevitably carry cultural and racial identifiers. Consider Hewlett-Packard’s icon for a software agent, a program that automates separate activities in your computer.
Software Agent from Hewlett-Packard's NewWave®

The sunglasses are, perhaps, to suggest a secret agent. Alternative interpretations were common. I head a woman from Japan refer to it as the “hoodluim” icon. A New Yorker called it the “California Joe Cool” icon.

Is this an icon of data security or of totalitarian oppression?

Avoid cultural stereotypes and overt gender roles. Avoid linking activities with people of any particular gender, race, or age. Cultures differ in the roles women and men play and the jobs they can perform. In much of Europe, Australia, Canada, and the United States, women are found at all levels and in all departments of business, working alongside their male colleagues. This trend, although relatively recent, is so pervasive that a graphic depicting an all-male group of computer users would be thought of as odd or dated.

This equality is not universal, however. Throughout the world, the jobs and roles of men and women differ widely. Even within a single nation or culture, we find extremes. In some Islamic countries, women play little or no role outside the home. In still others, women may fill technical and professional jobs, but may not work in direct contact with men in the same roles. In Pakistan, however, a woman has served as Prime Minister (Grove 1989).

This issue raises an ethical dilemma. By modifying your graphical strategy, are you pandering to the forces of oppression? Resolving this conflict will test your judgment and your courage. You can, of course, design graphics that prominently illustrate your values or those of your culture and “if the savages don’t like it, let ‘em use somebody else’s products.” This extreme fails on two counts. First, if your graphics draw attention—of the censors or the users—to the social relations depicted, those graphics become ineffective in communicating about the product. Second, there is no clear consensus about what are correct values or how to show them. What is politically correct in Northern California may be considered too liberal for rural Kansas, stilted and forced in France, and blasphemous in Saudi Arabia.

In most technical and business publications, the issue is easily avoided by showing people only where necessary and representing them by generic figures rather than realistic photographs or drawings.

Take care with body language. Whenever you show people you tell a story. The way they stand, the way they sit, the arrangement of hands and torso provide powerful cues as to status, respect, and power. Unfortunately, cultures differ in how they interpret these cues. Furthermore, relationships among co-workers and between workers and supervisors vary greatly around the globe (Boiarsky 1992). Take the simple act of crossing your legs. A well-known Thai journalist and political reformer was ejected from Parliament for sitting with her legs crossed (Axtel 1991). Princess Diana made news by sitting in public with her legs crossed at the knee, rather than at the ankle as is always done by Queen Elizabeth II (Axtel 1991). Many American men consider the practice of crossing the legs at the knee effeminate although it is common among European men. Other cultures keep both feet firmly on the floor (Morris 1977).

In this icon is the figure waiting to ask a question, hailing a taxi, delivering an insult, or giving a Nazi salute?

Avoid using hand gestures. The simple fact is that there is no configuration of the human hand that is not an obscene, rude, or impolite gesture somewhere in this world (Axtel 1991). Consider the various meanings of a few gestures common in the USA:

How do computer users around the globe interpret these icons?

A favorite example of the use of an inappropriate hand gesture concerns General Motors when it introduced its model called the Monza in Greece. GM
took out ads that showed a young woman dressed in blue and white, the Greek national colors, standing with her palm to the audience in the gesture of a traffic cop signaling traffic to stop. In Greece that palm-out gesture is considered obscene (Berlitz 1982). This gesture, which ironically is called the mouitza, dates back to Byzantine times when free men would humiliate new captives by scooping up horse droppings and, using this gesture, rub them into the faces of the captives (Morris 1977).

When you think of using a gesture as a symbol, this image should serve to remind you:

Use hands only to promote clarity. When using hands, show them manipulating a recognizable object. It is as close to a universal language as we have (Jones et al. 1992). However, we must take care that the hands are ones with which the viewer can identify. Some guidelines:

- Show hands only when they are performing a procedure.
- Stylize the hands so they are not clearly male or female.

Create generic hands.

- Do not show skin color or else vary skin color throughout a long document. This is true for showing people as well.
- If a procedure can be performed as easily with either left or right hand, show it being performed with the right hand. In some Arabic cultures the left hand is for unclean tasks.

Try cartoons. Use cartoons, simplified line drawings, or stick figures to depict people but to de-emphasize gender or race. For instance, replace this "yuppie with an attitude"—

with a cartoon, stick-figure, or generic silhouette—

Do not design cartoon characters for humor, for generality. Remember, humor is quite cultural and many people have no sense of humor whatsoever (Jones et al. 1992).

Even better than using a person, create cartoon characters by animating objects from the reader world of work. Pencils, calculators, computer terminals, coffee cups, filing cabinets, copying machines, and even technical manuals are good subjects (Kittendorf 1981). Keep in mind the purpose of your graphic, however. Make dangerous things look fierce and menacing; make helpful things appear safe and likable (Frye 1981).

Provincialism

Landscapes, office decor, clothing styles,Clip and even bodily features vary widely around the globe. Baseball may be familiar in the United States and Japan but not in Romania or Nepal. A win office is a symbol of prestige in the U.S., but indicates incompetence or obsolescence in Japan (Jones et al. 1992). The American rural mailbox is a poor emblem for an electronic mail program in Europe or Japan (Jones et al. 1992).

Electronic mail?

Another area in which we need to avoid provincialism is in data displays. For instance, graphic includes a picture of a monitor showing a spreadsheet program. How are the figures...
formatted? They need to be internationalized as well. Ways of writing dates, time, and currency differ throughout the world. Look at Table 2 for guidelines.

The situation is actually worse because additional formats are widely used. The government may decree one format as standard, businesses may use another, and consumers may demand a third. Canada officially uses metric units. Yet most grocery store signs still feature prices by the pound, ounce, and cup.

In planning the data formats for international documents, allow time to

- Resort alphabetized lists after translation. Don’t forget that collating sequences vary (Jones et al. 1992).
- Label in multiple units of measure. Most documents will need both metric and English units. Some may need even more. A page layout program may need measurements in inches, millimeters, points, picas, ciceros, didos, and agates.
- Reformat names and addresses. The placement of street numbers and postal (not ZIP) codes can vary considerably.

**WHAT ABOUT WORDLESS INSTRUCTIONS?**

We routinely use wordless instructions, and they would seem to be an ideal way to cater to an international market. For instance, wordless instructions on decals attached inside the covers of office equipment have been effective in showing how to load paper, change ribbons and cartridges, and clear a paper jam (Vogt 1986).

However, producing effective wordless

instructions is not easy. Remember the South African Chamber of Mines illustration for the illiterate mine worker? Developing nonverbal instructions requires a visual approach, teamwork, and testing (Brink and Wymant 1985).

Use wordless instructions for straightforward, step-by-step procedures involving simple physical actions. They are not appropriate for conceptual tasks that require branching and looping. Wordless instructions can show how to make coffee; they cannot teach you how to manufacture the coffee pot.

**Example of wordless instructions**

---

**TABLE 2**

<table>
<thead>
<tr>
<th>Typical data formats</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>United States</strong></td>
</tr>
<tr>
<td>Dates</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Time</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Currency</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Large numbers</td>
</tr>
<tr>
<td>Phone numbers</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>
Here is a suggested approach to developing a successful set of wordless instructions:

- Prepare a storyboard with word descriptions of the steps in the left column and photographs of the steps in the right column (Gange and Lipton 1984). Test and revise until the basic instructions work well. You may even want to videotape a typical user performing the procedure and capture individual frames for use in your storyboard.
- Make the reading sequence obvious. Remember that the viewer’s native language may suggest a reading direction other than the one you intended. Clearly indicate whether pictures are read by row or by column and whether sequences go from left to right or right to left.
- Segment the procedure. Box the pictures of a sequence and group them into modules of related steps (Vogt 1984).
- Eliminate unnecessary details that might distract viewers (Zimmerman and Perkin 1982).
- Test the document extensively, and revise it until you get it right (Bring and Wyman 1985).

For conceptual tasks, wordless instructions are seldom sufficient. Even with the cost of translation, there are good reasons to include text with your graphics.

**SPECIAL NOTE:** Write out all safety warnings in English and have them translated clearly (Jones et al. 1992).

Like graphics, text must undergo some changes for the global market.

**Consider the Viewer’s Reading Skills**

The way and extent to which graphics can be read depends on the language skills of the reader.

<table>
<thead>
<tr>
<th>If the reader...</th>
<th>Then design the graphic to...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reads English as a first language</td>
<td>Use English freely.</td>
</tr>
<tr>
<td>Does not read English</td>
<td>Avoid English for any critical distinction. Either repeat what is in the reader’s language or use an alternative graphic to ensure it will be understood without language.</td>
</tr>
<tr>
<td>Will read the document in translation</td>
<td>Use concrete words and short sentence structures to promote more accurate translation. Avoid abbreviations (Hartshorn 1989). Leave room in case more is required in the target language.</td>
</tr>
</tbody>
</table>

**Leave Room for Translation**

As a rule, text expands when translated from English to other languages. This means you must leave extra room for text that will be translated (Hartshorn 1989).

Consider how this menu bar expands as it is translated from English to other European languages:

- **English**: File Edit View Print Help
- **Spanish**: Archivo Editor Ver Imprimir Ayuda
- **German**: Datei Editieren Anzeige Drucken Hilfe
- **Italian**: File Editare Visualizzare Stampare Aiuto
- **French**: Fichier Edition Visualisation Impression
To estimate how much space you will require for translated text, multiply the number of characters in English by the multiplier from this graph:

- **Avoid acronyms, abbreviations, and mnemonics** in the callouts and annotations for graphics. Many terms lack abbreviations in the target language, and some languages do not allow abbreviations (Jones et al. 1992).
- **Avoid jargon, slang, and colloquialisms** (Rochester 1992).
- **Use simple, plain typefaces.** Stylized fonts may make characters harder for international users to recognize (Halio 1992).

### A Checklist for Cultural and National Differences

Table 3 recaps many of the cultural and national differences you may encounter and what you can do to make your graphics more international:

<table>
<thead>
<tr>
<th>Difference</th>
<th>What to do</th>
</tr>
</thead>
<tbody>
<tr>
<td>Racial characteristics</td>
<td>Use simple, abstract figures, devoid of recognizable bone structure or hair style. Use unshaded line drawings of people. Omit any indication of skin color.</td>
</tr>
<tr>
<td>Relations between sexes</td>
<td>Use simple unisex cartoons or stick-figure drawings of people, hands, and faces.</td>
</tr>
<tr>
<td>Clothing</td>
<td>Simplify drawings of clothing to omit seams, folds, buttons, and belts.</td>
</tr>
<tr>
<td>Modesty</td>
<td>Do not show bare arms, shoulders, legs, or feet.</td>
</tr>
<tr>
<td>Gestures</td>
<td>Avoid hand gestures. If you show a hand, show the right hand holding or pressing something.</td>
</tr>
<tr>
<td>Color associations</td>
<td>Define and explain color symbology. Use colors in a technical or business context only.</td>
</tr>
<tr>
<td>Familiarity with graphical formats</td>
<td>Limit yourself to common, well-established formats.</td>
</tr>
<tr>
<td>Sense of humor</td>
<td>Avoid humor, especially puns.</td>
</tr>
</tbody>
</table>

Carefully designed graphics can communicate across boundaries of language and culture. When based on images and concepts shared by all and with no details that confuse or offend, graphics can serve as a universal language.

### References


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To estimate how much space you will require for translated text, multiply the number of characters in English by the multiplier from this graph:

Ways to ensure adequate space for translation:

- Not overlapping the graphic with text (Vogt 1986).
- Leaving plenty of space between labels and within boxes containing labels. Translated labels may expand and longer lines may wrap, causing the text to spill over borders or overlap other parts of the graphic (Jones et al. 1992).
- Arranging all labels, callouts, and other text to appear outside the graphic so that the translated text will fit and not require redrawing the graphic.
- Using large type in English manuals and then reducing the type size when translating to other languages (Brockmann 1990).
- Allowing the window in online documents to resize to accommodate expanding text (Merrill and Shanoski 1992).

One alternative to spacing text labels is to use numbers in the illustration keyed to explanations in the body text. This is a lazy solution because it forces the user to search back and forth between the text and the graphic.

**Make Labels Legible and Readable**

Remember, the hardest text to read or translate is often the labels within a graphic. Design labels for ease of reading with these tips:


