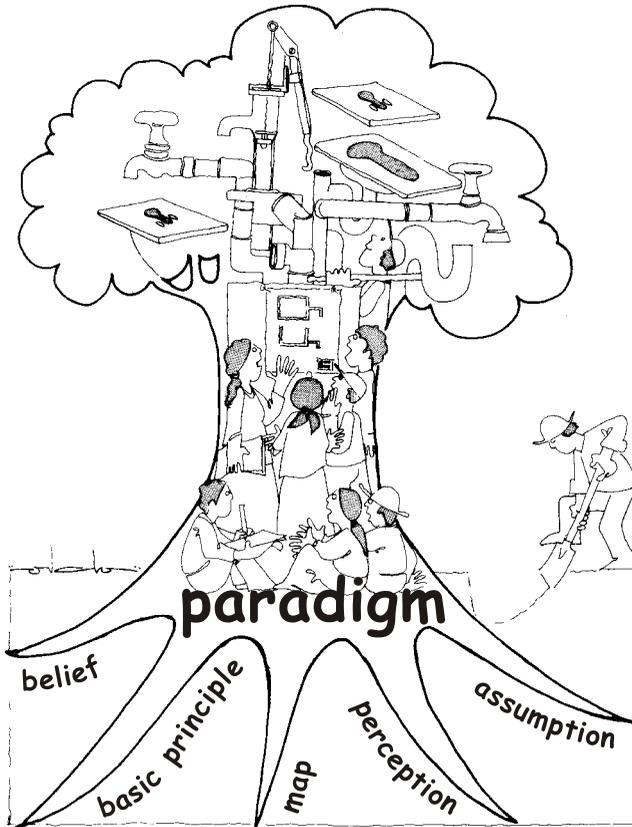# Better solutions through new ways of thinking

- the impact of paradigms on water supply and sanitation

Based on the findings of the 17th Aguasan Workshop 2001

skat_foundation

Better solutions
through new ways of thinking

- the impact of paradigms on water supply and sanitation

How do paradigms - mindsets, beliefs and assumptions - affect the planning and management of water and environmental sanitation projects?

By looking at the roots of our thinking can we find better solutions?

Based on the findings of the 17th Aguasan Workshop 2001

Impressum

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1. Introduction

1.1 The theme of this booklet

This booklet focuses on some of our basic beliefs – beliefs that relate to water supply and sanitation. It concerns the impact that our beliefs and understandings can have on the way in which we plan water supply and sanitation projects. It suggests that by changing some of these basic beliefs we might become more effective in meeting the huge international needs for improved water and sanitation services. There is no doubt that there have been impressive and dedicated efforts in this sector, and that they have resulted in affordable and sustainable services becoming available to millions of people each year, but universal coverage is still far off. It is estimated[1] that world-wide, 1.1 billion people do not have access to a safe and convenient water supply, and 2.4 billion lack suitable sanitation. It may be that a new approach to planning could result in an acceleration of the rate at which adequate quantities of safe water, and acceptable sanitation systems, are made available to people who are currently without.

These fundamental beliefs are compared to the roots of a tree. Roots are usually not exposed or obvious, but they determine the type of the tree, the height that it can reach, and the stability of the tree in adverse conditions - such as drought and high winds. We all have beliefs upon which we base our decisions and our plans. Often we are hardly conscious of these beliefs. Perhaps they are widely accepted by all around us and so they are never questioned or challenged – we can imagine that a pine tree in the middle of a pine plantation is not aware that oak trees exist. But just as underground roots anchor and nourish a tree, so our beliefs are important because they shape and perhaps restrict our thinking and our planning. This booklet argues that our basic beliefs and understandings influence the way we plan and manage water and sanitation projects and operations, and it suggests how we can become more aware of these links.

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[1] Figures for the year 2000 in *Global Water Supply and Sanitation Assessment; 2000 Report*, World Health Organisation, UNICEF and the Water Supply and Sanitation Collaborative Council.

To use a similar analogy, our assumptions are like the foundations upon which we build. Just as a structure that is well designed and constructed is still unsafe if it is built on bad foundations, so plans and procedures that are developed with perfect logic may be unsuccessful if the basic assumptions that they are built on are inadequate.

With the overall goal of improving water and sanitation coverage, and not forgetting the desire of many individuals to be more successful and effective in their own work, a workshop was organised by the Aguasan network to explore the questions of beliefs, assumptions and paradigms, in connection with water supply and sanitation projects.

1.2   What is a paradigm?

Paradigm is an important word in this booklet. Webster's Third Dictionary defines a paradigm as a model, an example or a pattern. In addition to this, the following terms - which may sometimes be regarded as synonyms for *paradigm* - may help to explain how this word is used in this booklet:

- belief – a paradigm is a picture of reality that we accept without necessarily having tested it in an objective way;
- fundamental principle or world view – a paradigm is a way of under-standing or interpreting our experiences and it provides the basis for our actions and reactions;
- metaphor – we use paradigms to represent reality, using concepts that are easy to grasp as a representation of a reality that is more elusive or complex;
- map – a reliable representation of reality that can be used to help us arrive at desired goals

We are not necessarily aware of the paradigms that shape our plans and actions, just as roots are hidden, but their influence is great.

A paradigm that will guide the preparation of this booklet is that using examples helps us to communicate and understand. Therefore, the reader will find frequent use of examples in this publication, drawn from both personal and professional life.

In the next chapter a range of paradigms will be presented, but at this stage it may be useful to provide, as an example, one paradigm that has had a big impact on water supply:

Water is a public good that should be supplied at no charge by the Government.

Whilst there are fewer individuals and governments that accept this paradigm today, it illustrates clearly how a paradigm can shape policy, planning and delivery. This consideration of paradigms is not an academic exercise; it can have very practical and far-reaching repercussions.

In the field of development co-operation it is common for counterparts from different cultural, political and educational backgrounds to work together. If each counterpart assumes that the other operates according to his[2] own paradigms, the scene is set for many misunderstandings and frustrations. It is very helpful if each is aware of his own paradigms and those of his counterparts.

1.3   Purpose and readership

The purpose of this booklet is to persuade readers that it is worthwhile to spend some time looking at the reasons why we do what we do. It also aims to show ways in which we can examine our basic beliefs and consider whether alternatives to these beliefs might produce better results. If this booklet is effective, it will encourage us to uncover our own beliefs and assumptions, and to develop alternatives to what is familiar. Freeing ourselves from restrictive assumptions might make us more innovative and help us to find new solutions.

It is hoped that this booklet will be of interest to all who are involved in the planning and implementation of water supply and environmental sanitation improvements, especially those who really desire to become more effective in their work. Many of the points made relate to much broader issues and are also relevant outside the water and sanitation sector.

Just as a paradigm is never a complete representation of reality, but more like a map for a particular journey, so also this booklet cannot be seen as a complete treatment of the subject. It is an introduction, which, for some readers, will be only a first step to a more thorough understanding of the roles of paradigms in planning and management. The Workshop Report (details in

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[2] For the sake of simplicity, the masculine pronouns *he*, *him* and *his* are used to refer to both women and men.

Annex 1) gives more information for readers who wish to go deeper into this fascinating subject.

1.4 The origin of this booklet

The source of the material in this booklet was an Aguasan workshop that was held in Switzerland in June 2001. The material was developed by means of an effective team effort.

The development of the concept and the preparation of this workshop called for conviction and vision in the workshop preparation group, since the theme was radically different from anything that had been attempted before. It would have been more comfortable and less risky to have been more conventional. The success of the workshop has vindicated this bold initiative.

The workshop was organised in two parts. In the first part, the Resource Person - Elisabeth Stern, a cultural anthropologist by training with years of experience in the university and business communities - presented the concepts that this booklet attempts to transmit. The information and ideas that she presented at the workshop were new and original, developed specifically for this event and purpose, and represent a new transdisciplinary synthesis. She made very effective use of anecdotes, examples, discussion and practical exercises.

In the second part of the workshop, four case studies were presented and used as examples, so that participants could practise using the methods that had been taught and could investigate the relevance of these new approaches to the planning and managing of water and sanitation projects.

The workshop was moderated by Tonino Zellweger, whose skilful and thorough approach forged the participants into an effective team.

The preparation stages of the workshop and the actual event were sponsored by the Swiss Agency for Development and Cooperation. SKAT took the leadership in the planning and organisation.

If this booklet is effective, it will be because of these contributions and efforts.

More information about the workshop is provided in Annex 1.

2.   The influence of paradigms

2.1   In our societies and private lives

We may often be unaware of some of the paradigms that influence our individual lives within our societies, because the same paradigms are accepted by other people all around us and so we are not challenged or encouraged to examine or question our basic beliefs. Living and working in a different culture may expose our previously hidden beliefs, when we are faced with different understandings, interpretations or road maps.

Changing, or even challenging, a paradigm can be painful and unpopular, especially if it is associated with a religious or cultural belief or practice, or if it is linked to the status of a leader or respected figure. If considerable prestige or resources have been invested according to a particular paradigm, there may be a surprising degree of opposition to any attempt to promote an alternative paradigm.

The following examples of paradigms indicate how they can influence our personal lives.

- Views on marriage, particularly the acceptability of divorce and gender roles, result in very large international differences in behaviour and expectations in the context of marriage.

- Individualism is esteemed very highly in many western cultures, whereas in the South there is a much greater degree of social cohesion, inter-dependence, social pressure and family loyalty.

- Respect for age varies greatly from one culture to the next. An extreme manifestation was the case of the co-pilot who would not tell the pilot who was flying a large jet that he was undertaking a dangerous manoeuvre because it was unacceptable to him to suggest that an older person was making a mistake. This has been reversed in many European cultures, where it is not longer considered appropriate for a parent to give advice to a teenager.

- Our voting is influenced by paradigms. If we believe that financial rewards are the only way to motivate people, we may vote for a party on the right of the political spectrum. Alternatively, if we believe that the role of government is to distribute wealth and improve living conditions for the poor, we are likely to vote for a party on the left.

2.2 Paradigms in development co-operation, especially concerning water supply and sanitation

Looking at the development co-operation scene today, it is possible to discern different paradigms which shape the policies of participating organisations. It is also interesting to see how paradigms have changed over the years. The paradigms listed in the box below were identified by a working group at the Aguasan workshop.

Evolution of paradigms and approaches in development co-operation over the last forty years - developed by a working group at the workshop

- Until 1960: Development workers considered themselves as pioneers knowing the best methods for development and the needs of the population.

- 1960 – 1965: Technical assistance was promoted, requiring purely technical expertise. This was the period of turnkey projects.

- 1965 – 1970: Sociological expertise was brought in to help the development specialist to understand the context in which he is working.

- 1970 –1975: It became obvious that development specialists should not be involved practically in the field, but should rather give advice to national and local government.

- 1975 – 1980: Integrated projects must be set up and carried out in order to develop the capacity of the local institutions and communities.

- 1980 – 1990: Institutional building needed strengthening by good governance practices. Linked to this new paradigm, the promotion of women (the gender issue) was seen as essential.

- 1990 – 1995: Decentralisation became the new paradigm.

- 1995 – present: Privatisation of public services was advocated to increase the efficiency of the services provided by local authorities for the populations.

The following list suggests other paradigms and approaches that previously shaped, or currently shape, approaches to development co-operation. They are presented here merely as observations, with no attempt to evaluate them or indicate agreement or disagreement.

- Top-down or bottom up? Should decisions be made at the highest possible level or at the lowest level? This particular issue can lead to double standards because agencies or individuals may feel obliged to

express support for a *bottom-up* approach to planning, while being reluctant or unable to devolve real decision-making authority.

- Trickle-down   In the 1960s it was believed that benefits received by the more prosperous elements of society would trickle down to eventually benefit the poorer people. This paradigm has largely been abandoned as modern efforts attempt very deliberately to target low-income groups.

- Official statistics   In some countries that have had centrally-planned government, there is a strong belief that official statistics accurately reflect reality. The data measured by an outside expert may be rejected if they do not agree with statistics that have been provided by central government.

- Promotion of the private sector   Some agencies seem to have accepted the paradigm that the private sector is always able to deliver better services at a lower cost. There sometimes appears to be little consideration of the context, particularly whether the public sector can provide the necessary regulating environment, or whether there is a sufficient degree of effective competition.

- Corruption   It is now widely believed that corruption is a major hindrance to development. However there are very different understandings of the precise meaning of corruption, especially regarding well established (though informal) practices of charging commissions and distributing a portion of each contract fee.

- Water quality   In the 1970s it was assumed that health risks were reduced by a water supply only in the case that the water is of drinkable standard. Later, research showed that the incidences of some diseases are reduced by an increased availability of water, even if the quality is not up to drinking standard. This research overturned the previous paradigm on water quality.

- Water pricing   As was mentioned in Chapter 1, there used to be a belief that water should be free. Elsewhere governments considered that prices for drinking water should be heavily subsidised. It has been repeatedly observed that this leads to low-income groups having very inadequate access to water, and to their paying a price for their water that is many times greater than the price paid by middle- and high-income groups. As a result paradigms on pricing are being reviewed.

- Ecological sanitation   For decades there has been the belief that water-borne sewerage is the most desirable and satisfactory method of managing human excreta. There is now a growing pressure to change this paradigm to one that encourages a lower consumption of water and the exploitation of the organic matter and nitrogen in agriculture.

The brief discussion here of many of these paradigms indicates change and conflict. Over the years some paradigms have been superseded, often as a result of experience. Such changes may often have not been easy to achieve. Other paradigms are the subject of conflict, because different stakeholders adhere to different paradigms and so see things differently from those with whom they work. The remaining parts of this booklet will consider these issues of change and conflict in more detail.

The list above is not complete, but illustrates how paradigms influence our thinking, planning and expenditures. If we are to improve our effectiveness in promoting access to water and sanitation, we may need to change some fundamental beliefs or paradigms. Before we can change them we need to identify them.

3. Alternative paradigms

This booklet is suggesting that different paradigms might free us to find more effective answers to the challenges that face us in our work. Methods for developing alternative paradigms are discussed in this chapter. However, before we can develop an alternative paradigm, we must understand what our existing paradigms are.

3.1 Recognising or identifying paradigms

If paradigms and basic assumptions are so important for planning and working together, and yet may be like roots under the surface, it is worthwhile to consider how we can uncover them.

Stated objectives may reveal paradigms. For example, if an agency states that its fundamental objective is the reduction of poverty, this is a root that should profoundly influence the growth of policy and plans.

Paradigms may be discerned by reviewing policies, decisions and criteria. In attempting to do this we must remember that different people, even in the same organisation, may be operating according to different perceptions or paradigms.

Paradigms are often exposed in a new environment, where other contrasting paradigms are influential. By asking and listening it is possible to dig up hidden paradigms. This is one argument in favour of travel and study abroad, and one of the benefits of international co-operation, but the desire to discover the paradigm of the other must outweigh the wish to impose one's own paradigm.

Other people may be able to see the paradigms and assumptions that we have adopted more clearly than we are able to see them ourselves. When someone else challenges our paradigms, or substitutes alternative paradigms, we may be helped to see our own paradigms more clearly. This technique was used effectively in the workshop, as will be discussed in the next chapters.

3.2 The pain of change

Anyone who has tried to implement change knows that success comes at a price. Change can be disturbing. Growth is often disturbing, but should not be avoided for this reason. Some of the reasons for opposition to change are:

- Senior managers and administrators may want to spend the remaining years before they retire in a stress-free and predictable way.
- Engineers may prefer to continue working with technologies and methods with which they are familiar and confident, and in which they have superior knowledge. Their respect for their university professors and for the status of the university qualification that they achieved may cause them to hold firmly to the approaches that they learned in university.
- Senior managers and engineers may be reluctant to call into question the foundations of the work that they have done for much of their careers, because they are concerned that their achievements should not be devalued.
- New paradigms of planning and management often advocate decentralisation of power, with a greater role for community groups and more decisions being made at lower level. Public sector managers and others aspiring to positions of authority may oppose the erosion of the authority that they have been anticipating for many years.

Initially, change may be relatively pain-free for the university student. Engineering students from the South who are studying in industrialised countries may quickly adopt the paradigms that they find in this new environment and take them home at the conclusion of their studies. With a *West is best* (or *North has worth*) mentality they may support the use of capital-intensive technologies that are not suited to the economic conditions of their home country. Proud of their overseas qualification, they may be reluctant to see its value challenged by suggestions that what they have learned is not entirely relevant. Students from overseas may also be discouraged by the hierarchical system that they return to, where the junior is expected to listen and obey, but not to offer suggestions. For the returning student, the pain may come as he returns to his own country and integrates into a professional organisation. In this situation the fresh graduate may look forward to the day when he has the authority of a high position, and so in this way develops a growing interest in maintaining the status quo.

Change may be painful and slow, but it may be unavoidable in order to make a greater and lasting impact on poverty, sickness, and unacceptable living conditions. Even when it is considered that change is unavoidable, decisions founded on flawed assumptions may lead to changes in the wrong direction. The next section describes some methods that can be used to examine the validity of existing assumptions and paradigms, and to develop alternatives.

3.3 Discovering alternative approaches

This section describes some of the techniques that were used during the workshop. These techniques help us to escape from the constraints that restrict our thinking, making us more aware of our assumptions and paradigms.

The following quotation from Marcel Proust was taken as the workshop motto:

> The real voyage of discovery consists not in seeking new landscapes but in having new eyes

The task before us is to learn to look at familiar problems with new eyes. We need to stretch our perceptions and imaginations to take a completely different viewpoint, to step outside our usual mindset.

Many people find that they can remember ideas much better if they link them to objects or a picture. Each one of the following aspects of the process of freeing our thinking is linked to an image so that it is easier to recall.

3.3.1 *Struggling free of unnecessary assumptions*

● ● ● Exercise

Draw four straight lines that go through all nine points without taking the pen off the paper or going over the same line twice.

● ● ●

● ● ●

(The solution is shown in Annex 2, but the impact of this exercise is lost unless you first try to solve it.)

In looking for a solution, most of us assume that the lines must be limited to be within the square that is defined by the nine dots. However, there is no reason for this assumption, and it is not specified in the instructions. Putting aside this unnecessary assumption, the problem can be solved.

Exercise

A farmer was taking a wolf, a goat and a cabbage to market. On his way, he was obliged to cross a river in a boat. He was able to take only one item at a time. He was concerned that the wolf would kill the goat and that the goat would eat the cabbage. How could he

cross the river? (There were no trees or rocks on either side that would enable him to tie the animals so that they could be kept apart.)

Again we may struggle with this problem because we restrict ourselves with an unnecessary assumption. If we assume that each item can only make one trip across the river, it seems impossible to find a solution. However, there is no requirement to be bound by this assumption. If we consider that it is possible to take one item across and later bring it back for a short while, we are close to the solution.

In our planning and management we may be restricting ourselves with assumptions that are not necessary. When they are discarded, new possibilities open up. Sometimes a stranger can help us see these unnecessary assumptions.

Einstein said

> Problems cannot be solved within the same mindset that created them.

3.3.2   People see differently

This is a well-known picture, but when seeing it for the first time, one person may see one image and another person may see a different one. Some people see a well-dressed young lady looking away and towards the left. Others see an old lady looking down and towards the left foreground. After a time it is usually possible to see both. (Modifications to the picture in Annex 2 may help the reader to see both ladies in the picture.)

This picture illustrates the point that two people may see the same picture or problem or issue in different ways, and with practice or help we can be enabled to see what the other person sees. It also shows the value of working in groups, where each person may see a particular situation in a different way.

3.3.3   Try another hat
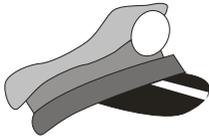
This approach is to deliberately try to view the issue from the perspective of a person with a different background. For example, the problem could be viewed from the perspective of a policeman, so one should imagine putting on a policeman's hat.

During the workshop, participants were asked to state the career they would have liked to follow if they had not been able to take up their current profession. Later they were asked to imagine themselves in this other role and view the issues under discussion from that perspective.

Role plays can be very effective in helping us to see a problem from another perspective. For example, if, in a role play exercise, a water supply engineer is asked to take on the part of a mother in a village, the engineer, using plenty of imagination, may get a deeper insight into the needs of the community and develop a better approach to planning a village water supply.

A simple exercise that enables us to understand to some extent the situation faced by a blind person is to cover the eyes of one person and delegate someone else to lead him around. The situation of the "blind" person has some interesting parallels with the relationship between uneducated villagers and professional experts. For example, it is appreciated by the "blind" person if the guide provides some explanations of where they are and what they may soon experience (such as steps or overhanging branches), and similarly villagers may appreciate explanations of processes affecting them, in terms that they can understand.

This discipline helps us to consider the problem from the viewpoint of someone with other skills, and a different background, training, perspective and set of objectives. This can be much more difficult than it sounds and can require some imagination and effort to think in the way that someone else might think. However, there may be times when the effort of doing this leads to a breakthrough in solving a problem.

3.3.4   What is in the background?
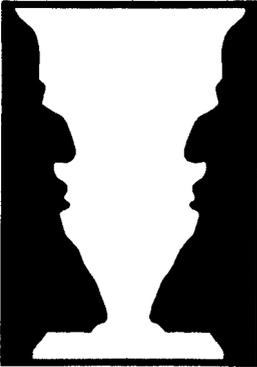
Most pictures present an object as the focus of attention. This object is often in the centre of the picture. In this picture it is an ornamental vase. Often we do not pay much attention to the background.   If we look at the black background of this picture we see the profiles of two old men, looking at each other.

The focus of attention is here called the *figure* and the rest of the picture the *ground. A figure/ground reversal* is when we concentrate our attention on the background.

This picture can help us understand how a problem can be seen in two ways. A figure / ground reversal is helpful in analysing a problem because it helps us to see it in another way, perhaps seeing the problem as someone else sees it. If we take what we consider to be the background to a problem, or its context, and make it the focus of our attention, we may have found a new and helpful way of understanding a situation better. This will be illustrated from the case studies in the next Chapter.

In modern European society, it could be said that young people are the foreground, the *figure*, and old people are the background. This can clearly be seen in advertising and in many television programmes, some of them particularly targeted at young women. The reverse may be true in many traditional societies where the elders (often the men) have the prominence.

The process of planning a water supply project might focus all attention on providing water, with issues such as drainage and sanitation left in the background. It may be important to deliberately consider these background issues. The main concern in a water and sanitation project might be the physical components or hardware, in which case it is important to look carefully at the social and institutional context.

When listening, it may be informative to consider what is the figure (main object of concern) in the speaker's mind, and what is in the background. When someone is explaining a situation to us, they usually concentrate on what they

consider to be the focus of attention (the *figure*). To determine what is the *figure*, the listener can ask questions about the presenters such as

- What are they trying to do?
- How do they do it?
- What is their motivation?
- What aspect is most prominent? What is frequently mentioned?
- Who benefits most from the current arrangements?
- Who or what is the centre of attention?

As we listen carefully, we may identify the actors, entities or items that are omitted from the explanation – elements that the presenter considers to be peripheral or the background because they are regarded as self-evident or not important. When we have identified what has been left in the background, it may be helpful to reverse the presenter's assessment and deliberately give importance to these neglected people or issues. Figure / ground reversals can sometimes be observed when two people are having an argument. Each person highlights what is important to them – the facts that are emphasised by one are ignored by the other.

If the figure and ground are reversed, it is as if the items or individuals that are ignored in the project under consideration become the focus or centre of another project.

3.3.5   Ask unfamiliar questions about the familiar

We may be able to break out of familiar patterns of thinking and look at our paradigms in a new way by asking strange, disconnected questions about some-thing familiar. For example, workshop participants were asked to list ways in which their lives were like a stapler: - *My life is like a stapler in that …*

The first reaction to such a question is often that it is a pointless exercise. In fact, such questioning can be valuable because it causes us to see in a new way something we had previously considered to be familiar and understood. Group discussions to find answers to such questions can be stimulating and searching. As group members dig around for answers they may say things that cause others in the group to react or question.

There is nothing special about a stapler. Other familiar objects or items could be used, such as a bicycle, or a mango tree, or a song.

This type of question forces us to search for strange and new solutions, to think the unfamiliar. When we search for solutions for any problem, we usually search within familiar territory and along paths that we often tread. In many cases this approach may be enough, and it is sufficient to get a conventional answer. But, there are times when we need to find a very innovative answer. An unfamiliar question about the familiar catapults us into really different mental avenues.

This technique stimulates our imagination by using completely different settings, or by changing roles, functions or tasks. Without this strange comparison it would be much more difficult to break free of the conventional, because in general we do not dare to mix up such completely different spheres (abstract things like *life* and commonplace articles like staplers). To search for such links invites us to adventure into unconventional thoughts.

3.3.6   Look hard for alternatives
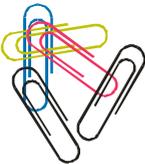
Exercise

Make a list of things that can be done with a paper clip.

(It has been estimated that 90% of all paper clips are not used to hold sheets of paper together, but are used for other purposes.)

One of the greatest hindrances to innovation and efficient design is often the failure to look for alternatives. Too often engineers and planners are content to follow the conventional pattern, or use the first model or approach that comes to mind. If we are forced to look for alternative options or approaches, we will often find one that is preferable to the version that was considered initially.

A particularly important application of this approach is to look for alternatives and variations to existing paradigms. When asked to consider approaches to a problem we are often guided by a prevailing paradigm. By taking time to look at alternatives to this paradigm, including considering the opposite, we may be able to find a more effective solution to the problem, and gain a better understanding of the key elements of the problem. Examples in the next chapter, taken from the working groups at the workshop, illustrate the benefits of this search for alternatives.

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If we question a generally accepted rule, norm or belief, this does <u>not</u> mean that it is wrong or invalid, but this questioning opens up our thinking to new solutions and new understandings. By considering the converse to an accepted rule, we can often see more clearly why it is important and worthy of general acceptance, and appreciate the importance of this rule more clearly. Alternatively, we may find that, though the rule was introduced for very good reasons, conditions have now changed, and the rule is no longer needed or helpful.

3.3.7   The trim tab factor
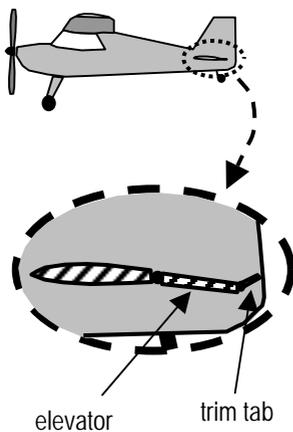
An aeroplane is made to point up or down by raising or lowering the elevators at the back of the aircraft. Along the rear edge of the elevators are trim tabs, which are used to keep the elevators in the correct position for the particular load that the aircraft is carrying. The trim tabs are very small, but if they are not set correctly, the pilot must fight against them all the time to keep the aircraft at the correct height.

Returning to tools for modifying mindsets, the *trim tab factor* is whatever is needed to be adjusted so that the project can move forward in a satisfactory way.

elevator   trim tab

In a project, the trim tab factor may appear to be very small. This factor is the one fact, mindset or component that makes all the difference to the progress of the project. It is often easier to identify in hindsight, (i.e. when looking back) as the factor that allowed the project to become successful. If the *trim tab factor* is correct, the energy and effort required are less.

Example: It was discovered that microcredit schemes were more successful in some cases than others. It turned out that when money was loaned to women, they used all of it to benefit their families, whereas when it was loaned to men , they kept 60% for themselves, and used only the remainder for the family. The trim tab factor, that enabled the project to be more successful, was to loan money only to women.

4. Examples from the workshop

It was mentioned in Section 1.2 that the writer believes that examples are very useful in transferring understanding. The current chapter presents examples based on case studies that were presented to four working groups at the workshop, and the discussions that followed. During these discussions the methods outlined in Section 3.3 were applied to each particular case.

After a presentation of the case to be discussed, each group dug deeper by looking at it from different professional perspectives, considering figure/ground reversals and asking unusual questions. Each group then proposed paradigms which they thought were in the minds of the planners during the development of the particular project. Another group was then invited to challenge these paradigms, proposing the reverse or variations for consideration. Finally each group agreed on three proposed paradigms for future development of the case under consideration, and listed the implications and appropriate next steps.

In the remainder of this chapter, the case studies will be introduced briefly, and a selection of the outputs of the groups will be presented. A more complete account of the deliberations of the workshop can be found in the Workshop Report, about which Annex 1 has more details.

It is clear that an important element in the process is the bringing together of people with different backgrounds and perceptions. The methods presented in Section 3.3 form a useful structure for joint discussion as well as aids for individual reflection.

4.1 Case 1 – Twenty-five years of water supply in Cameroon

4.1.1 Introduction

This case study concerned a village called Sop in Cameroon where a gravity-fed water supply had been built 25 years earlier. It reviewed the social processes currently taking place and attitudes to the water supply. The current objectives were to upgrade the system and to solve problems relating to operation and maintenance (O&M).

The piped supply system in Sop had been implemented by many stakeholders at national, district and community level, including Helvetas. The construction of the system was successful, but the provisions made for ensuring effective management of the operation and maintenance did not prove to be sustainable.

The current centralised Government organisational system is unable to provide sufficient support to ensure good operation and maintenance in the villages, so efforts are being made to involve the community in these functions through monitoring and the creation of social processes. Current challenges include the inability and unwillingness of the community to take on new responsibilities.

The community made a substantial contribution during the construction of the scheme, but this contribution a generation ago does not necessarily result in a current sense of ownership that motivates the villagers today to take responsibility for operation and maintenance.

4.1.2   *Wearing another hat – the perspective from second choice careers.*

(Comments shown in **bold** led to the main conclusions of this group.)

Profession	Opinion
Farmer	The water flows downhill without any pumping, so why should I pay for it? I would be prepared to pay a fee for some extra water that would allow me to grow vegetables, or other **additional benefits**.
Lawyer	It is the government's duty to provide these necessities for us. What right in law has the village water committee to collect a fee from the villagers? Is there a constitutional provision for this?
Nurse	While the system is working the water is safe to drink, but what happens if there is a breakdown of the system? Many people would become ill. How are women involved in the decision-making processes?

4.1.3   *Figure / ground reversals*

Figure - Attention is focused on: -	**Ground** - Left in the background: -
The community does the monitoring	Traditional decision-makers (Chiefs)
Changing the habits of the community through social processes	Committee members have not been involved or motivated, and their status has not been recognised.
Part-time caretaker is paid and so is motivated.	**The group of users that has the highest interest in improving the water supply**

4.1.4 *Comparison to a stapler*

- Getting the community motivated for O&M is like a stapler that has to be pushed down hard every time to do its job.
- The messages of essential factors should not be so many that a stapler cannot join them all.
- To get the government system involved in O&M is like getting a corroded stapler to work again – it needs both a hammer and oil.
- The role of government should be like the function of a stationery shop that sells staples. Government can provide support, funds and the legal framework.
- After 25 years of operation, a stapler is worn out and should be replaced, if it is still needed.

4.1.5 *Paradigms and alternatives*

Paradigms proposed by case study group to describe the design of the existing project	Challenges and revisions proposed by another group
Communities can be motivated through a social process facilitated from outside.	The motivation of communities is only a small step towards good maintenance – and does not guarantee it.
Water supply issues must be solved at community level.	Water supply issues must be solved at household level.
The community should guarantee that maintenance will be done.	**Dedicated individuals can trigger or motivate good maintenance**.
All actors should come together around one table.	The different interests of different actors should be acknowledged.
The private sector is better equipped to implement O&M.	The private and public sectors should work together to implement O&M.
Local leaders are important.	**Respected and legitimate initiative leaders are important.**
The role of local government should be acknowledged.	Local government must be supported. Government interference has negative impacts.

4.1.6 ⇨ *Output of group – example of paradigms and implications*

Paradigm   Social mobilisation – to achieve implementation of operation and maintenance by the community – cannot be facilitated from outside

Implications
- Establishment of new organisational structures
- Establishment of appropriate legal framework
- There will be no further external inputs - the community must find its own way.

Concept   In many villages there is a group of residents who have a particular interest in the effective operation of the water supply system. Such people may have retired to their family village after working in a city for many years, and so they are accustomed to having a regular supply of wholesome water, and regard such a supply as important. They may also have the financial resources, the education and the experience to take a leadership role within the village in ensuring the continuing operation of the water supply system. It is likely that such people will take advantage of any opportunity to have house connections, hence the symbol used to represent this group. The group of users who have the highest interest in having a continuous supply should be the ones who are commissioned to manage the supply.
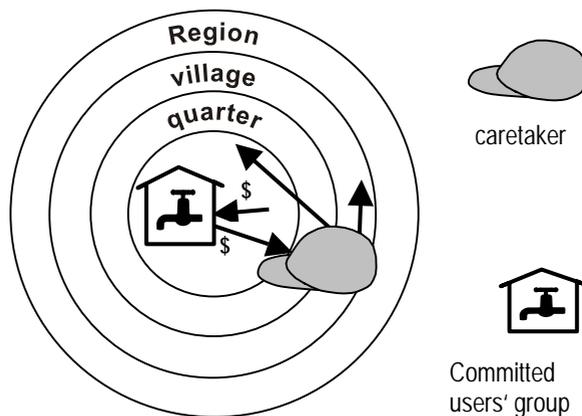
Potential	The number of committed users is increasing.
Risks	Committed users' group may modify arrangements to suit their own interest, so appropriate byelaws are needed.

4.2   Case 2 - Urban services in Faisalabad, Pakistan

4.2.1   Introduction

This case study was concerned with research into the attitudes and perceptions of a range of actors regarding the performance of a government body charged with operating and maintaining water supply and drainage facilities.   The body is the Water and Sanitation Agency (WASA) of Faisalabad, Pakistan. The aim of the research was to find ways in which the sustainability of the sanitation services could be improved.

Community Action Programme (CAP), the NGO represented by the presenter of this case study, had been acting as a facilitator and intermediary between the communities and WASA,   The essence of this intervention is that communities are empowered to request and secure services by being organised. The project is about changing mindsets. If CAP were not involved, the empowerment of the community would take much longer.

WASA is not connected to the political structure of the town. WASA personnel are civil servants who may not feel accountable to the people of the City. A metering system has been introduced but is not working, and many people do not pay their bills. Some officials get illegal money.

Issues discussed by the working group included the partnership between the community organisations and WASA, the degree to which the communities have a potential for organising themselves, and ways in which WASA could become more effective, such as if it were commercialised and staff were paid better salaries.

4.2.2   Figure / ground reversals

The figure or foreground is CAP.

The Muslim culture is a key aspect of the context.

The background to this project is WASA and the complex links that it has with the community and others involved in the supply of water and sanitation services.

4.2.3   *Comparison to a stapler*

- If the staples in a stapler are not organised properly, the stapler will not operate; if the community is not organised well it will similarly not achieve much.
- Just as a stapler needs pressure from outside to make it work, so the O&M system needs external pressure to make it operate. One has to know how to operate a stapler – how much pressure to put on it to get the best results.

4.2.4   *Paradigms and alternatives*

Paradigms proposed by case study group to describe the design of the existing project	Challenges and revisions proposed by another group
Community organisation is the most effective way to get better services.	Organisation begins at the household level.
WASA can be forced to provide better services by CBOs.	Involvement of private sector increases effectiveness.
People are the owners of the systems.	Government is the owner of public facilities.
All community members need services. Public services (should be) available for all.	No free service. Particular services to be provided to individual clients on demand.
NGOs are good.	Not all NGOs are good.
People are not organised and the communities are not organised	Each community has needs, clear rules, regulations, roles and responsibilities. Communities are organised in their own way.

4.2.5   *Output of group – example of paradigms and implications*

Paradigm   Partnerships which create win-win situations are a precondition to the achievement of effective service delivery

Implications   • It is necessary that the interests and motivation of all actors are known.

- It is necessary that the constraints faced by the actors are known.
- A platform needs to be available where the actors can negotiate their interests.
- Competence and methodology need to be available to deal with conflicting positions.
- Conditions must be created so that decisions & co-operative arrangements are made at local level.

4.3   Case 3 – Franchise for solid waste collection in Ghana

4.3.1   Introduction

This case study describes a pilot-scale project for collecting solid waste in a low-income neighbourhood in Kumasi in Ghana. The project was set up with World Bank assistance. This initiative follows the failure of conventional waste collection approaches, because of inadequate funding for vehicle repairs and replacements, which resulted in only partial service coverage, which, in turn, resulted in low fee collection efficiencies.   In accordance with the trend for decentralisation and private sector participation, three franchisees were appointed to collect the waste from house to house using donkey carts. The initial fee collection efficiency was 91%, and the service was well received. The project design included a declining subsidy payable to the franchisees in the expectation that fee collection efficiencies would initially be low. Monitoring of the franchisees (in financial and operational terms) was inadequate.   Some residents complained about harsh treatment of the donkeys, so tractors and trailers have been introduced. The City Authorities have retained the responsibility for secondary transportation and disposal.

This pilot project already shows some paradigm shifts.
- Engineers usually prefer large machinery and like to be seen to be in charge, but this pilot project used small simple vehicles and gives the local community a greater role. The paradigm has shifted from *Big is beautiful* to *Small is smart.*
- The choice of donkey carts seems to be reversing the direction of progress.

- Previously all municipal income had been gathered into a central pot, but in this project the private sector franchisees collect the primary waste collection fees themselves, and none of the collected money goes near the municipal Treasurer's Department.

4.3.2   *Wearing another hat – the perspective from second choice careers.*

Profession	Opinion
Farmer	Use organic waste for urban agriculture.
Mechanic	Tendering procedure should be more open, there should be more flexibility on technology choice.
Army officer	Use military resources to keep cities clean in peacetime.
Historian	Why privatise primary collection but not the secondary?
Musician	There should be no subsidies.
Economist	Banks should provide loans for equipment.
Medical doctor	Municipality should take care of hospital wastes.

4.3.3   *Figure / ground reversals*

Figure - Attention is focused on:	**Ground** - Left in the background:-
Primary collection	Secondary collection, disposal, recycling, integrated management
The interface between the primary collection service and residents	The link between the primary collection service and the secondary transportation
The priorities of the municipality	The priorities of the community
Subsidies from taxes	Full cost recovery from beneficiaries
Operations of franchisees	Municipal roles and capacities
Collective waste management service	Individual responsibility for waste management
Solid waste collection	General urban planning and management

4.3.4 *Comparison to a stapler*

Pictures showed

- A stapler with a great thickness of paper between its jaws so that there is no possibility of stapling all the sheets together – it is overloaded. This situation symbolises both the Local Government and the waste collectors.
- Another picture shows a broken stapler, unable to serve any useful purpose. This represents the broken trucks that litter the vehicle depot in Kumasi and are totally unserviceable.

4.3.5 *Paradigms and alternatives*

Paradigms proposed by case study group to describe the design of the existing project	Challenges and revisions proposed by another group
Privatised public services lead to better results.	Government services can also be run efficiently.
All services must be paid for.	Only satisfactory services should be paid for.
Least cost solutions should always be selected.	Sustainable solutions are not always the cheapest.
The community needs external support and guidance.	The community should fight for self-sustainability.
The community's own resources (human, financial) are inadequate.	Community resources are priority.
Somebody should take care of our waste.	Take care of your waste yourself.
The system will not work without subsidies.	Stopping subsidies does not guarantee the willingness to pay.
Willingness to pay will increase.	Viable systems always work without subsidies.
All garbage is useless.	All garbage has a value. Some garbage should be re-utilised.
Donkey drivers take care of their donkeys.	Donkey drivers are cruel to their donkeys.

4.3.6 ⇨ *Output of group – example of paradigms and implications*

<u>Paradigm</u>   Strong public institutions are essential in solid waste management.

<u>Implications</u>
- Need for improved franchise management
- Need for improved legislation and enforcement
- Clear definition of roles and responsibilities
- Need for good performance monitoring

4.4   Case 4 - Maintaining rural water supplies in Lesotho

4.4.1   Introduction

During the thirty years since the Department of Rural Water Supply (DRWS) was set up to provide safe water to Lesotho's villages, a number of paradigms have been followed and proposed in the quest to ensure that the water supply systems are kept in good working order. By the late 1980s water production actually went into decline, as more and more breakdowns were not repaired. At one stage a study by an independent consultant concluded that 30% of the systems were not functioning.   In response to this situation the following paradigms were proposed:

- Operation and maintenance should be considered at the stage of the feasibility study.
- Maintenance is the responsibility of the communities that use the supplies.
- Maintenance should be decentralised and privatised.
- More efforts should be devoted to preventive maintenance.
- Repairs should be made by an area minder if a local minder cannot do them.
- Inspection should be paid for by the Government.

The new approach included decentralising, using the private sector and increasing the emphasis on preventive measures. Two models were being considered –

- the *Area Minder* system in which a contractor is retained to service supplies in a given area and paid for work by the community, and
- direct contracting by the communities.

4.4.2   *Wearing another hat – the perspective from second choice careers.*

Profession	Opinion
Sociologist	The responsibility for O&M should rest with the people.
Film maker	Different groups in the village should use their artistic abilities
Sociologist	Social mobilisation can create a sense of ownership.
Architect	Services should be improved.
Sociologist	Community structures need capacity building.
Lawyer	Village water committees should be formalised by giving them a legal status.
Architect	Consider the need for transport.
Economist	A fund for O&M should be set up with no subsidies.

4.4.3   *Figure / ground reversals*

Figure   Attention has been focused on the private sector, the government and the role of the community

Ground   The following aspects were considered to have been left in the background:

- formalising the roles of caretakers
- gender issues
- political structures
- cultural appropriateness
- cost recovery
- a grass-roots approach
- the institutional structure
- community ownership
- the use of affordable and appropriate technology
- transparency
- payment for water services
- the roles of different stakeholders
- effective delivery of services

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4.4.4   *Comparison to a stapler*

As a stapler binds sheets of paper together, the chosen approach must bind the community, private sector and government together.

4.4.5   *Paradigms and alternatives*

Paradigms proposed by case study group to describe the design of the existing project – some examples	Challenges and revisions proposed by another group
Privatisation of O&M.	The private sector is a parasite. Keep away from the private sector.
Government plays a regulatory role. O&M managed by the community is better than O&M managed by government.	Shared responsibilities between government and civil society. O&M is the user's responsibility.

4.4.6 ⇨ *Output of group – example of paradigms and implications*

<u>Paradigm</u> The private sector is a good option for operation and maintenance

<u>Implications</u>	<u>Next steps</u>
Legal implications	• Make provision for accommodating new legal requirements. • Advocacy for changes in legislation. • Enactment and enforcement of law.
Undermining users' interests.	• Signing agreement between VDC* and the contractor.
Dilution of sense of ownership.	• Entrusting the responsibility for supervision and monitoring of the private sector to the VWC*. • Recommendation of the VWC* to be a precondition for renewal of contracts.

table continues …

Implications	Next steps
Potential increase of water charges.	• Conditions stipulating service level and tariff to be included in the agreement. • Tariff revisions to be approved by VWC/VDC*. • Rules for tariff revisions to be defined.
Excessive burden on poorest segments.	• Ensure concessionary rates for minimum lifeline requirement of water.
Lack of interest by the private sector.	• Provision of an economic scale of operation. • Create a conducive environment for private sector participation. • Provide rewards or incentives.
Limited experience of private sector in water supply.	• Capacity building. • Training.

* VDC is Village Development Council, with responsibility for a number of villages.
  VWC is Village Water Committee, one in each village

4.5 Postscript

This chapter has listed many paradigms. They have not been offered as ready-made off-the-shelf products, but have been presented to serve as indicators of processes. They are, in many cases, the first attempts to define paradigms; many of the workshop participants did not understand clearly the meaning of the word "paradigm" at the start of the workshop. The examples in this chapter should therefore be seen as first steps, but they also serve to indicate how much one can learn in a week.

Because of space limitations it has not been possible to present all the outputs of the groups.

5.   Reflections and conclusions

5.1   The need for radical thinking

This booklet has attempted to expose some of the roots of water supply and sanitation planning – the assumptions and paradigms that influence the questions that we ask and the solutions that we propose. It has also aimed to present some tools that can be used to investigate these roots and find better alternatives. These tools can be used in groups or by individuals to identify the thinking that has led to the methods and models that we work with, and to open up possibilities for new ways of thinking about familiar issues.

In water and sanitation projects, especially in cases where they are not progressing as we would like them to, we can try to understand what is the "hidden" paradigm that acts as an unconscious driving force. There may be different conflicting paradigms, each person in the project having a different, unspoken one.

Over the last decade, progress has been made in improving the operation and maintenance of water supply and sanitation schemes, but the situation is not yet satisfactory. Too many people are still without access to a reasonably convenient source of wholesome water, and suffer from the lack of decent and hygienic sanitation. If the process of implementing improvements in water supply and sanitation is compared to a journey, we need to ask ourselves if it is enough simply to make small modifications to the route or timing, or whether we need to head for a different destination, or use a different means of transport.

5.2   Effort, time and technique are needed

Most new ideas and shifts in paradigms will not come automatically, without effort. Unless we take the trouble to shake ourselves free of unnecessary assumptions, to look for another perspective and listen to others, to look for the background or context, we will probably continue to think and move in basically the same direction. We have been given tools, but tools achieve nothing unless they are picked up and used.

It is useful to take time to consider paradigms, mindsets, approaches. It is *more* useful to take time to discuss them with others, particularly if the group is

mixed (i.e. participants come from different backgrounds - educationally, culturally, professionally, and in terms of nationalities or roles). It is *most* useful to discuss paradigms in a mixed group using tools to structure and guide the discussion.

It is worthwhile to write down and agree on the precise formulations of paradigms that are in current use, rather than just discussing them in vague, general terms. Because the paradigm dictates or moulds the solution (mostly unconsciously), it is important to be fully aware of the paradigm that has previously been ignored in the background.

5.3 Paradigms and planning

The workshop experience showed that if we devote time to establishing and distinguishing the paradigm, the plan and actions will follow much more easily and naturally.

Different paradigms lead to different plans. Perhaps we tend to move too quickly to the stage of working out the details, the next steps, the plan of action. We often need to take the time to reflect on the basic paradigm that, perhaps unconsciously, has set the direction of our thoughts. This was the experience with the group work, in which considerable time was spent applying different tools and approaches to develop innovative paradigms, but once these paradigms were established, the detailed implementation programme could be proposed relatively quickly. The most creative aspect of the group work was in the challenging and formulating of paradigms, rather than the listing the implications that followed from them. Some of the challenges to the paradigms do not seem serious or realistic, but such flights of fancy can result in escaping from unnecessary assumptions, discovering new perspectives with "new eyes" and landing on fresh ground.

In our project planning, we need to schedule our sessions to ensure that there is time to discuss, develop, disagree on, and finally agree on paradigms. The agendas of our planning workshops should force us to first go back to the basic issues, so that we do not immediately rush to the details in order to complete our planning matrices. We need to find ways to incorporate mechanisms for reflecting on and challenging paradigms and assumptions. Reflecting on paradigms and assumptions in this way would help donors and partners to understand each other better, and to avoid conflict and tension at a

later stage when differences in paradigms and objectives start to become concrete.

5.4   Practical advice

When we return to our normal work situation, after a fresh or stimulating experience, the mindset around us can suck us right back into the old mode of thinking. We need to be committed to what we have discovered, without being unnecessarily stubborn.

We should be prepared that mistakes will be made when applying paradigm thinking to our projects. We need practice. We form the path by walking on it.

Even if we are convinced of the need for major change in paradigms, the magnitude of the task of trying to change the paradigms of agencies, senior managers or governments may make it seem impossible. We can draw strength from the lessons of history, that changes have occurred and that they are now occurring at an increasing pace, and we can use the increasing opportunities for networking to work towards that figure of 20% support that seems to be enough to start the shift of the paradigm.

> If you think that you are too small to change anything or to have any effect, you have obviously never shared a bed with a mosquito.

Annex 1   More information about the Aguasan Workshop

The booklet has been based on the 17th Aguasan Workshop. The Aguasan group is funded by the Swiss Agency for Development and Cooperation (SDC) and is directed by senior representatives of the leading Swiss agencies that are working in the field of water supply and sanitation.

A more detailed report of the Workshop has been prepared, and it can be downloaded from the **skat**_foundation website at
http://www.skat.ch/ws/publ/publ.htm .
It may be also be possible to obtain a printed copy from **skat**_foundation (at the address given on the reverse of the title page.)

There were 35 participants at the workshop, from 16 countries, including six from Asia, six from Africa, two from Eastern Europe. Many of the participants from Western Europe were engaged in development projects elsewhere.

The workshop included a range of activities, in addition to those referred to in this booklet. The programme started with some outdoor activities that taught a number of useful lessons, including

- How some tasks can seem so difficult or require so much work before we achieve success, and then appear so easy or obvious in hindsight, when we know how they can be accomplished;
- The importance of listening to and considering *all* suggestions instead of immediately operating in the conventional way;
- The importance of seeing the problem from the point of view of the other side or the other person, of putting ourselves in the shoes of the other and asking ourselves "Why does he think in the way that he does?";
- The importance of identifying the particular strengths or roles of each component, and designing the solution in accordance with these strengths, and
- The importance of deciding on a strategy only after we have considered the whole problem, (rather than considering only the first step at the beginning, and not thinking about later steps until the first has been accomplished).

The first part of the workshop was mainly devoted to a presentation of the significance of paradigms and how to perceive and modify them, by Elisabeth Stern. The method of presentation was very varied, and included individual

and group exercises, considerable thinking and a good dose of laughter. We were introduced to the term "mind jogging" – an expression that includes exercise for the brain and shaking to produce new combinations of thoughts.

The second part of the workshop, moderated by Tonino Zellweger, focused on the four case studies, using them to provide practical examples of digging for paradigms and developing alternatives. Much of this work was done in four groups, with frequent reporting back.

A site visit was organised to a nearby village where an unconventional approach to stormwater drainage had been developed. This provided a very practical example of the process of changing paradigms and implementing the resulting planning, and showed the need for persistence and patience, to gain support for implementing such changes.

At the end of the week participants were asked to write down some of the most important ideas that they had picked up during the Workshop. They are listed in the Workshop Report. A small selection is included here.

- *It is more effective to be approximately right than perfect but stuck to an old paradigm. (We need to take some risk.)*
- *Don't be shy to explore crazy ideas.*
- *It needs a lot of discipline to apply "mind jogging" tools and not to fall back into the usual way of thinking.*
- *Now I have more tools for creative thinking.*
- *It is important to look at things from a distance, from outside, from below and above, and with the eyes and the hearts of others.*
- *All the time I am guided by paradigms which I am not aware of. I want to try to question my paradigms.*
- *Differences of opinion are not necessarily different opinions but how people see from different perspectives.*
- *Economic benefits are important motivators for changes of paradigms.*
- *There are more things to consider in the background in solving a problem than what is seen in the foreground.*
- *I have become more aware of the importance and difficulty of teamwork.*

Reflecting on the Workshop several months later, participants emphasised the importance of learning to look at issues from other viewpoints, and that paradigm shifting is an attitude and a mind-set, that needs ongoing training and continuous practice.

Annex 2   Some solutions

Joining the dots

Crossing the river   (See Section 3.3.1)

First take the goat. On the next trip take the cabbage and on the return, bring back the goat. Leave the goat on the initial river bank and carry the wolf across. Finally come back for the goat.

The key to solving this problem is to realise that an item can be brought back after it has been taken across.

Young lady, old lady (Section 3.3.2)

The original picture has been modified slightly to make each character easier to see. In the top picture has been modified to accentuate the young lady, and in the lower the old lady is more clearly featured. The lower part of the nose of the old lady is the jaw of the young woman.

My life is like a stapler in that …

(See section 3.3.5)

There are no right answers to this exercise – one answer can be as good as any other. Here are some examples

- My life is like a stapler in that its significance comes from many small events.
- My life is like a stapler in that I need to be pushed to achieve anything.
- My life is like a stapler in that I am different from others and have a part to play in the bigger picture – an office needs computers and telephones and hole punchers as well as a stapler.
- My life is like a stapler in that I should not underrate the importance of little things (like staples).
- My life is like a stapler in that when I try to do too many things at once, I do nothing properly.

Better solutions
through new ways of thinking

- the impact of paradigms on water supply and sanitation

The recent history of water supply and sanitation projects in developing countries offers many varied examples of approaches, assumptions, beliefs and patterns - otherwise called paradigms - regarding initiation, decision-making, design criteria, financing, and the management of operation and maintenance. These paradigms are like the roots of a tree in that they form the foundation and determine the nature and sustainability of a project. The tasks of making wholesome drinking water and satisfactory sanitation available to everyone remain huge and challenging, and it is important that efforts in this connection are based on the best possible foundations.

This booklet has been derived from the presentations and discussions at an Aguasan workshop. It includes an explanation of the importance of paradigms, suggestions for investigating and modifying paradigms, and examples of the processes of reviewing and modifying paradigms, based on case studies from Africa and Asia. The examples show how new paradigms can lead to radically new - and potentially better - solutions.