

# HANS JONGSMA

# development communications

manual for non-artists



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An image can tell more than a thousand words Chinese proverb

For Sam

## FOREWORD

Communication plays a crucial role in development programs. Knowledge on local situations, new technologies and information related to various programs, is being shared and passed on as a way to raise peoples awareness and skills on the various subjects.

The effectiveness of communication depends to a great extent on how well the presented materials relate to the environment, problems and aspirations of the people we are trying to reach.

The following innovative system was developed in order to locally produce visual materials that support the training- and awareness raising elements in local development programs. It is an appropriate technology indeed and its beauty lies in the fact that the materials can be relatively easily produced by local people, depicting local situations.

Let the message be the messenger.

Henk Franken Regional Director Plan International SEARO

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# CHAPTER I / Introduction.

Communication between people is as complicated as it is varied. Over the ages people have developed patterns and means to understand each other better, faster and more efficiently.

This development has progressed differently in each part of the world. The people in our world use many different languages and have many different image-traditions, which can may be an obstacle in interpersonal contacts.

Physically different circumstances have also played a part in this. While mountain dwellers will use sound signals (yodeling) to convey messages across long distances, fisherman will do the same by means of a visual sign like light (lighthouse). They have one thing in common, i.e. that all these means of communication are 'etermined by the environment in which they function. So it can be said that communication is not universal; what is common in one culture is not necessarily understood in another. Therefore communication is closely related to with what is

The meaning is in the receiver, not in the message.

known and not with what is seen or heard.

Many people, especially in a Western society, take a picture to be a representation of the reality without realizing that this picture is also a product of an agreement, i.e. a two-dimensional, central-perspective image of a three-dimensional reality. Thus it is not so strange that some people do not understand a picture at all. How else can it be, if you have never seen one before and if such a thing is not part of your cultural background? Means of communication will not be effective before they have been adapted to a local situation. This is true for visual means of communication. The every day visual world of gesture, clothes, surroundings etc. is a constantly present factor. If you want to convey something through, let us say, a drawing, you have to take care that all the objects, clothes and details have been adapted to the environment in which it will be used. Someone in the village of Gasan will find it difficult to identify with the picture of an average American family.

In the medium of transmission, in this case a drawing, you will have to leave out as many things as can impede a message from getting across.

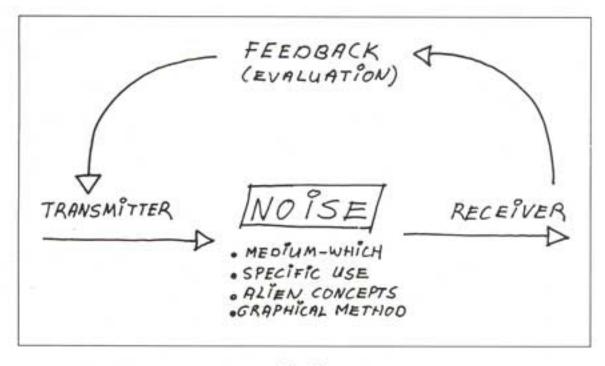


Fig. 1.

A model of communication. The meaning is in the receiver, not in the message.

In the above outline, a model of communication, we find under noise (disturbance) a number of factors that can hinder transmission (fig. 1).

#### The medium.

There are many different visual media, varying from the very simple ones (clothes) to the very complicated (holographic film). The medium itself has little to do with the perceptive notion of the receiver. But the way in which this specific medium is used does. One might be considered more spectacular than another, so that there is a risk that attention is paid to the form instead of the substantial value.

This manual will concentrate on two different media, photography and line-drawing, and their possible combinations.

# Specific use (production).

When producing a visual message, we have to keep in mind the perceptive world of the receiver. In cultures, which have never or very rarely been exposed to images, either by their own background or by modern media, many images will be misinterpreted or misunderstood.

# Specific use (application).

The message may also be disturbed by the way in which the medium is used. For instance flip-charts which are too far or which are shown at too great a distance or under poor lighting, slides projected on a bad background with too much light or in the wrong order. Often one will find aged people with bad eye sight in the audience. In such cases one should go close to the audience showing the visual material around.

## Imported concepts.

A well known example of an alien concept is the drawing of a strongly magnified tsetse fly which was shown by investigators asking the question: "Is this fly to be found in your area?" To which the villagers replied: "No, the ones here are not as big." The thoughtless use of, in this case, the blow-up, the strong magnification, can lead to great confusion. Image conventions from a different culture, like symbols, technical drawings and cross-sections are generally not or barely understood (fig. 2).

## Graphic method.

By graphic method we understand those image-technical factors that influence the image positively or negatively. This concerns things like the use of line, tone, colour and form, as well as image montage, movements or the position of the camera. It should always be kept in mind that it is far more important for our product to be communicative than to be attractive (not necessarily mutually exclusive). In Bangla-Desh, the makers of a poster had the following experience: the picture of a healthy, smiling farmer carrying a bundle of grain had been printed with too much yellow and the people the poster had been intended for thought the farmer was seriously ill.

It will be clear that this graphic method for the production of visuals, intended to support training activities in the rural parts of Asia, requires careful attention to avoid misunderstandings and misinterpretations. We will go further into this matter in the following chapter.

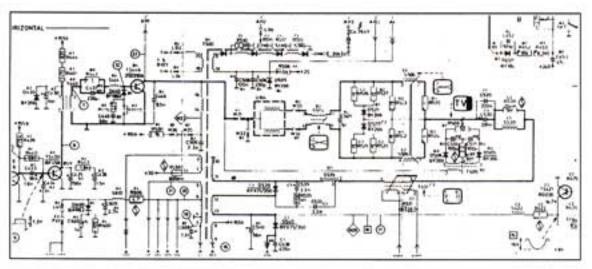


Fig. 2.

Alien concepts will not be understood, unless you are trained to do so.





# Chapter II / Application of the graphic method in photographs and drawings.

Experiences of people in different parts of the world show that visuals produced from photos are usually very well understood. However it also establishes a connection between understanding visual material on one hand and education and/or age levels on the other. An illiterate person for example is inclined not to see the picture as a whole but to fix the attention on details; the sum of these details eventually creates the total image. This may make it clear that it is very important how and to what extent details have been used. Both too little and too much detail, as well as inaccurate details, can easily lead to misunderstanding. In fact, the same goes for language: a verbal message may become too abstract and therefore imcomprehensible due to the lack of details; too many details and examples will divert the attention from what is being said.

One could say that in these cases the QUALITY of the message is important.

## II-1 THE BLOCK-OUT.

As has been said before, too much detail may be misleading and disturbing. To reduce this to a minimum, the technique of the block-out is used. The part of the picture to be used is cut out along the edges and glued to a white piece of paper eliminate superfluous detail (technique used in fig 6). A big advantage of this technique is that you can combine various block-outs on one piece of paper so that it becomes a whole (collagetechnique). Disadvantages are:

- Reproduction of such a block-out is difficult, time-consuming and, in the case of reproduction by printing technique (half-tone), expensive.
- The size is determined by the size of the photographic paper available. Producing visuals we have to keep in mind that the minimum size has to be A3 for it to be usable with a group of people.

# II-2 THE LINE-DRAWING.

It is possible to make a photo-realistic line-drawing on the basis of a picture. To achieve this you do not need any specific drawing skills. This technique will be dealt with in detail later. As in the case of the block-out, we can leave out details in a line-drawing. But we can also add details to a drawing. Thus we can exaggerate certain characteristics of the subject. Naturally, in a line-drawing there is also the possibility of combining things (collage).

It is often necessary to have several copies of a visual, eg. when training occurs in different places at the same time. With the above-mentioned drawing technique reproduction is simple; copies can be made simply and quickly, in any size or quantity.

### II-3 TONE AND COLOUR.

The use of tone and colour in drawings is a complicated matter for people without any drawing skills. If used incorrectly it will do more harm than good. It is more likely to confuse than to clarify (as in the case of the photo of the farmer in Bangla-Desh). However, used in a abstract rather than a naturalistic way, colour generally makes the drawing very attractive and in some cases easier to understand.

## II-4 CUTTING OUT AN IMAGE.

In general, it is better to show the object, action or person in their entirety. The person for whom the picture is intended will be given more points of impact than when only a part is shown; the image is less 'abstract' and will be easier to understand. Of course, in some cases cutting off part of the image may be unavoidable, for example, to show detailed action.

# II-5 THE USE OF OBJECTS.

Depending on the familiarity of the audience with that specific object, depicting an object can sometimes lead to misunderstandings. In general, objects are easier to understand when related to human action, thus showing the function of the object (fig 3). A melon is for eating but a football, a similar shape, is for kicking.

# II-6 SYMBOLS AND ALIEN CONCEPTS.

Symbols are useful for people who know what they mean. They represent a clear and universal agreement (like traffic signs). The same is true of alien concepts. Alien



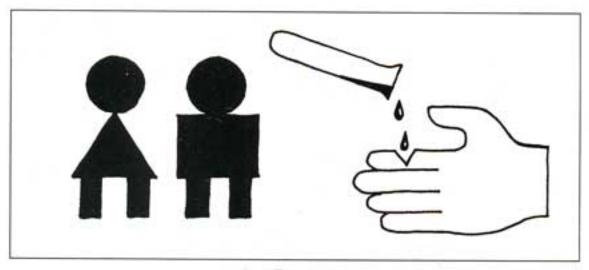


Fig. 4.

Symbols are useful for people who know what they mean.

concepts are image conventions from another culture or from a different level of education within one culture. People who are not aware of such an agreement do not understand them at all. The symbols for the ladies and the gents do not of course look like real human beings either (fig 4). And most people will not understand the blueprints of a house unless they have been trained to do so. Avoid the use of symbols and alien concepts unless you are pretty sure that they will be understood.

## II-7 PERSPECTIVE.

By perspective we understand the systems for suggesting depth in a two-dimensional plane. We have to realize that these systems are also based on agreements; somebody who does not know this will not understand it.

This so-called central-perspective drawing (fig 5) gives the depth-suggestion of two houses of the same size, the house on the right being farther away from the person looking at the picture than the house on the left. This picture may be interpreted as the picture of a big and a small house (literal interpretation). So this type of system has to be avoided as much as possible.

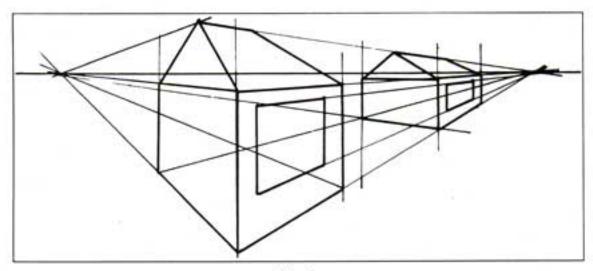


Fig. 5.

Central perspective can be interpreted literally.

#### II-8 ANGLE OF DEPICTION.

Closely related to this is the angle from which the subject is depicted. The perspective angle at which pictures are taken must depend on what you want to show. Find the angle (frontal, side-view) that will show the action in the best possible way. Avoid the use of perspective distortion (fig 6) and place the lens mean between the highest and the lowest point of the subject.

## II-9 THE USE OF TEXT.

An image can be clarified by using text. Text that says the same as the image is superfluous (if the image is clear enough) and may be confusing. For example: it is hard to make clear that a bucket contains dung. In this case one can write 'dung' on the bucket (fig 7).

## II-10 A WELL DETAILED PHOTO.

As mentioned at the beginning of this chapter, the visual 'quality' of our material is of vital importance. Since the drawing technique that we use is based on photo negatives,



Fig. 6.

Avoid perspective distortion, do not shoot from above (bird perspective)
or from below (frog perspective).







one can imagine that it will be impossible to make a well-detailed drawing using a insufficiently detailed negative.

The photos on the next two pages (fig. 8 & 9) show one incomplete visual message and one that shows enough detail to be clear. The first photo has been taken in bright sunlight. The detail 'eyes' and 'neckline' has disappeared because of heavy shading. The highlights have become white spots without detail. The second photo has been taken under different light conditions. Because South-East Asia is situated relatively close to the equator, the sunlight always comes down almost vertically with great intensity so that shadows are very hard. One has to diffuse the sunlight to make the shades softer. There are various ways of achieving this.

- Diffuser screen.
  - Place a piece of white, semi-transparent material (eg. a white sheet) between the sun and the object to be photographed.
- 2. Reflection screen.
  - Catch the sunlight with a piece of styrofoam or white cardboard on the shaded side of the object so that the light is reflected and the shaded parts become lighter. A combination of 1, and 2, is recommended (fig 10).
- Take the pictures in the shade of a house, wall or tree, catch the sunlight with the reflection screen and reflect it on to the object.
- 4. The same as 3, but with the use of a frontal camera flash.

Although the combination of 1. and 2. will give the best results, normally it is not possible to set it up under field conditions. One can use it when circumstances are favourable, for example when one wants to take pictures of different food groups. In practice, however, we will use system 3. and/or 4 (fig. 11).





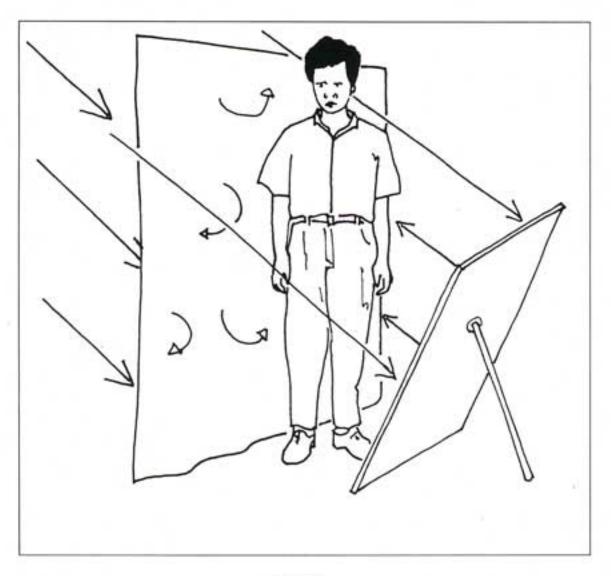


Fig. 10.

Diffusing the harsh sunlight: a combination of diffuser and reflection screen.

### II-11 CONCLUSIONS.

- 1. The quality of the visual message is of vital importance.
- Quality depends on details. Too little, too much or inaccurate detailing is confusing. To take a good-quality picture you will need to influence light-conditions.
- 3. Realism is a basic condition.
- 4. Make sure to find the right angle for depicting your subject.
- Do not use tone (shading) or naturalistic colour. Use colour in an abstract way for its attractiveness.
- Avoid zoom-in. In general it is better to show the action as a whole. To clarify objects, use them in combination with human action.
- Do not use alien concepts or symbols unless you are pretty sure they will be understood.

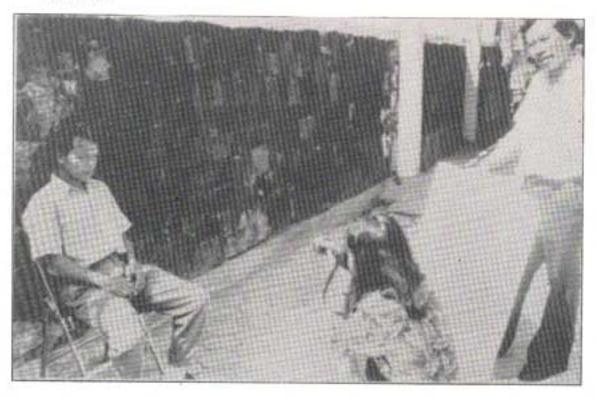
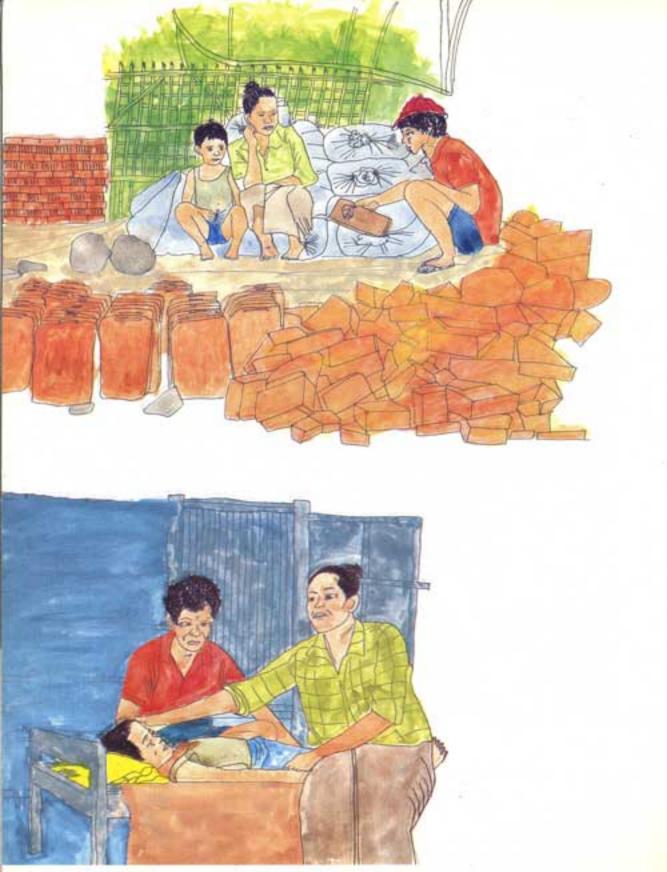


Fig. 11.
Under field conditions we use the shade of a house, tree or wall.



# Chapter III / Producing visual material.

As stated in the previous chapter we will employ a drawing system based on the use of photo negatives (black and white). Therefore this chapter will deal not only with drawing techniques etc. but will also give you some information on photography.

#### III-1 THE DESIGN.

Each visual is based on a plan. It is better to make the plan with some other people.

Together you tend to get more and better ideas. The questions to ask yourself should be:

What do I want to say?

How do I want to say it?

Where are the bottlenecks in my training, in other words: where will I need visual support and where not?

Are there any alternatives and what are they?

What are the problems concerning the representation of the idea? (see previous chapter)
Is it going to be one visual or a series of visuals?

Am I going to use text or not?

When this plan is ready the design is made: where, which size and in what relation to the rest will the various parts be arranged. Next, a list is made of the different pictures to be taken. Try to make a detailed break-down list of all the pictures required. Having to go back to your shooting location and developing a film again is frustrating and timeconsuming.

## III-2 THE DRAWING SYSTEM.

After having produced and developed a good quality negative (see previous chapter) we place it into a slide frame and insert this into a slide projector (upside down). The projection room should be as dark as possible to help you see the details of the projected negative better. We stick the paper or cardboard to the projection wall and by moving the slide projector back and forth we can decide on the size of the subject to be traced. This must be done according to the previously made design. If for example you need to use text you will have to reserve space for that.

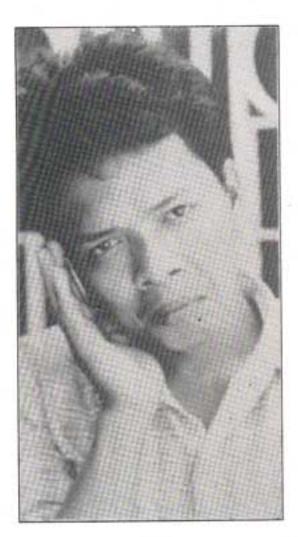




Fig. 12.

Decide whether and to what extent the drawing has to be modified or exaggerated.

Then focus the slide projector and start tracing with a pencil (HB). It is important to take your time with this. Make decisions about which lines to trace and which not. Leave out the details which are not needed in your message and will only distract the attention (eg. weaved bamboo background). Pay extra attention to the focus of the action and the details involved.

After having checked that we have traced everything we need (hand cover the lens of the slide projector) we decide whether the drawing will have to be modified or exaggerated (fig. 12). Then the drawing is ready to be traced in ink. This is done with several sizes of black feltpen of a permanent quality (otherwise it will be dissolved by the use of watercolours later). Finally, the drawing can be coloured.

### III-3 SOMETHING ABOUT CAMERA MECHANISMS.

The camera we employ to take pictures will preferably be a full-automatic type of camera with auto-focus, built-in flash and zoomlens. Our camera is just a tool to provide us with good quality negatives to trace, so the easier to operate the better. Working with fancy equipment will only help you, if you are an inexperienced photographer, to make lots of mistakes each one of which will mess up your film. For example, a blurred or out-of focus negative or heavily under or overexposed one will be useless for tracing purposes.

However, if you have to work with a system-camera (a body with removable lenses) there are a few important points to remember.

Relationship of aperature and speed.

Taking a picture at the wrong speed will usually result in a blurred picture. This is how to avoid it.

- a. Use the A-mode (automatic) of your camera.
- b. Check your exposure meter (located in the viewfinder) for speed.
- c. If speed is under 125 (60, 30, 15 etc.) open the aperature ring enough to set the camera for that speed. Over 125 (250, 500,1000 etc.) is no problem.
- d. If the aperature ring is fully open and you still do not have 125, use a tripod or flash.
- Focus.

Since out-of-focus negatives are useless, make sure you focus your lens carefully. Most system-cameras have systems for focussing in the viewfinder (fig 13).

a. split-image.

For sharp focus, a line in the subject has to cross the line in the cirkel while remaining unbroken.

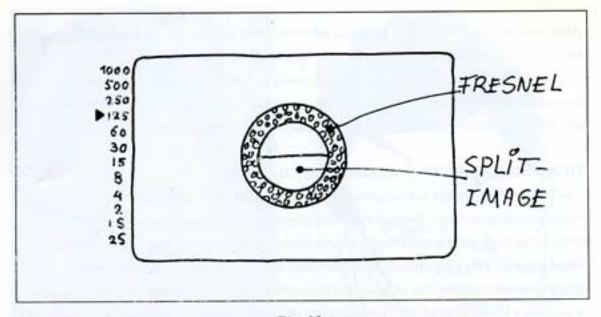


Fig. 13. \*

Systems of focussing in the viewfinder. Take your time focussing!

#### b. fresnel.

For a sharp focus, the dots in the ring round the split-image must disappear.

If you use a zoomlens, first zoom-in entirely, focus and zoom-out untill you achieve the desired composition, without touching the focus-ring again.

Important.

Even automatic cameras with auto-focus need to be focussed on the right subject. In order to do so, direct the centre of your viewfinder on the subject, slightly depress the release button and decide about your composition while keeping the button depressed. Then take your shot. The centre of your viewfinder will make the camera focus (fig. 14). If there is a piece of background in that centre it will focus on that rather than on your subject.

In general: take your time focussing!

## III-4 TAKING PICTURES.

Taking pictures on location can sometimes be rather hectic, since you will have to arrange for all kinds of things and meet all kinds of problems which will divert your attention from the actual picture taking. Therefore it can be useful to have some rules of thumb in the back of your mind.

- Before taking the picture, you will have to decide on the angle that will show the
  action in the best possible way. Avoid frog or bird perspective.
- 2. Achieve the best light conditions.
- Get close enough to your subject to have the best effect for your negative format.
   On the other hand, do not get too close if it means you cut off parts (like hands or feet) that you will need later. Always make composition according to your previously made design.
- Ask the model(s) to pose rather than perform the real action because the movement can result in a blurred photo.
- Your models can sometimes be shy or not quite understand what you want them to do. Make them feel comfortable and give them clues as to what to do. Be a director.

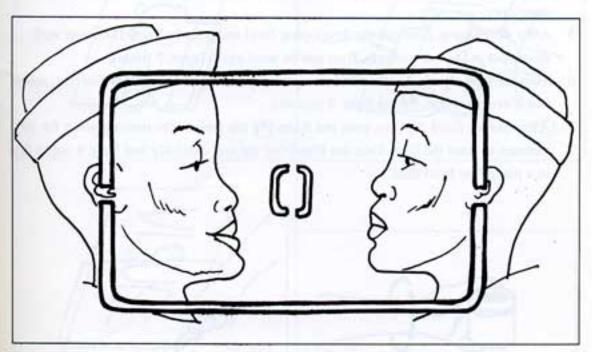


Fig. 14.
In such a situation your automatic camera will focus on the background.

## III-5 HOW TO DEVELOP A B & W FILM.

If there is no possibility of taking your exposed film to a development service, this is how you do it yourself (fig 15).

- Insert the film into the reel and close the developing tank. This should be done in complete darkness. After closing the tank it is ready for use under daylight conditions.
- Use Micro-MF or Kodak D76 developer. D76 should be diluted. One part water and one part D76 (1+1). Each film takes 300 ml. of solution. Temperature of both developer and fixer should be 22 °C.
- Poor in developer, bump the tank gently on a hard surface to release airbubbles from the solution and close the lid. Turn the tank upside down twice. This should be repeated once every 30 seconds (one turn only) during development.
- Developing time for both Kodak T-Max 100 asa and 400 asa: 10 minutes. (D-76 developer). Same time for Fuji Neopan SS 100 asa and 400 asa. (Micro-MF developer)
- After developing, pour out the developing fluid and pour in fixer. Take note well: developer is for one use only, fixer can be used again (appr. 5 times).
- Turn the tank upside down and back repeatedly during one minute. After this, repeat twice every minute. Fixing time: 8 minutes.
- After having fixed the film, poor out fixer. Put the tank under running water for 10 minutes to rinse the film. Take the film from the reel carefully and hang it out to dry in a place free from dust.

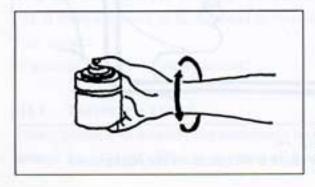
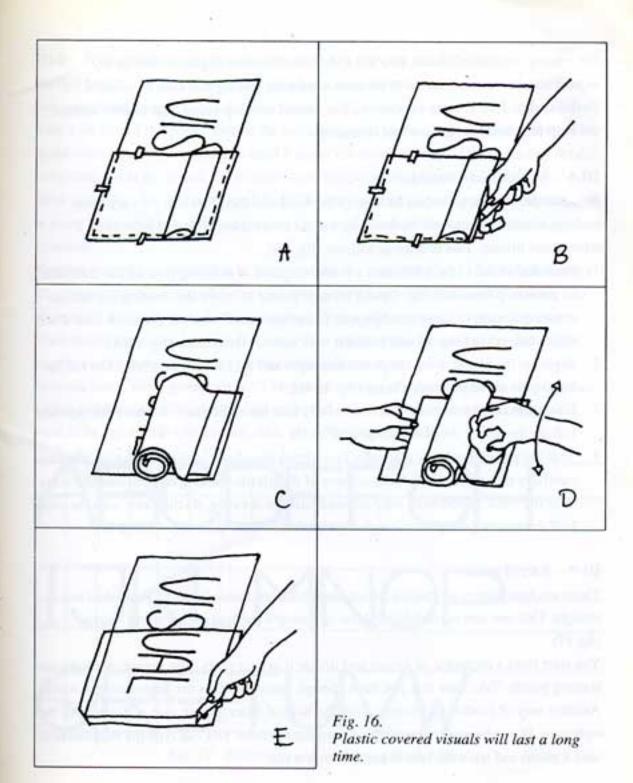


Fig. 15.

The tumble method: turn the tank upside down once every 30 seconds.



For tracing one can of course also use slide film or colour negative film. In my experience, however, it seems to be more confusing tracing this kind of material. Besides, slide film is quite expensive. You cannot develop either type of film without the help of special equipment and chemicals.

## III-6 COVERING A VISUAL.

Because the visuals will often be used in the field and therefore can get very dirty, making it impossible to use them again, we can cover them with self-adhesive, transparent plastic. This is done as follows (fig. 16).

- Stick the visual to the table with a rolled-up piece of masking tape on the underside, to prevent it from moving. Cut off enough plastic to cover the drawing (or half the drawing in case of large sized paper). Cover the visual with the plastic in such a way that 1 cm. is sticking out and fasten it with tape on three sides (fig. 16 A).
- Separate the plastic from the protection layer and fold it back carefully. Cut off the loose part of the protection layer (fig. 16 B).
- Use a soft cloth to rub the plastic carefully into the right place. Remove the tape and roll up the rest of the plastic (fig. 16 C & D).
- 4. Tear the protection layer gradually loose from the plastic while rubbing the plastic carefully into place. Cut off the corners of the plastic sticking out and fold the sides over the back. If you have only covered half the drawing, do the same with the other half, connecting the plastic carefully with the covered part (fig. 16 D & E).

## III-7 LETTERING.

There are many ways of making letters, drawn letters, printed letters: flourished or straight. Our one aim is readability. Here is a simple method of designing letters (fig 17).

You start from a rectangle or square and divide it in four parts. The intersections are the starting points. Take care that you have enough space between the letters and the words. Another way of producing letters is with the help of letter guides, that is if you have the right size. If you have a typewriter or a computer printer, you can type the required text, take a photo and trace the text at any size you want.

## III-8 REPRODUCTION OF AND IMPROVING UPON A LINE DRAWING.

As said before, it might be very useful to have several copies of the same visual. This is how you make a copy.

Take a picture of the poster. Frame the negative, put it in the slide projector and trace it at the same size or another if you need a larger (or smaller) copy. If there are any details to be changed in the visual, eg. if it turns out that something is not understood well, these details can be left out or modified. This method can also be applied if the material is going to be used in a different area and you need to adapt the visuals to the local situation.

Another way of reproduction is to print or draw the negative on A3 size and photocopy this print (although it is sometimes possible to have large size photocopies made). The photostatic has to be made before colouring since colours render a tone on the copy. Thus many copies can be made in a short time and they can be used as hand-outs (for people to take home as a visual representation of the story).

In some cases, when groups are very large and the size of your material is not adequate, a slide can be made of the visual and projected on the wall. Of course, circumstances have to be favourable (dark room, slide projector and electricity).

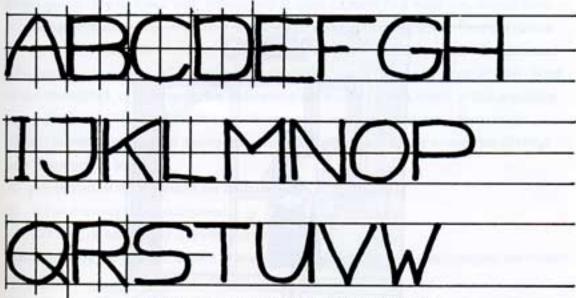


Fig. 17. Lettering: our one aim is readability.







# Chapter IV / Evaluation of visual material.

### IV-1 NECESSITY OF EVALUATION.

It goes without saying that testing the material is always an essential part of the production process. Afterall, what is the use of visuals if they are not or only partly understood? Therefore, even though the material seems simple and perfectly clear, it always has to be tested. One should never just assume that it will be understood. How to find out if visuals are, are not or are only partly understood? First we have to bear in mind that the visuals being used at this moment are meant to go together with oral information, a story. This offers us a good opportunity, after the training, to check if the people have actually understood the story with the help of the visual(s). For this purpose, both the story and the visuals have to be perfectly clear to the people. It is therefore also a good opportunity to put the whole training to the test.

## IV-2 HOW TO EVALUATE IN A SIMPLE WAY.

To find out whether misunderstandings are due to the story or to the visual, we do a pretest first. Try to find a group of testees which can be considered an average of your target group. Try to make your testees feel at ease, explain first what you expect them to do, ask their names, note it down with their age and educational level. Find a location for the pretest and test on a quiet, well-lit place separated from the rest of the audience. This pretest consists simply of questions about the visual (laying in front of you). What is this (pointing), or in case of, for example, a drawing of a sick child: is this a healthy or a sick child? (fig.18). This test is only meant to find out if the outer form of the visuals is being recognized and/or understood. The answers of the testees are divided into 3 categories ie:

- A. All or almost all drawings are understood.
- Some drawings are understood.
- Not any, or hardly any drawings are understood.

Keep notes of the specific details that are misunderstood so you can compare the results later.

After the training comes the actual test. With this test, we have to take the results of the

pretest into account, especially if after the training the same elements which were not understood in the pretest are still not clear. This test consists of asking testees to recount the story that has been told during the training with the help of the visual material. In this case it is more a matter of checking whether the substance of the message has come across rather than whether the visual representation is clear.



Fig. 18.

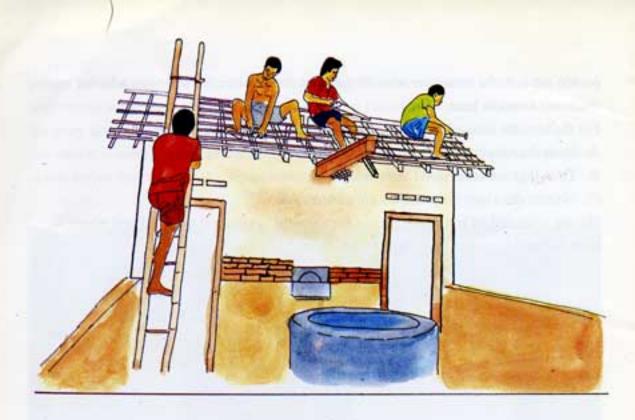
Testing the visual material must always be an essential part of the production process.

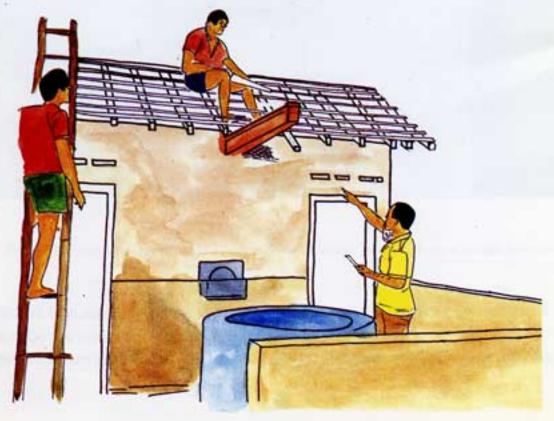
Indeed, both during the pretest and test it is important to avoid leading questions such as: "Do you think that these well-dressed, smiling people with few children have a better life then this big family dressed in rags?" One should not forget that in such cases people are inclined to answer what they expect the inquirer (the one who asks the question) wants to hear.

For the test, the answers are divided into the following three categories:

- A. Both drawings and contents are understood.
- B. Drawings are understood but contents are not.
- C. Neither drawings nor contents are understood.

Having collected all test data, one can compare the results and decide if and where improvement is needed (see previous chapter).





# Chapter V / Illustration or material for discussion.

Visual material can have several functions and can serve different ends.

We may want to show the target group something that is not at hand, eg. a simple brooder used in poultry training (fig 19). It is hardly possible to take the real thing along.

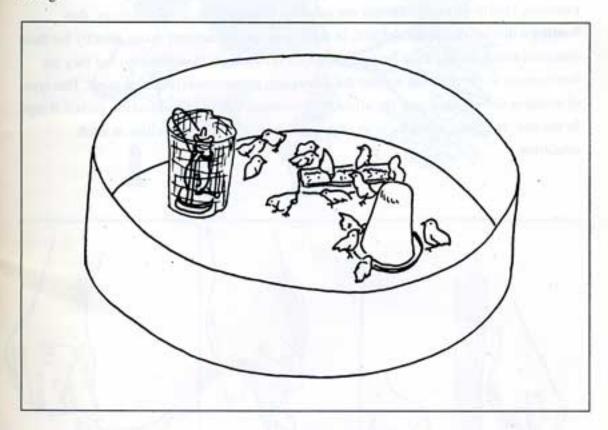
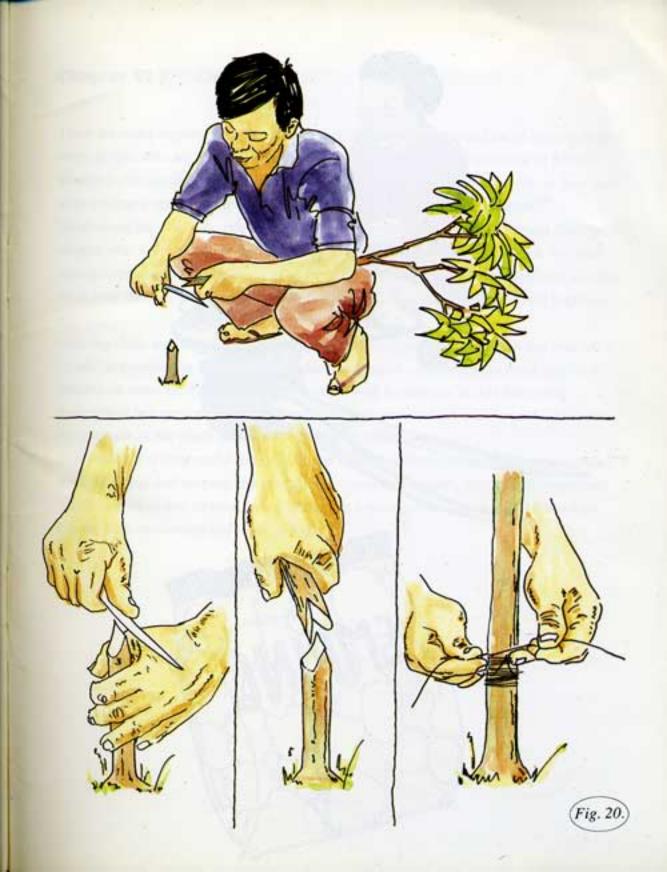


Fig. 19.
Sometimes a visual has to replace the real thing.

The visual can also make a story more clear. You tell people that drinking water has to be covered and at the same time you show a drawing of the action. Of course, people know what it looks like, but the drawing emphasizes the story.

The visual can also be used to show a series of actions or events in the course of time simultaneously (fig. 20).

So far, we have discussed the illustrative function of a visual, ie. visualizing concrete objects, actions and persons from the story. Visual material can also have a different function; it can also give rise to discussion. In this case, the visual is used in an independent, non-illustrative way, to represent a vexed or delicate subject like, for example, family-planning. People are asked to comment on these drawings, thus starting a discussion on the subject. In such cases people are not asked directly for their opinion (which could easily be considered an invasion on their privacy) but they are free to react to the drawing so that the discussion arises from the group itself. This type of visual is directed towards the attitude of communities or individuals to certain things. In the end, changing attitudes is an important aim of training activities in adult education.





# Chapter VI / Conclusion.

There are many arguments in favour of using visuals in education. One of them is that many people who are engaged in training every day, find that the attention of people increases considerably whenever visual material is used. As some villagers on Java said after a training session with visual material: "Why didn't you do this before?"

Good visual material can only be developed by people with knowledge about the subject, who know what are the difficulties. Please note the word developed, as visual material can always be improved or elaborated. As stated before, it is important to really think over the idea behind the product, discuss it with others and if necessary improve it.

Drawing skills are of minor importance; using the technique described in this manual it should be possible for everybody to make drawings of a reasonable to good quality. Besides, in some field offices there are people with experience in this field who participated in a workshop on development communications. It will be useful to involve these people in the whole process as much as possible.

And finally, it is very useful to make a habit of storing the negatives you have produced and cutting out and keeping any photographs from newspapers, folders and magazines which may be of use. In time, you will acquire a visual collection, a visual file which may be both motivating and time-saving.

# LIST OF RECOMMENDED EQUIPMENT AND MATERIALS

## Equipment.

Automatic camera(built-in flash, auto-focus, zoomlens, approx. 35-70 mm.)

Recommended: Yashica Zoomtec 90 (zoom 38-90 mm.) Price in Indonesia approx. \$US 280.

Slide projector and spare bulbs

Slide frames

Tripod

Developing tank Paterson (or imitation like Hitco) 3-reel.

Film picker to extract films from the cartridge (automatic cameras have an automatic rewind that feeds in the film entirely).

Kodak Grey-card

### Chemicals and films.

Kodak T-Max 100 and 400 ASA film and D-76 film developer or Fuji Neopan SS 100 and 400 ASA and Micro-MF film developer

Film fixer (any)

Chemical containers for 5 liters

Thermometer (up to 50 °C)

Container for measuring 1 liter (scale divided into 100 cc steps)

Funnel (medium)

# Stationary.

Drawing paper, 24x34 inch

Drawing paper, approx. 14x20 inch

Feltpens, black, permanent

- \* small point (0.5 mm.)
- \* medium point (1.0 mm.)
- \* bullet point (3.0 mm.)

Watercolours / brushes in different sizes

Colour pencils

Pencils, medium hard

Erasers

Cutter knife

Masking tape (width one inch)

Long ruler

Letter guides